

Succession

# OSS-affecting Features in iSN07

## Advance Feature Guide

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ISN07 Standard 01.02 August 2004



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## Advance Feature Guide

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# Publication History

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## **Appendices**

Appendix A: Passport 8600 Performance Metrics  
Appendix B: MG 9000 MIB OMs/PMs  
Appendix C: USP OMs  
Appendix D: MG 9000 Alarms and Logs  
Appendix E: Passport 15000/MDM Alarm Log Summary  
Appendix F: CICM Logs and Alarms



# About this document

## Overview

This document supports Nortel's International Succession Solutions ISN07 release. It describes ISN07 features that affect inputs to or outputs from the solutions. These changes, therefore, affect the use of the Operations Support System (OSS) for ISN07. The document includes copies of feature descriptions used in software design.

**Information in this document is believed to be accurate at the time of publication, but it is subject to change. Use of this document should be restricted to resource planning and estimating for ISN07. Do not use this document to make changes to existing software.**

## How this document is organized

This document is divided into the following sections:

- *Global features.* This section contains a table listing the OSS-affecting features which apply to both the North American and International markets. These features are documented in detail in equivalent North American documents (see "Related documents", below).
- *Activity mapping table.* The table relates the activity identifier associated with each International-only feature to:
  - the product/application/network element, or market area affected
  - affected software object types (data schema, for example)
- *New or changed for ISN07.* This section provides a table for each software object type, as follows:
  - Office parameters
  - Logs and faults
  - Operational and Performance Measurements (OMs and PMs)

- Data Schema tables or MIBs
- User Interface (commands)
- Service Orders
- AMA/billing
- Software Optionality Control (SOC)

Each table gives a summary of the changes caused per feature. Within each table, features are arranged by product/application, network element, or market.

- *Feature descriptions.* This section provides feature descriptions, based on design documents. These are organized by product/application/network element, or market.
- *Appendices* that support specific product lines, such as MG9K

## Related documents

Global information that applies to both the North American and the International markets can be found in the following North American (SN06.2) documents:

- PLN-072AT-OSS, *SN07 OSS Guide (ATM)*
- PLN-07IP-OSS, *SN07 OSS Guide (IP)*

The documents contain details of OSS-affecting features that apply to both SN07 (North America) and ISN07 (International), referenced from section “Global features” in this document.

Other relevant descriptions contained in the North American documents are as follows:

- Audio Provisioning Server
- Compact Call Agent
- CMT
- SAM21 (Logs/faults as an Appendix)
- CS2000 XA-Core
- GWC
- SPM (all variants)
- Storm
- MG 9000 (OMs/PMs as an Appendix)
- Network Patch Manager (NPM)



- CS 2000 Core Manager
- TOPS
- Passport 8600
- Passport 15000 (Alarm logs as an Appendix)
- MDM (Alarm logs as an Appendix)
- PNM
- UAS (Logs/faults as an Appendix)
- USP (Logs/faults and OMs/PMs as an Appendix)
- OSSGate User Guide

## Audience

This document is intended for Nortel Networks personnel, third-party OSS vendors, and customers who need to plan resources and estimate network impacts for this release.

## How to check the version and issue of this document

The document release information on the title page and the footers of this document indicate the version and issue, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time a document is revised but re-released in the same software release cycle. For example, the second release of a document in the same software release cycle would be 01.02.

## Writing conventions

Descriptions of commands, parameters, and responses in this document use the following conventions:

### Input prompt

An input prompt (> or #) indicates that the information that follows is a command:

>LIST

### Commands and fixed parameters

Commands and fixed parameters that are entered at the MAP terminal are shown in uppercase letters:

>LIST ALL

**Variables**

Variables that are entered at a MAP terminal are shown in lowercase letters:

>TABLE table\_name



# Global features mapping

## Introduction

This section contains a table that lists the OSS-affecting features that apply to both the International and North American market. These features are covered in the following North American documents:

- SN07 OSS Guide (IP), PLN-07IP-OSS
- SN07 OSS Guide (ATM), PLN-07AT-OSS

## Global Features

| SN07 Solutions                  |           | Solutions Affected |             |           |           |             |                   | SW object types or areas impacted |             |               |         |                 |          |             |             |
|---------------------------------|-----------|--------------------|-------------|-----------|-----------|-------------|-------------------|-----------------------------------|-------------|---------------|---------|-----------------|----------|-------------|-------------|
| Product, Application, or Market | ACTID     | Int'l PT-AAI2      | Int'l PT-IP | Int'l IAC | Int'l IAW | Int'l UA-IP | Int'l Succ on DMS | Logs/Faults                       | Data Schema | Office Params | ServOrd | User Interf/HMI | OMs/PIMs | AMA/Billing | Optionality |
| CS 2000                         | A00001649 |                    |             |           |           |             | X                 | X                                 |             |               |         | X               |          |             |             |
| CS 2000                         | A00001650 |                    |             |           |           |             | X                 |                                   |             |               |         | X               |          |             |             |
| CS 2000                         | A00001743 |                    | X           | X         | X         |             |                   | X                                 |             |               |         | X               |          |             |             |
| MG 9000                         | A00001893 |                    |             |           |           | X           |                   |                                   |             |               |         | X               |          |             |             |
| CS 2000                         | A00002008 |                    |             |           |           |             | X                 |                                   |             |               |         |                 |          | X           |             |
| CS 2000                         | A00002011 |                    |             |           |           |             | X                 |                                   |             |               |         |                 |          |             | X           |
| CS 2000                         | A00002133 |                    |             |           |           |             |                   |                                   |             |               |         | X               |          |             |             |
| CS 2000                         | A00002155 |                    |             |           |           |             | X                 |                                   |             |               |         | X               |          |             |             |
| CS 2000                         | A00002186 |                    |             |           |           |             | X                 |                                   |             |               |         |                 |          |             | X           |
| CS 2000                         | A00002281 |                    |             |           |           |             | X                 |                                   | X           |               |         |                 |          |             |             |
| CS 2000                         | A00002340 |                    |             |           |           |             | X                 |                                   |             |               |         |                 | X        |             |             |
| CS 2000                         | A00002538 |                    |             |           |           |             | X                 | X                                 |             |               |         |                 | X        |             |             |
| CS 2000                         | A00002555 |                    |             |           |           |             | X                 |                                   |             |               | X       |                 |          |             |             |
| CS 2000                         | A00002556 |                    |             |           |           |             | X                 |                                   |             | X             |         |                 |          |             |             |

| SN07 Solutions                  |           | Solutions Affected |             |           |           |             |                   | SW object types or areas impacted |             |             |         |                 |         |             |             |
|---------------------------------|-----------|--------------------|-------------|-----------|-----------|-------------|-------------------|-----------------------------------|-------------|-------------|---------|-----------------|---------|-------------|-------------|
| Product, Application, or Market | ACTID     | Int'l PT-AAI2      | Int'l PT-IP | Int'l IAC | Int'l IAW | Int'l UA-IP | Int'l Succ on DMS | Logs/Faults                       | Data Schema | Office Parm | ServOrd | User Interf/HMI | OMs/PMs | AMA/Billing | Optionality |
| CS 2000                         | A00002585 |                    | X           |           |           |             |                   |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00002740 |                    |             |           |           |             | X                 |                                   | X           |             |         |                 |         |             |             |
| CS 2000                         | A00002741 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00002744 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00002757 |                    |             |           |           |             | X                 | X                                 |             |             |         |                 |         |             |             |
| CS 2000                         | A00002766 |                    |             |           |           |             | X                 |                                   |             |             |         |                 | X       |             |             |
| CS 2000                         | A00002822 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00002901 |                    |             |           |           |             | X                 |                                   | X           |             |         |                 |         |             |             |
| CS 2000                         | A00002966 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00002979 |                    |             |           |           |             |                   |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00003371 |                    | X           | X         | X         | X           |                   | X                                 |             |             |         |                 |         |             |             |
| CS 2000                         | A00003454 |                    | X           | X         | X         | X           |                   |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00003459 |                    |             | X         | X         | X           |                   | X                                 | X           | X           |         | X               |         |             |             |
| CS 2000                         | A00003485 |                    | X           |           |           |             |                   |                                   | X           |             |         | X               |         |             |             |
| MG 9000                         | A00003571 |                    |             |           |           | X           |                   | X                                 |             |             |         | X               |         |             |             |
| CS 2000                         | A00003687 |                    |             |           |           |             | X                 | X                                 | X           | X           |         |                 | X       |             |             |
| CS 2000                         | A00003698 | X                  | X           |           |           |             |                   |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00003704 |                    |             |           |           |             | X                 |                                   | X           |             |         |                 |         |             |             |
| Centrex IP                      | A00003717 |                    |             |           | X         |             |                   |                                   |             | X           | X       |                 |         |             |             |
| Centrex IP                      | A00003718 |                    |             |           | X         |             |                   | X                                 |             |             |         |                 |         |             |             |
| CS 2000                         | A00003905 |                    |             |           |           |             | X                 |                                   | X           |             |         |                 |         |             | X           |
| CS 2000                         | A00003971 |                    |             |           |           |             | X                 | X                                 |             |             |         | X               |         |             |             |
| CS 2000                         | A00004005 | X                  | X           |           |           |             |                   |                                   |             |             |         | X               | X       |             |             |
| CS 2000                         | A00004271 |                    | X           |           |           |             |                   | X                                 |             |             |         |                 | X       |             |             |
| CS 2000                         | A00004414 |                    | X           |           |           |             |                   |                                   |             |             |         |                 |         |             | X           |
| CS 2000                         | A00004554 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00004713 |                    |             |           |           |             | X                 |                                   |             | X           |         |                 |         |             |             |
| CS 2000                         | A00004868 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| MS 2000                         | A00004873 |                    |             |           | X         |             |                   |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00005073 |                    |             |           |           |             | X                 | X                                 |             |             |         | X               |         |             |             |
| CS 2000                         | A00005074 |                    |             |           |           |             | X                 |                                   |             |             |         | X               |         |             |             |
| CS 2000                         | A00005160 |                    |             |           |           |             | X                 |                                   | X           |             |         | X               | X       |             |             |
| CS 2000                         | A00005190 |                    |             |           |           |             | X                 |                                   | X           |             |         | X               |         |             |             |
| CS 2000                         | A00005192 |                    |             |           |           |             | X                 | X                                 |             |             |         |                 |         |             |             |
| CS 2000                         | A00005193 |                    |             |           |           |             | X                 |                                   | X           |             |         |                 |         |             |             |
| CS 2000                         | A00005268 |                    |             |           |           |             | X                 | X                                 |             |             |         | X               |         |             |             |
| CS 2000                         | A00005363 |                    |             |           |           |             | X                 | X                                 | X           |             |         |                 |         |             | X           |

| SN07 Solutions                        |           | Solutions Affected |             |           |           |             |                   | SW object types or areas impacted |             |              |         |                 |         |             |             |
|---------------------------------------|-----------|--------------------|-------------|-----------|-----------|-------------|-------------------|-----------------------------------|-------------|--------------|---------|-----------------|---------|-------------|-------------|
| Product,<br>Application,<br>or Market | ACTID     | Int'l PT-AAI2      | Int'l PT-IP | Int'l IAC | Int'l IAW | Int'l UA-IP | Int'l Succ on DMS | Logs/Faults                       | Data Schema | Office Parms | ServOrd | User Interf/HMI | OMs/PMs | AMA/Billing | Optionality |
| CS 2000                               | A00005485 |                    | X           | X         | X         | X           |                   |                                   |             |              |         | X               |         |             |             |
| CS 2000                               | A00005734 |                    |             |           | X         |             |                   |                                   | X           |              | X       |                 |         |             |             |
| CS 2000                               | A00005758 |                    |             |           |           |             | X                 |                                   |             |              |         | X               |         |             |             |
| CS 2000                               | A00005986 |                    |             |           | X         |             |                   | X                                 |             |              |         |                 |         |             |             |
| CS 2000                               | A00005988 |                    |             |           | X         |             |                   |                                   |             |              |         | X               |         |             |             |





# ISN07 Activity mapping table

## Introduction

This document contains advance information about differences in operations, administration, maintenance, and provisioning (OAM&P) for International Succession Networks Release 7 (ISN07). The purpose of this document is to provide early information about new, modified or deleted items related to OSS-impacting areas.

The table below shows the mapping from the activity identifier (ACTID) associated with each new feature to the following:

- the associated product, application, network element, or market
- the international solution that the feature affects, of the following:
  - International PT-AAL2
  - International PT-IP
  - International IAC
  - International IAW
  - International UA-IP
  - International Succession on DMS
- the software object type or area that the feature affects, of the following:
  - Logs/faults
  - Data schema tables/MIBs
  - Office parameters
  - Service orders (ServOrd)
  - User interface/human-machine interface
  - Operational and performance measurements (OMs/PMs)
  - Automatic Message Accounting (AMA)/billing
  - Software Optionality Control (SOC)

**Activity Mapping Table: Solutions Affected**

| PRODUCT or APPLICATION | ACTID                        | SN07 Solutions |             |           |           |             | Int'l Succ on DMS |
|------------------------|------------------------------|----------------|-------------|-----------|-----------|-------------|-------------------|
|                        |                              | Int'l PT-AAL2  | Int'l PT-IP | Int'l IAC | Int'l IAW | Int'l UA-IP |                   |
| CS 2000                | A00001935                    |                | X           |           |           |             |                   |
| CS 2000                | A00002252                    |                | X           |           |           |             |                   |
| CS 2000                | A00002291                    |                |             |           |           |             | X                 |
| CS 2000                | A00002365                    |                |             |           | X         |             |                   |
| CS 2000                | A00002367                    |                |             |           |           |             | X                 |
| CS 2000                | A00002377                    |                |             |           |           |             | X                 |
| CS 2000                | A00002512                    |                |             | X         | X         |             |                   |
| CS 2000                | A00002639                    |                |             |           |           | X           |                   |
| CS 2000                | A00002642                    |                |             |           |           | X           |                   |
| CS 2000                | A00002644                    |                |             | X         | X         |             |                   |
| CS 2000                | A00002654                    |                |             |           |           | X           |                   |
| CS 2000                | A00002655                    |                |             |           | X         | X           |                   |
| CS 2000                | A00002678                    |                |             |           |           | X           |                   |
| CS 2000                | A00002680                    |                |             |           |           | X           |                   |
| CS 2000                | A00002713                    |                |             |           |           | X           |                   |
| CS 2000                | A00002755                    |                |             |           |           |             | X                 |
| CS 2000                | A00002756                    |                |             |           |           |             | X                 |
| CS 2000                | A00002884                    |                |             |           |           |             | X                 |
| CS 2000                | A00002900                    |                |             |           |           |             | X                 |
| CS 2000                | A00002904                    |                |             |           |           |             | X                 |
| CS 2000                | A00002916                    |                |             |           | X         |             |                   |
| CS 2000                | A00003410                    |                |             |           |           |             | X                 |
| CS 2000                | A00003411                    |                |             |           |           |             | X                 |
| CS 2000                | A00003465                    |                |             |           |           |             | X                 |
| CS 2000                | A00003627                    |                |             |           | X         |             |                   |
| CS 2000                | A00003695<br>(see A59036475) |                | X           |           |           |             |                   |
| CS 2000                | A00003696                    |                | X           |           |           |             |                   |
| CS 2000                | A00003951                    |                |             | X         |           |             |                   |
| CS 2000                | A00004205                    |                |             |           |           |             | X                 |
| CS 2000                | A00004931                    |                | X           |           |           |             |                   |
| CS 2000                | A00004933                    |                | X           |           |           |             |                   |
| CS 2000                | A00004981                    |                |             | X         | X         |             |                   |
| CS 2000                | A59036475                    |                | X           |           |           |             |                   |



| PRODUCT or APPLICATION | ACTID     | SN07 Solutions |             |           |           |             | Int'l Succ on DMS |
|------------------------|-----------|----------------|-------------|-----------|-----------|-------------|-------------------|
|                        |           | Int'l PT-AAL2  | Int'l PT-IP | Int'l IAC | Int'l IAW | Int'l UA-IP |                   |
| World Trade            | A00001914 |                |             |           |           |             | X                 |
| World Trade            | A00001918 |                |             |           |           |             | X                 |
| World Trade            | A00001919 |                |             |           |           |             | X                 |
| World Trade            | A00001920 |                |             |           |           |             | X                 |
| World Trade            | A00001921 |                |             |           |           |             | X                 |
| World Trade            | A00001923 |                |             |           |           |             | X                 |
| World Trade            | A00001930 |                |             |           |           |             | X                 |
| World Trade            | A00002053 |                |             |           |           |             | X                 |
| World Trade            | A00002101 |                |             |           |           |             | X                 |
| World Trade            | A00002173 |                |             |           |           |             | X                 |
| World Trade            | A00002319 |                |             |           |           |             | X                 |
| World Trade            | A00002364 |                |             |           |           |             | X                 |
| World Trade            | A00002641 |                |             |           |           | X           |                   |
| World Trade            | A00002702 |                |             |           |           |             | X                 |
| World Trade            | A00002754 |                |             |           |           |             | X                 |
| World Trade            | A00002844 |                |             |           |           |             | X                 |
| World Trade            | A00002907 |                | X           |           |           |             |                   |
| World Trade            | A00003147 |                |             |           |           |             | X                 |
| World Trade            | A00003227 |                |             |           |           |             | X                 |
| World Trade            | A00003466 |                |             |           |           |             | X                 |
| World Trade            | A00003467 |                |             |           |           |             | X                 |
| World Trade            | A00003686 |                |             |           |           |             | X                 |
| World Trade            | A00004503 |                |             |           |           |             | X                 |
| World Trade            | A00004563 |                |             |           |           |             | X                 |
| World Trade            | A00004565 |                |             |           |           |             | X                 |
| World Trade            | A00004743 |                |             |           |           |             | X                 |
| World Trade            | A00004750 |                |             |           |           |             | X                 |
| World Trade            | A00005802 |                |             |           |           |             | X                 |
| World Trade            | A00006001 |                |             |           |           |             | X                 |

**Activity Mapping Table: Software object types or areas impacted**

| SN07 Solutions         |                              | SW object types / areas impacted |             |             |         |                          |         |             |             |
|------------------------|------------------------------|----------------------------------|-------------|-------------|---------|--------------------------|---------|-------------|-------------|
| PRODUCT or APPLICATION | ACTID                        | Logs/Faults                      | Data Schema | Office Parm | ServOrd | Commands/User Interf/HMI | OMs/PMS | AMA/Billing | Optionality |
| CS 2000                | A00001935                    |                                  | X           | X           | X       |                          |         |             |             |
| CS 2000                | A00002252                    | X                                | X           | X           | X       | X                        |         |             |             |
| CS 2000                | A00002291                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002365                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002367                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002377                    |                                  |             |             | X       |                          |         |             | X           |
| CS 2000                | A00002512                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00002639                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002642                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002644                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00002654                    |                                  | X           |             | X       |                          |         | X           |             |
| CS 2000                | A00002655                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00002678                    |                                  | X           | X           |         |                          |         |             |             |
| CS 2000                | A00002680                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002713                    |                                  | X           | X           |         |                          |         |             |             |
| CS 2000                | A00002754                    |                                  | X           | X           |         |                          |         |             |             |
| CS 2000                | A00002755                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002756                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00002884                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002900                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00002904                    |                                  | X           |             |         |                          | X       |             |             |
| CS 2000                | A00002916                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00003007                    |                                  | X           |             |         |                          |         | X           |             |
| CS 2000                | A00003410                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00003411                    |                                  | X           | X           |         |                          |         |             |             |
| CS 2000                | A00003465                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00003627                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00003695<br>(see A59036475) |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00003696                    | X                                | X           | X           |         |                          |         |             |             |
| CS 2000                | A00003951                    |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A00004205                    |                                  | X           |             |         |                          |         |             |             |
| CS 2000                | A00004931                    |                                  |             |             |         |                          |         |             |             |

| SN07 Solutions         |           | SW object types / areas impacted |             |             |         |                          |         |             |             |
|------------------------|-----------|----------------------------------|-------------|-------------|---------|--------------------------|---------|-------------|-------------|
|                        |           | Logs/Faults                      | Data Schema | Office Parm | ServOrd | Commands/User Interf/HMI | OMs/PMs | AMA/Billing | Optionality |
| PRODUCT or APPLICATION | ACTID     |                                  |             |             |         |                          |         |             |             |
| CS 2000                | A00004933 |                                  |             |             |         |                          |         |             |             |
| CS 2000                | A00004981 |                                  |             |             |         | X                        |         |             |             |
| CS 2000                | A59036475 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00001914 |                                  | X           |             | X       |                          | X       |             |             |
| World Trade            | A00001918 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00001919 | X                                | X           |             | X       |                          | X       |             |             |
| World Trade            | A00001920 | X                                | X           |             |         | X                        |         |             |             |
| World Trade            | A00001921 |                                  | X           | X           |         |                          |         |             |             |
| World Trade            | A00001923 |                                  | X           |             | X       |                          |         |             |             |
| World Trade            | A00001930 |                                  | X           |             | X       |                          | X       |             | X           |
| World Trade            | A00002053 | X                                |             | X           |         |                          |         | X           | X           |
| World Trade            | A00002101 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00002173 |                                  | X           |             |         | X                        |         |             | X           |
| World Trade            | A00002319 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00002364 | X                                | X           |             |         |                          |         | X           |             |
| World Trade            | A00002641 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00002702 | X                                | X           |             |         |                          |         |             |             |
| World Trade            | A00002754 |                                  | X           | X           |         |                          |         |             |             |
| World Trade            | A00002844 | X                                | X           |             |         |                          |         |             |             |
| World Trade            | A00002907 |                                  | X           | X           |         |                          |         |             |             |
| World Trade            | A00003147 |                                  |             | X           |         |                          |         |             |             |
| World Trade            | A00003227 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00003466 |                                  |             | X           |         |                          |         |             |             |
| World Trade            | A00003467 |                                  | X           |             |         |                          |         |             | X           |
| World Trade            | A00003686 |                                  |             |             |         |                          |         |             | X           |
| World Trade            | A00004503 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00004563 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00004565 | X                                | X           |             |         |                          |         |             |             |
| World Trade            | A00004743 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00004750 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00005802 |                                  | X           |             |         |                          |         |             |             |
| World Trade            | A00006001 |                                  |             |             |         | X                        |         |             |             |





## New or changed for iSN07

### Introduction

This section of the document contains tables which give an overview of the feature-based changes occurring in this release for:

- Office parameters
- Logs/faults
- Operational measurements (OMs) and performance measurements (PMs)
- Data Schema tables or MIBs
- User interface (commands)
- Servord
- AMA/billing
- Software Optionality Control (SOC)

Within each table, the changes are arranged by associated product, and the activity identifier (ACTID) of the feature which causes the change.

### Office Parameter changes overview

The following office parameters are new or changed for iSN07. More complete descriptions appear in the Feature Descriptions section of this document.

#### Summary of new or changed Office Parameters

| Office Parm Name         | New or Changed | Description                                                                                                                                                                                                                                           |
|--------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b> |                |                                                                                                                                                                                                                                                       |
| FEATURE_TO NE_SET        | Changed        | A00002252 (Int'l PT-IP) alters the functionality of office parameter RDT_SUCC_AUTOCREATE_LNINV for MG9K lines. For MG9K lines the value of ACTIVE is ignored, and no auto provisioning of table LNINV is allowed. DEFAULT_MNO is used for MG9K lines. |

**Summary of new or changed Office Parameters**

| Office Parm Name                    | New or Changed | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WTIN_TDP4_ACTIVE                    | New            | A00002675 (Int'l UA-IP) creates two new parameters in table OFCENG:                                                                                                                                                                                                                                                                                                                                                                                                 |
| INAP_ASF_FILTERING_TIMEOUT_DURATION |                | <ul style="list-style-type: none"> <li>WTIN_TDP4_ACTIVE (Intelligent Networks Trigger Detection Point 4 Active) should be set to TRUE if TDP-4 triggering is required in the office. If set to FALSE, TDP-4 triggering is disabled, regardless of datafill in table TRIGGRP.</li> <li>INAP_ASF_FILTERING_TIMEOUT_DURATION (Intelligent Network Application Part ActivateService Filtering Timeout Duration) specifies the network-specific ASF duration.</li> </ul> |
| INAP_VARIANT                        | Changed        | A00002675 (Int'l UA-IP) adds the new value TELEFONICA for the Spanish national market.                                                                                                                                                                                                                                                                                                                                                                              |
| ORIGNETID                           | New            | A00002713 (Int'l UA-IP) creates this new parameter in Table OFCVAR to determine the originating network identification number. The default value is 0. For Interconnect trunks, this value will be different and will be datafilled in the table TRKOPTS against the corresponding spanish ISUP V2 trunk.                                                                                                                                                           |
| INAP_TSSF_WFI_TIMER                 | Changed        | A00002754 (Succession on DMS) changes the range of this parameter from 1-10 to 1-60, and changes the datafillable value from 1-10 to 1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60.                                                                                                                                                                                                                                                                                  |
| DISABLE_DP_RECEPTION_ON_DGT         | Changed        | A00003147(Succession on DMS) creates this new parameter in Table OFCENG to disable DP digit collection on lines assigned DGT option; only offhook, flashes and DTMF tones are permitted.                                                                                                                                                                                                                                                                            |
| FEATURE_TONE_SET                    | Changed        | A00003411 (Succession on DMS) expands this parameter in table OFCENG to include the new HONTONES toneset that is required for the Honduras market.                                                                                                                                                                                                                                                                                                                  |
| CAPTURE_ISC_PC                      | New            | A00003696 (Int'l PT-IP) creates this new parameter (Capture International Switching Center Point Code) to enable/disable the printing of LOG (ISC6000) that captures ISC Point Code information.                                                                                                                                                                                                                                                                    |
| <b>Product = World Trade</b>        |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Summary of new or changed Office Parameters

| Office Parm Name         | New or Changed | Description                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Various                  | Deleted        | <p>A00001921 (Succession on DMS) removes these 6 office parameters from table OFCENG. Their functionality is taken over by new tuple LONG_DIST_ALERT in table ISERVOPT:</p> <ul style="list-style-type: none"> <li>• <b>LDA_ENABLED</b></li> <li>• <b>LDA_DEFAULT_CALLTYPE</b></li> <li>• <b>LDA_OM_ENABLED</b></li> <li>• <b>LDA_ALERT_NO_CLID</b></li> <li>• <b>LDA_CWT_TIMEOUT</b></li> <li>• <b>LDA_PATTERN</b></li> </ul> |
| FTR_RECORDER_FOR_ICR_OPT | Changed        | <p>A00002053 (Succession on DMS) creates this parameter in table OFCVAR to make the FTR record generation optional for metered actions of ICR feature option. When the subscriber having ICR option is charged for the ICR operations (assignment / deassignment / usage), the FTR record is generated only if the FTR_RECORD_FOR_ICR_OPT is Y.</p>                                                                            |
| INAP_TSSF_WFI_TIMER      | Changed        | <p>A00002754 (Succession on DMS) changes the range of INAP_TSSF_WFI_TIMER in table OFCENG from '1-10' to '1-60', and changes the datafillable value from '1-10' to '1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60'.</p>                                                                                                                                                                                                         |
| NI_INCOMPL_ACRJ          | New            | <p>A00002761 (Succession on DMS) creates this parameter in OFCVAR to enhance the existing ACRJ functionality to accept or reject the HKISUP to line calls with NI=1 in incoming HKISUP IAM/INF.</p>                                                                                                                                                                                                                            |
| Q955_COMPLIANT           | Changed        | <p>A00003466 (Succession on DMS) modifies this parameter to provide assigning precedence level ROUTINE to calls originated from non-MLPP sources when terminating to an MLPP BRI loop if Q955_COMPLIANT is set to N.</p>                                                                                                                                                                                                       |

## Logs/faults changes overview

The following logs/faults are new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

### Summary of new or changed Logs/Faults for ISN06

| Log/Fault Type               | Log/Fault Name          | New/Modified/Deleted, ACTID and Solution                                                                                                                                                                                                              |
|------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b>     |                         |                                                                                                                                                                                                                                                       |
| LINE logs                    | All LINE logs (changed) | Per A00002252 (Int'l PT-IP) all LINE logs will use the new MG9K LEN format that reflects the physical location of the line.                                                                                                                           |
| ISC logs                     | ISC600 (new)            | A00003696 (Int'l PT-IP) creates ISC600 to display the Point Codes and the respective counts for all the calls received on a GISUP trunk routing to a National variant.                                                                                |
| MCID logs                    | MCID600 (new)           | A00003696 (Int'l PT-IP) creates MCID600 as an extension of the MCID logs, introduced for DTAG holding service. It provides information about the Called agent, calling number, called number and the date and time of the call.                       |
| <b>Product = World Trade</b> |                         |                                                                                                                                                                                                                                                       |
| CEPT logs                    | CEPT100 (new)           | A00001919 (Succession on DMS) creates CEPT100, generated when CEPT Features' Password (CEPTPW) is locked remotely which means the subscriber exceeded the maximum wrong PIN entry for CEPTPW feature.                                                 |
|                              | CEPT101 (new)           | A00001919 (Succession on DMS) creates CEPT101, generated when the subscriber attempts to use supported CEPT features (ILR, IWUC, CEPTPW, CFD, CFU and CFB) from remote agents via CEPTRA.                                                             |
| MTR logs                     | MTR150 (new)            | A00001920 (Succession on DMS) creates info log MTR150, generated when there is no space available in MTRDEASS table for a new entry.                                                                                                                  |
|                              | MTR156 (changed)        | A00002053 (Succession on DMS) makes the generation of the MTR156 log dependent on the SOC option RBIL0014. If this option is set to ON, instead of MTR156, FTR record and its optional AMAB156 log are generated with the same information as MTR156. |



**Summary of new or changed Logs/Faults for ISN06**

| Log/Fault Type | Log/Fault Name                             | New/Modified/Deleted, ACTID and Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMAB log       | AMAB156 (new)                              | A00002053 (Succession on DMS) creates this log in place of MTR156 when SOC option RBIL0014 is set to ON. It is optionally generated depending on the existing AMA parameter LOGAMA in table AMAOPTS. If the LOGAMA option is ON, AMAB156 log is printed whenever the FTR record is generated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CDR log        | CDR601 (changed)                           | A00002364 (Succession on DMS) adds new field CLGNUM_IND to include the corresponding indicator set in CDR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MTR log        | MTR158 (changed)                           | A00002702 (Succession on DMS) enhances this log to support the additional SMDR and MOG &SMDR interaction restrictions, and adds field DR to the log data text for SMDR activation from translation cases. This log is generated when a line origination from IBN, ISDNKSET or P-phone without a valid charging option is attempted. This log is generated only if the 'No Line Origination Without Charging' feature is activated by setting NCW_CHRG to DISALLOWED.                                                                                                                                                                                                                                                                                                                                            |
| EMD log        | EMD101 (new)                               | A00002754 (Succession on DMS) creates new Info log EMD101, generated when a trunk subscriber's meter counts are increased by more than a threshold value in a given time period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MTR logs       | MTR161<br>MTR162 (new)<br>MTR113 (changed) | A00004565 (Succession on DMS) creates two new MTR logs and modifies an existing log: <ul style="list-style-type: none"> <li>MTR161 is generated if a corresponding MTRTARIF tuple could not be found for a received tariff index within ISUP CRG message.</li> <li>MTR162 is generated when a mismatch occurs between calculated software meter count and reported hardware metering pulse count for local type backward metering, AND when a mismatch occurs between received meter count and reported hardware metering pulse count for distance type backward metering.</li> <li>MTR113 is generated when the system attempts to meter a call and one of the following tables has invalid or missing data for universal translations or metering. New reason text is added for backward metering.</li> </ul> |

## Operational Measurements/Performance Measurement changes overview

The following OMs or PMs are new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

### Summary of new or changed OMs/PMs

| OM Group or PM name          | New or Changed | Description                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b>     |                |                                                                                                                                                                                                                                                                                                                                                                                             |
| SCAISRV4                     | Changed        | A00002904 adds new registers TOGCLLRR and TOGCLLRE to peg application-specific outgoing SCAL messages.                                                                                                                                                                                                                                                                                      |
| <b>Product = World Trade</b> |                |                                                                                                                                                                                                                                                                                                                                                                                             |
| ILR1                         | Deleted        | The ILR1 OM group is deleted, because all information is stored in the flexible ILR OM group.                                                                                                                                                                                                                                                                                               |
| ILR                          | New            | A00001914 (Succession on DMS) creates the flexible ILR OM group to support the flexible definition of the barring programs in table ILRCLASS. The ILR OM provides per OM group the number of activations, deactivations, usages and unsuccessful deactivations. Two new OM registers are defined for successful deactivation and unsuccessful temporary deactivation: TEMPDAC and TEMPUDAC. |
| CEPTPW                       | New            | A00001919 creates OM group CEPTPW to provide information about the usage and performance of the CEPT features password. This OM group stores in 9 registers the counts of activation, programming, interrogation, unsuccessful attempts for all actions and error cases of CEPTPW feature.                                                                                                  |
| CEPTRA                       | New            | A00001919 creates OM group CEPTRA to provide information about the usage and performance of Cept Features Remote Access (CEPTRA). This OM group stores in 5 registers the counts of hardware and software overflow, successful usage, unsuccessful attempts for all actions and error cases of CEPTPW feature.                                                                              |
| CMI                          | New            | A00001930 creates OM group CMI to provide information about the successful and unsuccessful usage and performance of CMI features (SVBI0033 SOC must be ON). These OM registers are pegged by LCMI and TCMI features.                                                                                                                                                                       |

## Data Schema tables/MIBs changes overview

The following Data Schema tables or MIBs are new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

| DS Table/MIB             | Changed or New                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b> |                                                                                                                                                                                                                                                                                                                                                     |
| LGRPINV (changed)        | A00001935 (Int'l PT-IP) adds new entry M in the GRPTYPE field to indicate that the logical group is assigned to a CICM gateway. The table LGRPINV is provisioned by the SESM. No manual datafill or change is allowed. Manual changes to this table will cause data corruption.                                                                     |
| LNINV (changed)          | A00001935 (Int'l PT-IP) modifies the SUBGROUP and CIRCUIT fields of table LNINV based on their associated LGRPINV GRPTYPE field.                                                                                                                                                                                                                    |
| LGRPINV (changed)        | A00002252 (Int'l PT-IP) uses field GRPTYPE to denote a specific type of LGRP. The values for GRPTYPE are S, M, and C. This feature disables SERVORD auto provisioning for GRPTYPE S for groups on shelves 0 to 3; refer to the FN section for more info. Currently, GRPTYPE S will denote a set of LGRPs that for now will only include MG9K LGRPs. |
| PADDATA (changed)        | A00002252 (Int'l PT-IP) adds two new pad groups which will be used by gateway lines. Pad group PKLNL will be used by gateways lines with LGRP GRPTYPE set to S. PKNIL will be used by gateway lines with LGRP GRPTYPE set to C.                                                                                                                     |
| TRKOPTS (changed)        | A00002291 (Succession on DMS) adds new entry TKO_FDCP in the OPTINFO field to be assigned to incoming FDCP trunks.                                                                                                                                                                                                                                  |
| ISERVOPT (changed)       | A00002365 (Int'l IAW) adds new option CWR_ON_TRUNK to field SOPTSVAR, containing subfields ETSI_ISUP, ISUP, and R2.                                                                                                                                                                                                                                 |
| TRKOPTS (changed)        | A00002365 (Int'l IAW) adds new option CWR_OFF to field OPTINFO.                                                                                                                                                                                                                                                                                     |
| PRECONF (changed)        | Per A00002367 and A00002884 (Succession on DMS), to enable the originator of a preset conference to add on conferees as local call, once the preset conference is established, field ADDON must be set to "yes."                                                                                                                                    |
| TRKOPTS (new)            | A00002558 (Succession on DMS) creates table TRKOPTS to store the CLLI of all trunk groups carrying incoming toll-completing traffic. LDI evaluates the CLLI name to determine the long distance status.                                                                                                                                             |

| DS Table/MIB                                                       | Changed or New                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISERVOPT<br>(changed)                                              | A00002639 (Succession on DMS) adds new entry ICWT to field SOPTSKEY and SOPTSVAR/OPTION to indicate whether the Call Waiting Announcements is to be applied to the Waiting (Calling) party.                                                                                                                                                                                                                                                                 |
| ISERVOPT<br>(changed)                                              | A00002642 (Int'l UA-IP) adds new entries ICONF_WARNING_TONE, PREVENT_WML_DURING_ENQUIRY, and PREVENT_HELD_TONE to field SOPTSVAR.                                                                                                                                                                                                                                                                                                                           |
| IBNFEAT<br><br>xxCODE (applies to any XLA CODE table)<br>(changed) | A00002654 (Int'l UA-IP) makes the following changes to these tables. <ul style="list-style-type: none"> <li>• IBNFEAT modifies the SEC feature option to include the AR and ACRJ options in its Features List.</li> <li>• xxCODE is modified to add the additional features AR and ACRJ in the feature option selector (i.e., FTR) of the XLA feature selector (i.e., FEAT) of the XLA CODE table.</li> </ul>                                               |
| CUSTSTN                                                            | A00002655 (Int'l UA-IP, Int'l IAW) adds the CEPT interface, PIN protection optionality, and CEPT billing to MMP ACRJ by adding CEPT to the applicable customer group in table CUSTSTN. CEPT ACRJ is available only for IBN lines.                                                                                                                                                                                                                           |
| TRIGGRP<br><br>SERVINFO<br>(changed)                               | A00002678 (Int'l UA-IP) makes the following changes to these tables. <ul style="list-style-type: none"> <li>• TRIGGRP adds new CRITERIA types of CPC and CAUSE.</li> <li>• SERVINFO adds new FCI_OPT option TELEFONICA and INITDP_PARMS option CAUSE.</li> </ul>                                                                                                                                                                                            |
| ANNPHLST<br>(changed)                                              | A00002680 (Int'l UA-IP) enables the Automatic Intercept System by utilizing existing tables as follows: <ul style="list-style-type: none"> <li>• These tables require specific datafill but do not have new fields nor values (refer to the FN for details): CLLI, ANNS, ANNMEMS, PAUSPATT, ISCASSGN, AISDBS.</li> <li>• ANNPHLST adds new external phrase names AISBASEDN and AISREFDN to represent the base DN and reference DN, respectively.</li> </ul> |
| SERVINFO                                                           | A00002754 (Succession on DMS) introduces new selection: CIRP into CS1R option to indicate that: If CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included.                                                                                                                                                                                                                    |

| DS Table/MIB          | Changed or New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISERVOPT<br>(changed) | <p>A00002755 (Succession on DMS) makes the following modifications to the tuple CEPTONCENTREX:</p> <ul style="list-style-type: none"> <li>• adds new field MARKET to indicate in which market the line service is used.</li> <li>• adds several new entries in the OPTIONS field to indicate if the corresponding CEPT line services are allowed to work on IBN line without CEPT line option or not.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ISERVOPT<br>(changed) | <p>A00002755 (Succession on DMS) makes the following modifications:</p> <ul style="list-style-type: none"> <li>• adds new field SHOW_CHG_PSWD in the tuple ILRCLS to allow the ILR password to be displayed and changed.</li> <li>• adds new field ABORT_IF_IN_USE in the tuple IWUC to indicate if the wakeup request is aborted or not when the line is in use at the scheduled time.</li> <li>• adds new field ICWT_IGNORE_WAITING_TMO in the tuple ICWT to specify the time-out of the timer "Called Party Ignores Waiting Call" for ICWT service.</li> <li>• adds new field COLLECT_DNPIN_IN_DIFF_STAGES in the tuple CEPTPW to indicate if the new DN and PIN dialing sequence is adopted for CEPTRA service.</li> <li>• changes field CEPTANNID in the tuple CEPTPW to add new announcement IDs for the new DN and PIN dialing sequence.</li> </ul> |
| SERVINFO              | <p>Per A00002900 (Succession on DMS), option INITDP_PARM of table SERVINFO is extended to add two new fields IP_AVA and IPSSP_CAP to indicate whether parameters IPAvailable and IPSSPCapabilities will be carried in IDP.</p> <p>Also, option SRF_INFO is extended to add new field IP_INFO to provide detailed information of the IP capability within SSP.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| DS Table/MIB                 | Changed or New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCAISSRV (changed)           | <p>A00002904 (Succession on DMS) makes the following modifications in the table SCAISSRV:</p> <ul style="list-style-type: none"> <li>A new default tuple TPCC16\$ under category TPCC will be created with the new function TOGGCALL for the new message dv_toggle_call. TPCC16\$ will also contain the optional parameter HDUHDLEG of the function CALLHELD and CALLUNHELD set to Y.</li> <li>A new default tuple SCAI3WC15\$ under the category SCAI3WC will be created with the new function TOGGCALL, for the new message dv_toggle_call.</li> <li>A new default tuple SCAICC10\$ under the category SCAICC will be created with the optional parameter HDUHDLEG of the function CALLHELD and CALLUNHELD set to Y.</li> </ul> |
| TRKSGRP (changed)            | A00003410 (Succession on DMS) changes field VARIANT to add the HONDURAS entry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| LTCINV (changed)             | A00003411 (Succession on DMS) adds the HONTONES value to the TONE_SET_TYPE type.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| TRKOPTS (changed)            | A00003695 (Int'l PT-IP) references feature A59036475 for changes to table TRKOPTS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| KKSCRN (new)                 | A00003696 (Int'l PT-IP) creates this table to facilitate KK, IPI and TMR based screening and routing. The customer group for the call can be specified uniquely for each KK/IPI/BC combination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ISERVOPT (changed)           | A00004205 (Succession on DMS) adds new entry JAPANPRI to fields SOPTSKEY and SOPTSVAR and adds new option ALLOW_BACKWARD_VOICE_PATH to the JAPANPRI.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| TRKSGRP (changed)            | A00004931 (Int'l PT-IP) provides the ability to datafill Indian ISUP variant in table TRKSGRP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| TRKOPTS (changed)            | <p>A59036475 (Int'l PT-IP) makes the following changes:</p> <ul style="list-style-type: none"> <li>FGD was created as a new TRKOPTS option. IXC was created as a new sub-option for this option.</li> <li>FCI was created as a new TRKOPTS option. NATL and INTL were created as new sub-options for this option.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Product = World Trade</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ISERVOPT (changed)           | A00001914 (Succession on DMS) extends the ILRCLS tuple of the table ISERVOPT. A new subfield is added named SDT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| DS Table/MIB                                      | Changed or New                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XXCODE and XXHEAD (changed)                       | A00001914 (Succession on DMS) introduces a new translation feature function TEMPDEACT used for temporary deactivation of a service. This feature can be datafilled at all XXCODE and XXHEAD tables. Table ACCODE is used for CEPT feature service code datafills.                                                                                                    |
| ISERVOPT (changed)                                | A00001918 (Succession on DMS) introduces a new tuple named CEPT_ANN in ISERVOPT table and a new field SPECIAL_DIAL_TONE for the existing tuple CEPT_CFX.                                                                                                                                                                                                             |
| ISERVOPT (changed)                                | A00001919 (Succession on DMS) introduces a new tuple named CEPTPW with 6 fields.                                                                                                                                                                                                                                                                                     |
| MTRDEASS (new)                                    | A00001920 (Succession on DMS) introduces the new deassigned meters table to track deassigned meters of the subscriber to be able to restore them when a MOG reprovisioning is done.                                                                                                                                                                                  |
| TRKOPTS<br><br>ISERVOPT (changed)                 | A00001921 (Succession on DMS) modifies these tables as follows: <ul style="list-style-type: none"> <li>• TRKOPTS adds a new boolean field CHECK_NOA related with the LDA feature.</li> <li>• ISERVOPT introduces new tuple LONG_DIST_ALERT to provide CIS market requirement related to the "Toll Call Ringing" feature.</li> </ul>                                  |
| ISERVOPT<br><br>CUSTSTN<br><br>CPCOPMAP (changed) | A00001923 (Succession on DMS) modifies these tables as follows: <ul style="list-style-type: none"> <li>• ISERVOPT introduces new tuple ZONETOLL_SCRN to activate zone toll screening for the office.</li> <li>• CUSTSTN adds new field CPC, used to assign CPC value to customer groups.</li> <li>• CPCOPMAP adds new fields CPCMKEY, ISUPCPC, and MFCAC.</li> </ul> |
| CISCPCPR                                          | A00001923 (Succession on DMS) introduces table "Commonwealth of Independent States Calling Party Category PRivileges" in the CIS network to define network and service access privileges in terms of CPC value and call translation class.                                                                                                                           |
| CUSTSTN<br><br>IBNXLA (changed)                   | A00001930 (Succession on DMS) modifies these tables as follows: <ul style="list-style-type: none"> <li>• CUSTSTN adds new customer group option CMI.</li> <li>• IBNXLA adds new values TCMI and LCMI in field FEATURE.</li> </ul>                                                                                                                                    |
| TRKOPTS (changed)                                 | A00002053 (Succession on DMS) adds new entry VMI as a possible value for the CND_RTE_CONDITION type in field CNDSEL.                                                                                                                                                                                                                                                 |



| DS Table/MIB                            | Changed or New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PXRTE (changed)                         | A00002319 (Succession on DMS) adds new entry VMI as a possible value for the CND_RTE_CONDITION type in field CNDSEL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| TRKOPTS (changed)                       | A00002101 (Succession on DMS) adds new option TELETAXE_ITX_SIG in the OPTION field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SOSMMPC<br>SOSMTRK<br>SOSMPARM<br>(new) | <p>A00002173 (Succession on DMS) creates the following System of Operative Searching Measures tables:</p> <ul style="list-style-type: none"> <li>SOSMMPC provides the mechanism to allocate MPC cards for the DMS-Control Point X.25 Interface of SOSM feature. For each pair of channels, a tuple is added to this table.</li> <li>SOSMTRK is used for mapping generic trunk groups into dedicated SOSM trunks. Each entry identifies a trunk group to be used for the PCM-30 group of MCLs.</li> <li>SOSMPARM is used by the SOSM system for saving SOSM-specific parameters.</li> </ul> |
| CLICNTL (changed)                       | A00002364 (Succession on DMS) adds new option OCN as one of the selectors of BILLING_OPTIONS. It can be assigned to any CLICTKEY whose direction is incoming, but only when the CLICTKEY with OCN option is assigned to an ANSI ISUP or HK ISUP trunk.                                                                                                                                                                                                                                                                                                                                     |
| ISERVOPT (changed)                      | Per A00002365 (Int'l IAW), new option CWR_OFF is introduced to disable CWR over trunk for a specific trunk group without the need of disabling the whole trunk type.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ILRCLASS (new)                          | A00002641 (Int'l UA-IP) creates this new table which contains the barring programs for the ILR line option.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ISERVOPT (changed)                      | Per A00002641 (Int'l UA-IP), the OPTIONS value for field SOPTSVAR is deleted. The information contained in this field is now available in table ILRCLASS                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MTRSYSPM (changed)                      | A00002702 (Succession on DMS) renames existing metering system parameter NCW_MOG to NCW_CHG.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ISUPSVC (changed)                       | Per A00002713 (Int'l UA-IP), table ISUPSVC is modified to add new option ORIGNETID which is associated to the trunk group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SERVINFO (changed)                      | A00002754 (Succession on DMS) adds new selection CIRP into the CS1R option to indicate that the outgoing CIRP will use the CS-1R format, and the legID will not be included.                                                                                                                                                                                                                                                                                                                                                                                                               |
| MTRSYSPM (changed)                      | A00002844 (Succession on DMS) adds new subfield TRUNK THRESHOLD in the EMD field. Also, the existing THRESHOLD field is renamed as LINE_THRESHOLD.                                                                                                                                                                                                                                                                                                                                                                                                                                         |



| DS Table/MIB                                                        | Changed or New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SERVINFO<br>(changed)                                               | A00003227 (Succession on DMS) adds new selection UUI to field INITDP_PARMS to indicate whether parameter UUI data contained in an incoming ETSI ISUP V2 is carried in InitDP.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Universal translations tables (i.e., PXCODE)<br>(changed)           | A00003467 (Succession on DMS) enhances option CUSTMOD by adding new field REV_XLA(Reverse Translations Grigger) and its refinement DELDIGS (Delete Prefix Digits). Functionality is controlled by SOC.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| TRKGRP (changed)                                                    | A00004503 (Succession on DMS) adds new field CGSCCDEA to provide a control mechanism in order to activate/deactivate terminating SCC processing for CGPN.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| TRKSGRP<br>(changed)                                                | A00004563 (Succession on DMS) adds new value MOROCCO in Subfield VARIANT of field SGRPVAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| C7UPTMR<br><br>ISUPSVC<br><br>xxHEAD<br><br>xxCODE<br><br>(changed) | A00004565 (Succession on DMS) modifies these tables as follows: <ul style="list-style-type: none"> <li>• C7UPTMR adds new ISUP timer CRG which is started to wait CRG messages after ANM/CON messages in backward metered ISUP calls. This timer is provisioned only for OG and 2W trunks.</li> <li>• ISUPSVC is modified to include a default tuple for the new Moroccan variant, MOROCCAN_EIV2.</li> <li>• xxHEAD tables add the BCKWMTR option to the OSEL (option selector) subfield of the DFOP field.</li> <li>• xxCODE tables add the BCKWMTR option to the OSEL (option selector) subfield of the XLADATA field.</li> </ul> |
| Subtables<br>CGPNDA and<br>CDPNDA of table<br>CGPNSCRN<br>(changed) | A00004743 (Succession on DMS) adds option BILL_CLI in CGPNOPT list and in the CDPNOPT list.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| LTCINV (changed)                                                    | A00004750 (Succession on DMS) adds new optional attribute EBI. When added to a DTCO2 tuple in LTCINV, it downloads EBI support feature to DTCO2 during static data download. The LIUINV table should be compatible with the far end setting. EBI can only be added when TYPE_OF_NETWORK in table OFCENG is set to NORTH_AMERICA and the PM is a CPM-based DTCO2.                                                                                                                                                                                                                                                                    |

| DS Table/MIB       | Changed or New                                                                                                                                                                                                                                                            |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MNNODE (changed)   | A00005802 (Succession on DMS) adds two new fields <b>complaw</b> and <b>bitinv</b> of enum type to DMSCP class of SPM as a vector <b>compopt</b> . They allow the craftsperson to change the p-side companding law and bit inversion option for a OC3-SPM of DMSCP class. |
| MNCKTPAK (changed) | A00005802 (Succession on DMS) adds a new warning message if the p-side companding law in table MNNODE is A-law while adding an OC3-SPM.                                                                                                                                   |

## User Interface (commands) changes overview

The following User Interface GUIs or Commands are new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document,

| Field                                 | Command/User Interface Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CS2000 Management Tools GUI (changed) | A00001935 (Int'l PT-IP) modifies this GUI by making alterations to the Associate Media Gateway dialog box. CICM gateways provisioned prior to SN07 will have their profile names changed to an obsolete value (e.g. "OBSOLETE_CICM") to allow them to continue to function within the various provisioning systems as they did in SN06.                                                                                                                                                                                                                                                                                                               |
| CI Commands using LEN                 | Per A00002252 (Int'l UA-IP), any CI command that requires a LEN for input must use the new format for a gateway line with GRPTYPE set to S in table LGRPINV. Likewise, any gateway LEN with GRPTYPE set to S in table LGRPINV display via a CI command (or MAPCI) will be displayed in the new format.                                                                                                                                                                                                                                                                                                                                                |
| CS2000 Management Tools GUI (changed) | <ul style="list-style-type: none"> <li>A00002512 (Int'l IAW, Int'l IAC) makes the following changes to this GUI:</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GWC-EM Network Panel GUI (changed)    | <p>A00002512 (Int'l IAW, Int'l IAC) makes the following changes to this GUI:</p> <ul style="list-style-type: none"> <li>The upper section is reorganized to put the existing three subsections into tabbed panes.</li> <li>VCAC Resource Usage data is provisioned via the new RU table in a fourth tab in the upper section.</li> <li>NATs are provisioned as before, except that the tab is renamed "IP-VPNs (Virtual NATs)" and a new field is added to provision a "Parent" (northbound neighbor) middlebox in the topology.</li> <li>LBLs are provisioned via a table in a new tab added to the central section of the Network Panel.</li> </ul> |

| Field                                                                                                                                                                                                                                                         | Command/User Interface Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XML Interfaces:<br><br>Add/Query NATs (changed)<br><br>Change NATs (new)<br><br>Add/Delete and Change Media Proxies (new)<br><br><b>Add/Delete/Query and Change Resource Usage Profiles (new)</b><br><br><b>Add/Delete/Query and Change LBL entries (new)</b> | A00002512 (Int'l IAW, Int'l IAC) makes the following changes to the XML Interfaces: <ul style="list-style-type: none"> <li>Add/Query NATs added a parent middlebox attribute.</li> <li>Change NATs can only change the &lt;ParentMB&gt; tag. The value of this tag must have been previously provisioned into the system to successfully complete this command.</li> <li>Add/Delete and Change Media Proxies -- Media Proxy provisioning via XML is new to SN07.</li> <li><b>Add/Delete/Query and Change Resource Usage Profiles -- Resource Usage provisioning is new to SN07.</b> To successfully create an RU profile the XML client must provide every Codec/packetRate combination that has been entered into the CS2K config manager.</li> <li><b>Add/Delete/Query and Change LBL entries --</b> Limited Bandwidth Links provisioning is new to SN07. The &lt;CounterGWC&gt; tag is optional, if omitted the counterGWC is automatically assigned. The &lt;RUDescription&gt; and &lt;ParentMB&gt; values must have been previously provisioned into the system to successfully complete this operation.</li> </ul> |
| <b>NAOCCI tool</b>                                                                                                                                                                                                                                            | The PCADB level of the NAOCCI tool has been updated with a new command called "convert". The command simply takes the <b>vpa</b> as input and it prints out the number of meter pulses based on the <b>vpa</b> and data in table CURRCONV.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Updated GUIs                                                                                                                                                                                                                                                  | A00002644 (Int'l IAC, Int'l IAW) modifies the following GUIs (see the FN section of this feature for details): <ul style="list-style-type: none"> <li>Maintenance Settings Panel</li> <li>Change Maintenance Settings Dialog</li> <li>Network Devices Panel, NATs tab</li> <li>Add NAT middlebox Dialog</li> <li>Delete NAT confirmation Dialog</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Modified XML commands                                                                                                                                                                                                                                         | A00002644 (Int'l IAC, Int'l IAW) modifies the following XML commands (see the FN section of this feature for details): <ul style="list-style-type: none"> <li>queryNAT</li> <li>addNAT</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| NAT middlebox ID display dialog (new)                                                                                                                                                                                                                         | A00002644 (Int'l IAC, Int'l IAW) adds the new GUI, "NAT middlebox ID display dialog."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Field                                      | Command/User Interface Description                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| queryCallAgent Id,<br>setCallAgentID (new) | A00002644 (Int'l IAC, Int'l IAW) creates the following new XML commands: <ul style="list-style-type: none"> <li>queryCallAgent Id</li> <li>setCallAgentID</li> </ul>                                                                                                                                                                                                                                           |
|                                            | A00002756 (Succession on DMS) migrates Japan trunk services "Notification of Time and Charge" (NTC), "Carrier Name Notification" (CNN) and "Account Code" (ACCT) from the legacy MMP product to CS2K Hybrid product IP side in ISN07.                                                                                                                                                                          |
|                                            | A00003465 (Succession on DMS) allows the user to override the channel reservations for the calls on a loop. This enables the user to steal channel reserved for any other non-CW incoming alerting call for another call. Incoming alerting call is a call which ALERT is sent by the set to the switch.                                                                                                       |
|                                            | A00003465 (Succession on DMS) modifies existing GUIs to allow the user to provision the carrier (only for SONET and not for SDH) in "Channelized" mode in addition to the previously existing functionality by selecting the DCC card and clicking on the "Carrier à Provisioning" option listed in the Menu. The new GUI pages are entitled "Carrier Provisioning," "Carrier Controls," and "Carrier Status." |
| i2001 interface functionality              | A00003951 (Int'l IAC) describes the functionality and interface for the i2001 Phase II Unistim Terminal.                                                                                                                                                                                                                                                                                                       |
| Updated GUIs                               | A00004981 (Int'l IAC, Int'l IAW) modifies the following GUIs (see the FN section of this feature for details): <ul style="list-style-type: none"> <li>Associate Media Gateway Dialog</li> <li>Change Gateway Dialog</li> <li>Gateway Provisioning Panel</li> </ul>                                                                                                                                             |
| Modified XML commands                      | A00004981 (Int'l IAC, Int'l IAW) modifies the following XML commands (see the FN section of this feature for details): <ul style="list-style-type: none"> <li>AssocMG</li> <li>ChangeRootMiddleBoxes</li> <li>QueryMG</li> </ul>                                                                                                                                                                               |
| <b>Product = World Trade</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                |
| DEASSCLR                                   | A00001920 adds this command to clear all content of MTRDEASS table.                                                                                                                                                                                                                                                                                                                                            |

| Field                             | Command/User Interface Description                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MTRCOUNT</b>                   | <p><b>A00001930 modifies MTRCOUNT</b> in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON.</p> <p><b>It also modifies QFPS in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON.</b></p> |
| <b>SOSMCONF at CI level (new)</b> | <b>A00002173 creates the new CI level SOSMCONF (SOSM Configuration) to restrict access to the SOSM configuration tables.</b>                                                                                                                                                                                                                                                                                |

## Service Order changes overview

The following Service Order information is new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

### Summary of new or changed Service Orders

| Area                       | New or Changed | ServOrd Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b>   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| USERID and PASSWD options  | Changed        | Per A00001935 (Int'l PT-IP), the USERID and PASSWD options are used to specify CICM client information in the various SERVORD+ commands which create or modify lines.                                                                                                                                                                                                                                                                                                                      |
| Pad groups PKLNL and PKNIL | Changed        | Per A00002252 (Int'l PT-IP), pad group PKLNL will be assigned to gateway lines that have LGRP GRPTYPE set to S via SERVORD. Pad group PKNIL will be assigned to gateway lines that have LGRP GRPTYPE set to C via SERVORD. Attempts to change the pad group via SESM or SERVORD will not be successful. The appropriate gateway pad group will be assigned. However, the pad group can be changed in table LNINV via table control if need be.                                             |
| AFC line option            | New            | A00002377 (Succession on DMS) increases the provisioning number of AFC Keys to 10 per DN for the DMS ETSI BRI implementation. The master DN, known as SFC (Single Functional Call) key is able to have up to 10 AFC Keys associated with it. This can be specified through servord by using the AFC line option. If the AFC line option is added to a DN on a BRI set, the user is prompted for NUMCALLS indicating the number of call references permitted to be associated with that DN. |

**Summary of new or changed Service Orders**

| <b>Area</b>                  | <b>New or Changed</b> | <b>ServOrd Description</b>                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SEC option</b>            | <b>Changed</b>        | A00002654 (Int'l UA-IP) expands the existing SEC (Security Code) option to accept two more additional values (AR and ACRJ) when it is prompted for its feature list. The feature list contains a list of features for which the Security Code PIN applies.                                                                                                                                                                     |
| <b>Product = World Trade</b> |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>ILR line option</b>       | <b>Changed</b>        | <b>A00001914 (Succession on DMS) adds two new restriction classes:</b> <ul style="list-style-type: none"> <li>• <b>DNATL (Deny only NATional)</b>--In this restriction class, only outgoing national calls will be restricted while other call classes are not.</li> <li>• <b>DLCL (Deny only LoCaL)</b>--In this restriction class, only outgoing local calls will be restricted while other call classes are not.</li> </ul> |
| <b>CEPTPW line option</b>    | <b>New</b>            | <b>A00001919 (Succession on DMS) creates the CEPTPW line option which can be assigned to each IBN and ETSI ISDN BRI line via service order session.</b>                                                                                                                                                                                                                                                                        |
| <b>CPC line option</b>       | <b>Changed</b>        | <b>A00001923 (Succession on DMS) introduces new value RSRVD.</b>                                                                                                                                                                                                                                                                                                                                                               |
| <b>CMI line options</b>      | <b>Changed</b>        | <b>A00001930 (Succession on DMS) adds new line options TCMI and LCMI for IBN and ETSI BRI lines.</b>                                                                                                                                                                                                                                                                                                                           |

**AMA/billing changes overview**

The following AMA/billing information is new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

**Summary of new or changed AMA/billing**

| <b>AMA/billing item</b>   | <b>New or Changed</b> | <b>Description</b>                                                                                                                                                                                                                                                     |
|---------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 20000</b> |                       |                                                                                                                                                                                                                                                                        |
| <b>CEPT services</b>      | <b>New</b>            | A00002654 (Int'l UA-IP) implements the ability for all CEPT services to produce NAOC-defined billing records and NAOC meter counts for the following CEPT-defined capabilities: activation, deactivation, interrogation, invocation, erasure, and security key change. |

**Summary of new or changed AMA/billing**

| AMA/billing item             | New or Changed | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMAOPTS table                | Changed        | Per A00004933 (Int'l PT-IP), in the Local exchange (i.e. CGP) a new option <b>Capt_Charge_Band_Number</b> should be selected and AMASEL should be made ON to generate AMA record.                                                                                                                                                                                                                                                                                                    |
| FTR record                   | New            | <b>A00002053 creates new FTR record to provide detailed information for feature subscriber's metered functions. The generation of the FTR record for the metered actions of ICR feature option depends on the new office parameter FTR_RECORD_FOR_ICR_OPT in table OFCVAR. This parameter makes the generation of FTR record optional when the subscriber is charged for the ICR operations assignment / deassignment / usage. This feature applies to meterable IBN lines only.</b> |
| <b>Product = World Trade</b> |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CDR                          | Changed        | <b>A00002364</b> provides CLI/RDN/OCN and corresponding indicator within CDR records generated on calls whose originating physical port is ISUP trunk according to the capture logic.                                                                                                                                                                                                                                                                                                |

**Software Optionality Control (SOC) changes overview**

The following SOC information is new or changed for ISN07. More complete descriptions appear in the Feature Descriptions section of this document.

**Summary of new or changed SOC**s

| SOC code                     | New or Changed | Description                                                                                                                                                                                                                                                                        |
|------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product = CS 2000</b>     |                |                                                                                                                                                                                                                                                                                    |
| SULN0028                     | New            | Per A00002377 (Succession on DMS), this SOC code is used to restrict the usage of the "10 AFC KEYS for BRI DIRECTORY NUMBER" functionality. If the SOC is active, provisioning of 10 AFC Keys for a DN is possible only for Point-to-Multipoint configuration of ETSI BRI variant. |
| NETK0024                     | New            | Per A00004933 (Int'l PT-IP), this SOC code enables Network AOC tariff information.                                                                                                                                                                                                 |
| <b>Product = World Trade</b> |                |                                                                                                                                                                                                                                                                                    |

**Summary of new or changed SOC's**

| <b>SOC code</b> | <b>New or Changed</b> | <b>Description</b>                                                                                                                                                                                                                                                                       |
|-----------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| METR0016        | New                   | Per A00001920 (Succession on DMS), this SOC code is used to restrict the usage of the "10 AFC KEYS for BRI DIRECTORY NUMBER" functionality. If the SOC is active, provisioning of 10 AFC Keys for a DN is possible only for Point-to-Multipoint configuration of ETSI BRI variant.       |
| METR0017        | New                   | Per A00001920 (Int'l PT-IP), this SOC code enables Network AOC tariff information.                                                                                                                                                                                                       |
| SVBI0033        | New                   | <b>A00001930 (Succession on DMS) introduces this SOC to control the office-wide functionality of the TCMI and LCMI services.</b>                                                                                                                                                         |
| RBIL0014        | Changed               | <b>A00002053 (Succession on DMS) modifies this SOC so that</b> for the metered feature actions, the FTR record and AMAB156 log are generated instead of the MTR156 log if the SOC option RBIL0014 is set to ON. When the SOC option RBIL0014 is IDLE, MTR156 log is generated as before. |
| SOSM0001        | New                   | <b>A00002173 (Succession on DMS) creates this SOC to control access to SOSM provisioning, including the SOSM configuration CI level and SOSM configuration tables.</b>                                                                                                                   |
| XLAS0054        | New                   | <b>A00003467 (Succession on DMS) creates this SOC to activate the Reverse Trnslations feature.</b>                                                                                                                                                                                       |
| XLAS0053        | New                   | <b>A00003686 (Succession on DMS) creates this SOC to activate the XLAS Reroute Rel Cause feature.</b>                                                                                                                                                                                    |





## iSN07 Feature Deltas

### *Product = CS 2000*

### **A0001935 -- Provisioning Support for Centrex-IP Nodes and Lines (Int'l PT-IP)**

#### ***Functional Description***

Feature A0001935 will deliver the lines flow through and pre-provisioning functionality in the Succession Element and Sub-element Manager (SESM) required for the Centrex IP Client Manager (CICM) integration with Succession. The design will be split into Nodes provisioning for CICM Gateways (GWs), and lines provisioning for CICM terminations. The Nodes provisioning feature component will provide for the provisioning of CICM GWs. Nodes provisioning will also provide functionality to pre-provision the CICM terminations in the GWC-EM and to pre-provision LENs (Line Equipment Numbers) in XACore table LNINV. The Lines Provisioning component will provide flow through of service information entered at OSSGate (SERVORD+ commands). New line provisioning functionality will be delivered to allow line data to be transmitted to the CICM Element Manager (CICM-EM).

#### **Hardware Requirements or Dependencies**

Not applicable.

#### **Software Requirements or Dependencies**

Not applicable.

#### **Limitations and restrictions**

None.

#### **Interactions**

This feature will integrate the Centrex-IP client provisioning with the existing Succession SERVORD+ system. Centrex-IP client commands/data will be distributed to the CICM-EM from the SERVORD+ system within the SESM.

The following commands will trigger data distribution to the CICM-EM from SESM SERVORD+:

- NEW, EST, ADD, OUT, DEL, CDN, CHDN, CLN/CTP, CKLN/CKTP, ADO, DEO, CHF

This list is subject to change until final DSUM approval.

### **Applicable customer facing sections**

#### **Fault Management**

Logs \_\_N/A\_

Alarms \_\_N/A\_

#### **Configuration**

Data Schema \_\_X\_\_

User Interface \_\_N/A\_

Element Management \_\_N/A\_

Security \_\_N/A\_

Service Order \_\_X\_\_

Office Parameters \_\_N/A\_

Accounting (includes AMA billing) \_\_N/A\_

Performance (includes operational measurements) \_\_N/A\_

## ***Configuration for A00001935***

### **Hardware and Software Requirements**

Not applicable.

### **Initial Configuration**

Not applicable.

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

Not applicable. This feature leverages a previously defined gateway profile for CICM gateways.

### **Upgrade Impact**

#### **Dump and Restore**

Not applicable.

## Element Management Upgrade

Not applicable.

Upgrade of CICM data to SN07 is not supported. SN06.1 and SN06.2 data must be removed and then re-added in SN07 in order to leverage any flow through capabilities delivered by this feature. Both new and old format CICM data will be allowed to co-exist in SN07, however the SN06 format CICM will be managed generically (same as in SN06).

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| LGRPINV        | CHANGED                  | UNCHANGED                          |
| LNINV          | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

#### Name: LGRPINV

Logical Group Inventory

#### Functional description

In SN06, the field GRPTYPE of the table LGRPINV is set to “C” for non-MG9K logical groups and to “S” for MG9K logical groups. In SN07, the unused value “M” will be used in this field to indicate that the logical group is assigned to a CICM gateway.

#### Usage sequence and implications (CM Only)

The table LGRPINV is provisioned by the SESM. No manual datafill or change is allowed. Manual changes to this table will cause data corruption.

#### Size

Not applicable.

#### Fields/OIDs

Not applicable. This feature will use an already defined and supported field.

#### Datafill example

The following example shows sample datafill for table LGRPINV.

Preprovisioned MG(e.g MG9K) : SLOA 00 0 GWC 3 S \$

Preprovisioned CICM gateways : CICM 00 0 GWC 3 M \$

Non preprovisioned MG(e.g. Cable MG) : LG 01 0 GWC 3 C \$

**Table release history update**

Not applicable.

**Supplementary information**

Not applicable.

**Translation verification other tools**

Not applicable.

**Name: LNINV**

Line Inventory

**Functional description**

In SN07, the field SUBGROUP and CIRCUIT fields of the table LNINV are refined based on their associated LGRPINV GRPTYPE field.

The SUBGROUP/SLOT and CIRCUIT fields are defined as follows:

(GRPTYPE C) LINE SUBGROUP {0 TO 10}

(GRPTYPE M) LINE SUBGROUP {0 TO 10}

(GRPTYPE S) SLOT {2-9, 14-21}

(GRPTYPE C) CIRCUIT {0 TO 99}

(GRPTYPE M) CIRCUIT {0 TO 99} FOR SUBGROUP {0 TO 10}

(GRPTYPE S) CIRCUIT {0 TO 47}

**Usage sequence and implications (CM Only)**

Entries will be automatically configured by SESM at CICM gateway provisioning time.

**Size**

Not applicable.

**Fields**

The following table lists fields for LNINV.

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry     | Explanation and action |
|----------|----------------|------------------------|-----------|------------------------|
| SUBGROUP | Changed        | M                      | {0 to 10} |                        |
| CIRCUIT  | Changed        | M                      | {0 to 99} |                        |

**Datafill example**

The following example shows sample datafill for table LNINV.

Preprovisioned MG(e.g MG9K) line:

SLOA 00 0 21 31 RDTLSG PKLNL HASU N NL N NIL

Preprovisioned CICM gateway line:

International - HOST 00 0 10 22 **GWLEBS** NPDGP HASU N NL N NIL

North America - HOST 00 0 10 22 **RDTEBS** NPDGP HASU N NL N NIL

Non preprovisioned MG(e.g. Cable MG) line:

LG 01 0 00 00 RDTLSG PKLNL WORKING N NL N NIL

**Table release history update**

Not applicable.

**Supplementary information**

Not applicable.

**Translation verification other tools**

Not applicable.

**Gateway and Termination Name Mapping to Logical Group and Line Equipment Number (LEN)****Functional description**

The definitions of the various portions of the logical group, LEN, GW and termination names are defined to provide a visual correlation between their respective values.

**GW**

<GWNAME>-<NNN>, e.g. "CICM-142"

where:

<GWNAME> = String

CICM Identifier (configurable)

<NNN> = 000-511

The CICM gateway identifier.

**Logical Group**

<SITE> <NNN> <G>, e.g. "HOST 142 0", "CICM 142 0", etc.

where:

<SITE> = SITE name chosen at gateway provisioning time. Matching gateway name to SITE name is not an enforced rule, however it is suggested that a "CICM" SITE name be defined in the XACore and that all CICM gateway provisioning utilize the "CICM" SITE name. "HOST" is used in this example simply to show the flexibility of the provisioning system (any SITE name may be chosen at CICM gateway provisioning time). Actual utilization of the "HOST" SITE name is NOT recommended as it may collide with legacy LCM definitions in the XACore.

<NNN> defined as in GW name.

<G> = 0-2

The group number. Each gateway will span 3 logical groups.

**Termination/Endpoint**

tp/<G>/<TTtt>, eg. "tp/0/1013"

where:

<G> defined as in the logical group.

<TT> = 00-10

<tt> = 00-99, except where <TT> = 10 in which case <tt> = 00-22.

**LEN Format**

<SITE> <NNN> <G> <TT> <tt>, e.g. "CICM 142 0 10 13"

where:

<SITE>, <NNN>, <G>, <TT>, and <tt>, defined as in gateway and logical group.

### Logical Group and LEN to GW and Termination Correlation for a CICM Processor Pair

- One CICM “GW” mapped to Three logical groups in the XACore.
- 3069 CICM terminations mapped to the three logical group's LENs in the XACore.
- 3 terminal numbers are reserved in the XACore (one for each logical group) for maintenance/messaging.

### LEN to GW, Termination and Terminal Number Mapping

| LEN              | GW       | Termination | Terminal Number |
|------------------|----------|-------------|-----------------|
| CICM 142 0 00 00 | CICM-142 | tp/0/0000   | 1 **            |
| CICM 142 0 00 01 | CICM-142 | tp/0/0001   | 2               |
| :                | :        | :           | :               |
| CICM 142 0 10 22 | CICM-142 | tp/0/1022   | 1023            |
| CICM 142 1 00 00 | CICM-142 | tp/1/0000   | 1 **            |
| CICM 142 1 00 01 | CICM-142 | tp/1/0001   | 2               |
| :                | :        | :           | :               |
| CICM 142 1 10 22 | CICM-142 | tp/1/1022   | 1023            |
| CICM 142 2 00 00 | CICM-142 | tp/2/0000   | 1 **            |
| CICM 142 2 00 01 | CICM-142 | tp/2/0001   | 2               |
| :                | :        | :           | :               |
| CICM 142 2 10 22 | CICM-142 | tp/2/1022   | 1023            |

\*\* Terminal number 0 is reserved in the XACore for the maintenance/messaging terminal on the node. The formula currently used by the XACore to convert non-MG9K LEN to terminal number is as follows:

$$\text{terminal number} = ((100 * TT) + tt + 1)$$

### Service Orders (SO) (CM & SESM)

#### Service order change details

No new service orders are introduced by this feature. CICM client-specific SERVORD+ commands (NEW, EST, OUT, etc.) may contain USERID and PASSWD option flags which will be stripped from the command by SESM before being processed by the CM.

## How service order options are presented

### Description

The USERID and PASSWD options are used to specify CICM client information in the various SERVORD+ commands which create or modify lines. These options may be provisioned using any valid key number on the CICM client, however they are not key specific options (they affect the entire set).

### Example

Example of the USERID option in no-prompt mode for SERVORD+

```
NEW $ 6137210992 M5216 PRADEFAULT 0 0 1 N LATA1 9 CICM 142 0 10 13 1 7 USERID 123456
```

### Line class code compatibility

USERID to LCC compatibility

<abbreviated option name> compatibility to LCC

| Line class code | Compatible?                        |
|-----------------|------------------------------------|
| M5216           | Yes                                |
| All others      | No (but not functionally enforced) |

### SERVORD+ Exceptions

No SERVORD+ command exclusions although some servord commands will not be integrated with CICM provisioning. The non-integrated commands will still function normally from a SERVORD+ and XA-Core perspective.

## Software optionality control (SOC)

Not applicable.

## Element Management

### New/modified GUIs

The CS2000 Management Tools GUI is modified by this feature. Specifically the Associate Media Gateway dialog box will be altered.

The profile name “CICM” which was added in SN06 to the list of profiles that appears in the Gateway profile name drop down list, will be unmodified in SN07. The Reserved terminations for this profile will be 3069.

CICM gateways provisioned prior to SN07, will have their profile names changed to an obsolete value (e.g. “OBSOLETE\_CICM”) to allow them to



continue to function within the various provisioning systems as they did in SN06.

### **Command interface changes**

Not applicable.

### **Security**

Not delivered under this feature.

### **Configuration Walkthrough**

The general order of provisioning is as follows:

- Provision table SITE in XACore. SITE values for CICM should be restricted from use for other logical group types.
- Provision table PADDDATA in XACore (PKLNL and PKNIL entries).
- Provision CICM gateway in SESM (autocreates LGRPINV and LNINV entries).
- Configure CICM gateway at the CICM-EM (some data is retrieved from SESM via OSSGate)
- Execute SERVORD+ commands via OSSGate (service is assigned to LENS in LNINV).
- USERNAME and PASSWD data is configured (via OSSGate SERVORD+) on the CICM client to enable service.

## ***Product = CS 2000***

### **A00002252 -- MG9K Lines Preprovisioning (Int'l PT-IP)**

#### ***Functional Description***

Feature 89009298 implements the core code changes required for increasing MG9K line provisioning throughput by preprovisioning. Please refer to ActID 89008025 which details the overall goals of the preprovisioning work effort.

The 89009298 core changes have three components:

1. The format of an MG9K LEN will reflect a physical location. Previously, no correlation existed between an MG9K LEN and its physical location. Instead the LEN correlated to the terminal id of the line. The new format shows a circuit range of 0 to 47. Currently, only 32 circuit line cards are supported for the MG9K.

## OLD FORMAT

<SITE> <0 to 511> <0 to 9> <subgroup, 0 to 10> <circuit, 0 to 99>

## NEW FORMAT

<SITE> <frame, 0 to 511> <shelf, 0 to 9> <slot, 2 to 9, 14 to 21> <circuit, 0 to 47>

2. When SESM provisions an MG9K node on shelves 0 to 3 and LGRP data, table LNINV will be automatically datafilled with the available circuits. Subsequent SERVORD+ commands issued by SESM will not add or delete MG9K line datafill from table LNINV. Essentially, autoprovisioning of table LNINV will be disabled for MG9K lines.

This new functionality will supersede the setting of office parm RDT\_SUCC\_AUTOCREATE\_LNINV for determining the autoprovisioning of table LNINV. This feature, however, does not restrict the MNO\_DEFAULT value associated with RDT\_SUCC\_AUTOCREATE\_LNINV. We can assume multiple gateway offices where setting the default MNO would be desirable for all gateways including MG9K. It is the ACTIVE setting that is ignored for MG9K lines.

3. Two new pad groups will be defined for use by gateway lines. PKLNL will be created for use by gateway lines that have LGRP GRPTYPE set to S. PKNIL will be created for use by gateway lines that have LGRP GRPTYPE set to C. These pad group will always be applied to gateway lines during SERVORD provisioning and during SESM provisioning and preprovisioning. Changing of gateway line pad group from these two new groups is permitted via changing the pad group in table LNINV. Default pad levels will also be set for Legacy interaction.

## Hardware Requirements or Dependencies

None.

## Software Requirements or Dependencies

The changes implemented under feature 89009298 require associated code changes in SESM line provisioning and MG EM in order to deliver the described functionality. However, the core changes are completely transparent to existing functionalities. Interactions are detailed below.

## Limitations and restrictions

This feature is specific to MG9K lines.

## Interactions

The feature 89008782 “MG EM - LINE CARD DATA DELIVERY TO SESM” implements the MG9K-EM part of the preprovisioning. It is required for this feature to work properly. It is a compliment of this feature.

The feature 89008025 implements the SESM line provisioning changes that are required by MG9K lines for this feature to work.

Feature 00000420 introduces the office parm  
RDT\_SUCC\_AUTOCREATE\_LNINV which enables autoprovisioning for  
non-MG9K line gateways.

### Applicable customer facing sections

#### Fault Management

Logs ☒

Alarms ☐

#### Configuration

Data Schema ☐

User Interface ☒

Element Management ☐

Security ☐

Service Order ☒

Office Parameters ☐

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☐

### Glossary

| Term  | Description                                |
|-------|--------------------------------------------|
| EM    | Element Manager                            |
| LEN   | Line Equipment Number                      |
| LGRP  | Logical Group (of lines)                   |
| LNINV | Line Inventory (table)                     |
| MG    | Media Gateway                              |
| MG9K  | Media Gateway 9000                         |
| SESM  | Succession Element and Sub-element Manager |

## ***Fault Management for A00002252***

### **Fault management strategy**

ActID 89009298 changes the format of MG9K LENs. Prior to SN06 (CCM19), an MG9K LEN had the following format.

<SITE> <0 to 511> <0 to 9> <subgroup, 0 to 10> <circuit, 0 to 99>

Because of the formula used to calculate terminal ids (TermID) in the core, the MG9K LEN reflects the TermID/terminal number and not the physical location of the MG9K line. For example, the following shows a QLEN on an SN05 MG9K LEN:

>QLEN CO10 00 0 01 67

```

-----
LEN:   CO10 00 0 01 67
TYPE:  SINGLE PARTY LINE
SNPA:  619
DIRECTORY NUMBER:  5210621
LINE CLASS CODE:   1FR
SIGNALLING TYPE:  DIGITONE
LINE TREATMENT GROUP:  0
LINE ATTRIBUTE INDEX:  0
CARDCODE:  RDTLSG  GND: N PADGRP: NPDGP BNV: NL MNO: N
PM NODE NUMBER   :  103
PM TERMINAL NUMBER :  168
OPTIONS:
DGT
-----

```

Note that the terminal number is the LEN slot/circuit + 1.

The new MG9K LEN format reflects the physical location of the line.

<SITE> <frame, 0 to 511> <shelf, 0 to 9> <slot, 2 to 9, 14 to 21> <circuit, 0 to 47>

### **Fault management tools and utilities**

As stated above ActID 89009298 changes the format of an MG9K LEN. Any OAM&P utility that uses LENs will require the new MG9K LEN format for MG9K lines, and any OAM&P utility that displays LENs will display MG9K LENs in the new format. A sampling of OAM&P that will require or reflect the new MG9K LEN follows. The complete list of changed utilities is essentially everything that uses LENs. Reference the Logs section below for MG9K LEN values and ranges.

- MAPCI: Posting MG9K lines via LEN at the LTP level will require the new format.

- LINE logs in logutil will use the new format.
- SERVORD will require the new format for MG9K lines (SESM).

## Logs

### Explanation

All LINE logs generated for MG9K lines will utilize the new LEN format.

### Field descriptions

The new MG9K LEN contains the following fields.

#### Field descriptions

| Field           | Value            | Description                      |
|-----------------|------------------|----------------------------------|
| <site>          | character vector | name of the site from table site |
| <frame or cf>   | 0 to 511         | frame number in the office       |
| <shelf or rs>   | 0 to 9           | shelf number in the frame        |
| <slot or ss>    | 2 to 9, 14 to 21 | card slot number                 |
| <circuit or cc> | 0 to 47          | circuit on card                  |

### Action

Persons responsible for maintenance must realize the MG9K LEN format has changed. The crafts person can now use the log to pinpoint the physical location of the reported MG9K circuit.

None

### Related documentation

None.

## *Configuration for A00002252*

### Hardware and Software Requirements

Act ID 89009298 functionality is resident in the CCM19 and CNA19 software layers in the core. While this functionality may be resident, it is dormant unless features 89008782 and 89008025 are present. These features reside in MG9K EM and SESM respectively. Feature 89008025 specifically provisions MG9K lines with the new LEN format.

### Initial Configuration

This specific feature does not require changes to initial configuration.

## Office/Subnet parameters (OP/SP) (CM & SESM)

The functionality of office parm RDT\_SUCC\_AUTOCREATE\_LNINV is altered with this feature for MG9K lines. For MG9K lines the value of ACTIVE is ignored, and no autoprovisioning of table LNINV is allowed. DEFAULT\_MNO is used for MG9K lines.

## Upgrade Impact

This feature does not directly impact a system upgrade. However, upgrading a Succession MG9K GW network from SN05 to SN06 does require special handling. Essentially, existing MG9K LENS and terminal ids will be migrated to use the new LEN format. All of this will be driven by MG9K EM and will be completely transparent for a core SN05 to SN06 upgrade. Please refer to 89008025 documentation for more info.

## Dump and Restore

This feature does not impact dump and restore on upgrades.

## Element Management Upgrade

This feature does not impact EMs.

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

The previously unused field GRPTYPE in Table LGRPINV is used in this feature to denote a specific type of LGRP. The values for GRPTYPE are S, M, and C. This feature disables SERVORD autoprovisioning for GRPTYPE S for groups on shelves 0 to 3; refer to the FN section for more info. Currently, GRPTYPE S will denote a set of LGRPs that for now will only include MG9K LGRPs.

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| LGRPINV        | CHANGED                  | UNCHANGED                          |
| PADDATA        | CHANGED                  | UNCHANGED                          |

Table PADDATA will have two new pad groups which will be used by gateway lines. Pad group PKLNL will be used by gateway lines with LGRP GRPTYPE set to S. PKNIL will be used by gateway lines with LGRP GRPTYPE set to C.

## Table/MIB/Remote Database Schema information

### Name: LGRPINV

Logical Group Inventory Table

**Functional description**

Table LGRPINV contains logical group information for gateway lines.

**Usage sequence and implications (CM Only)**

SESM will provision table LGRPINV for LGRPs with GRPTYPE S.

**Size**

Table size is not changed via this feature.

**Fields**

The following table details the GRPTYPE field in table LGRPINV.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry       | Explanation and action                                                                                                       |
|---------|----------------|------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------|
| GRPTYPE | Changed        | None                   | S<br>C<br>M | S denotes a specific set of LGRPs that includes MG9K LGRPs.<br><br>C denotes all other LGRPs<br><br>M is currently not used. |

**Datafill example**

The following example shows sample datafill for table LGRPINV.

| GRPNO     | SRVRNAME | GRPTYPE | LGRPOPTS |
|-----------|----------|---------|----------|
| CO10 00 0 | GWC 1    | S       | \$       |

**Table release history update**

A GRPTYPE value of S denotes a specific set of LGRPs that include MG9K LGRPs. A GRPTYPE value of C is used for all other gateway LGRPs. GRPTYPE M is currently not used.

**Supplementary information**

None.

**Translation verification other tools**

Table LGRPINV is not displayed for TRAVER.

**Name: PADDDATA**

Pad Data Table

**Functional description**

Table PADDDATA contains attenuation and boost settings for different device interactions. Pads are applied to devices in order to balance volume levels.

**Usage sequence and implications (CM Only)**

Pad groups PKLNL and PKNIL will be defined and will appear in table PADDDATA in the nodatafill base load.

**Size**

Pad value settings will be created for the two new pad groups. New table size will be within the allocated size.

**Fields**

Fields will not change with these changes.

**Datafill example**

The following example would apply a 3db attenuation to a line with pad group PKLNL and a 3db gain to a line with pad group STDNL whenever the lines are connected:

```
PKTLN STDNL 3L 3G
```

**Table release history update**

Pad group PKLNL is to be used only by gateway lines that have LGRP GRPTYPE set to S. Pad group PKNIL is to be used only by gateway lines that have LGRP GRPTYPE set to C. Gateway lines will automatically have the appropriate pad group assigned when they are provisioned.

**Supplementary information**

None.

**Translation verification other tools**

Table PADDDATA is not used in TRAVER.

**Service Orders (SO) (CM & SESM)****Service order change details**

Act ID 89009298 disables SERVORD autoprovisioning for gateway lines that have an LGRP type of S (table LGRPINV field GRPTYPE) that reside on shelves 0 to 3. Autoprovisioning provisions or deletes datafill to table LNINV for specific SERVORD+ commands received from SESM. SESM will preprovision table LNINV at the time of node provisioning; reference



documentation for Act ID 89008025. This functionality supercedes the setting of office parm RDT\_SUCC\_AUTOCREATE\_LNINV which is applicable to other types of line gateways. Previously, office parm RDT\_SO\_AUTOCREATE\_LNINV was used for setting autoprovisioning for gateway lines (SN05). RDT\_SUCC\_AUTOCREATE\_LNINV was introduced in SN06 specifically for gateway line autoprovisioning. Neither office parm is applicable for MG9K gateway lines.

Pad group PKLNL will be assigned to gateway lines that have LGRP GRPTYPE set to S via SERVORD. Pad group PKNIL will be assigned to gateway lines that have LGRP GRPTYPE set to C via SERVORD. Attempts to change the pad group via SESM or SERVORD will not be successful. The appropriate gateway pad group will be assigned. However, the pad group can be changed in table LNINV via table control if need be.

### **Software optionality control (SOC)**

This feature has no effect on SOC.

### **Element Management**

This feature has no effect on EM. However, Act ID 89008782 does.

### **Command interface changes**

Act ID 89009298 changes the format for gateway LENS that have GRPTYPE set to S in table LGRPINV. Please refer to the FN for detailed information on the change. Consequently, any CI command that requires a LEN for input must use the new format for a gateway line with GRPTYPE set to S in table LGRPINV. Likewise, any gateway LEN with GRPTYPE set to S in table LGRPINV display via a CI command (or MAPCI) will be displayed in the new format.

### **Security**

None.

### **Configuration Walkthrough**

Please reference Act ID 89008782 documentation.

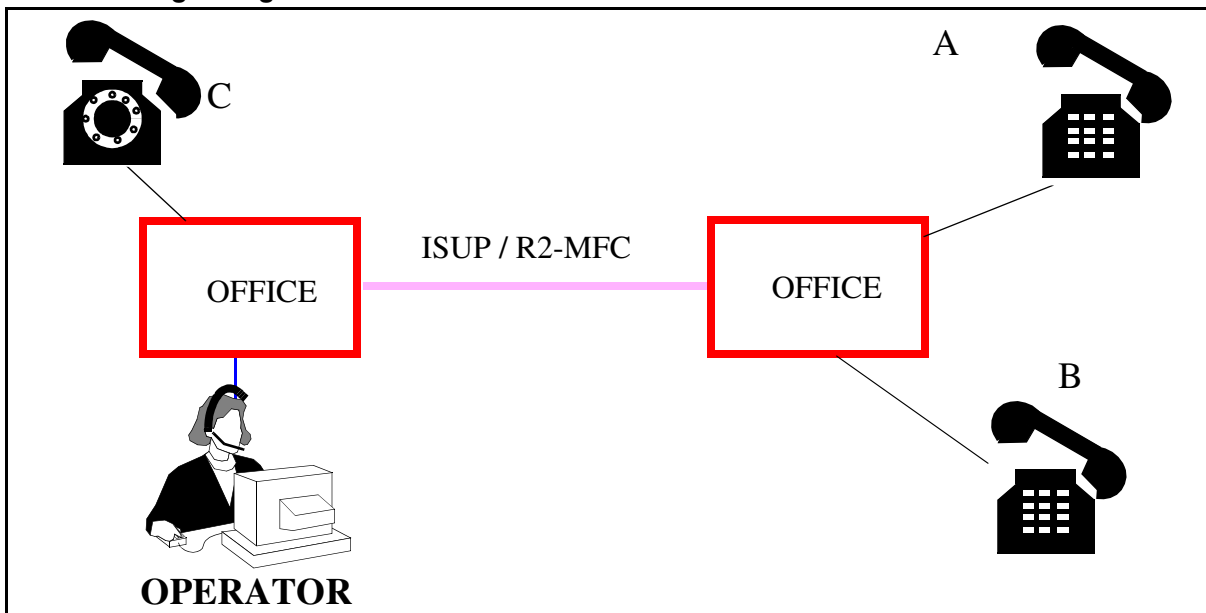
## ***Product = CS 2000***

### **A00002291 - Trunk Offering Expansion (Succession on DMS)**

“Trunk Offering” (TKO, TOF) is a software package that allows an operator to inform a busy subscriber that another subscriber wants to speak to him. The operator can break into an existing call and inform the busy subscriber verbally

about a new, pending call. If the busy subscriber wants to receive the new call, one of the parties in the existing call goes onhook, then the operator can connect him to the new caller immediately.

#### Trunk Offering configuration



TKO over ETSI ISUP trunks is already supported for some markets in the World-Trade software starting from the WT14 stream. This FN reflects the functionality that supports the TKO feature both over ETSI ISUP and FDCP / MFC-R2 trunks for all markets using the default FDCP variant.

#### TKO support today

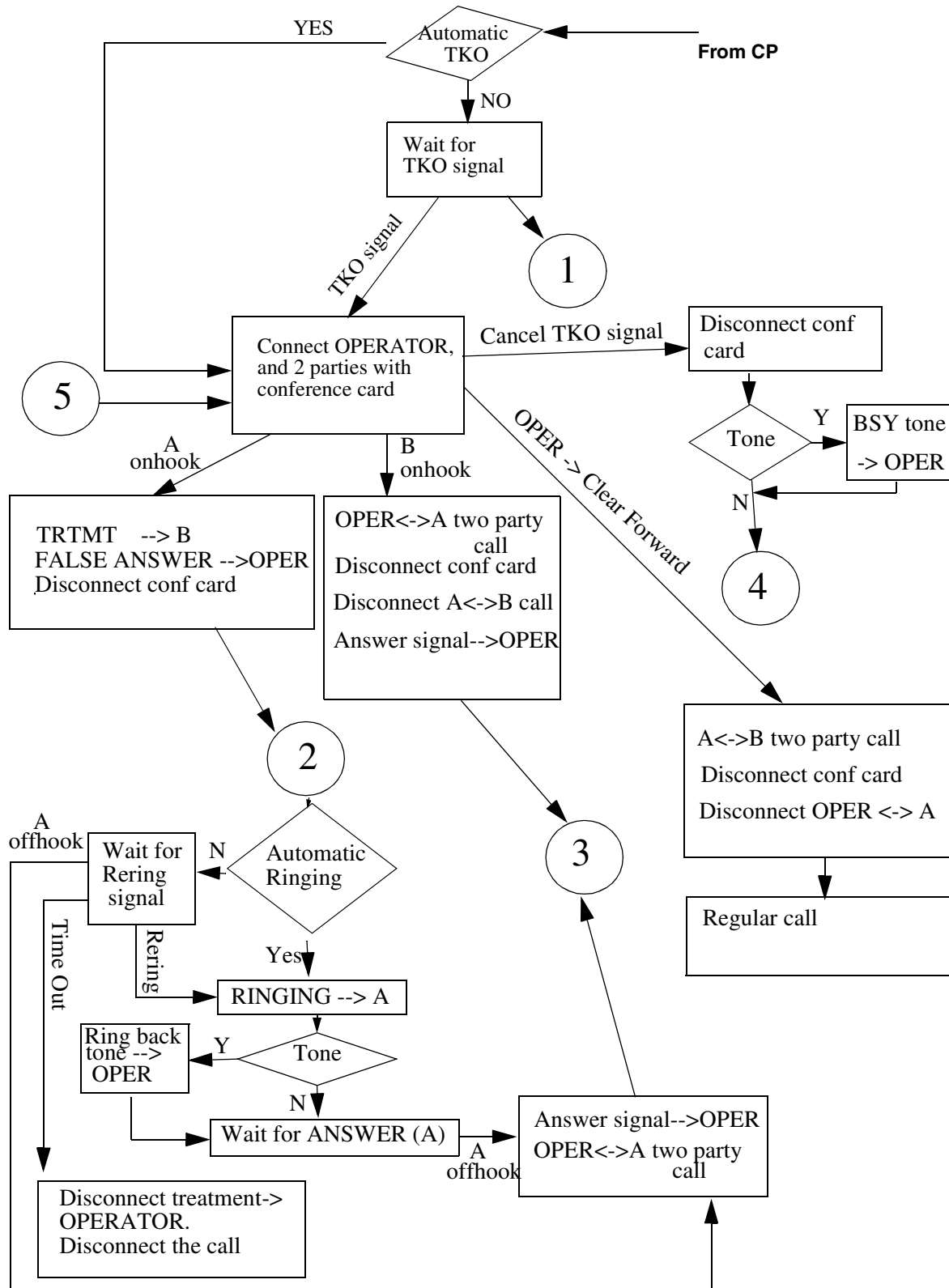
|                         | Telrad markets                | other WT markets |
|-------------------------|-------------------------------|------------------|
| <b>ETSI ISUP trunks</b> | supported in off-stream only. | supported.       |
| <b>FDCP/MFC trunks</b>  | supported in off-stream only. | not supported.   |

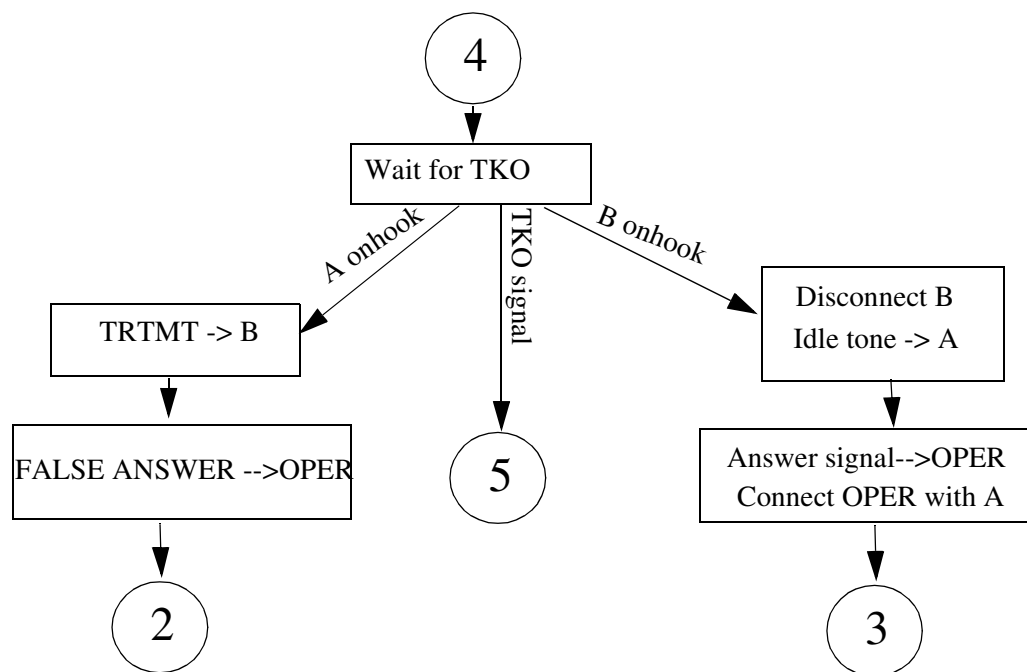
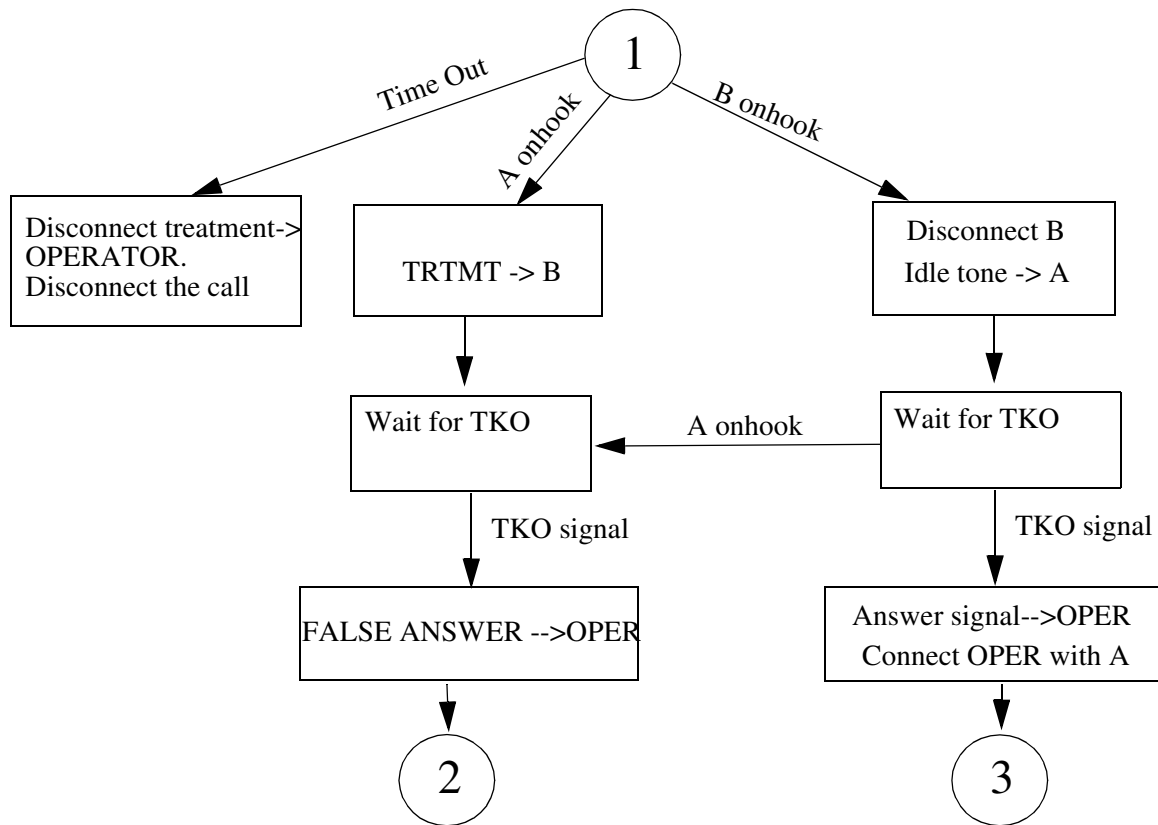
In order to provide Telrad markets with TKO feature in on-stream release, this feature propagates the TKO support to MMP20 for the following protocols:

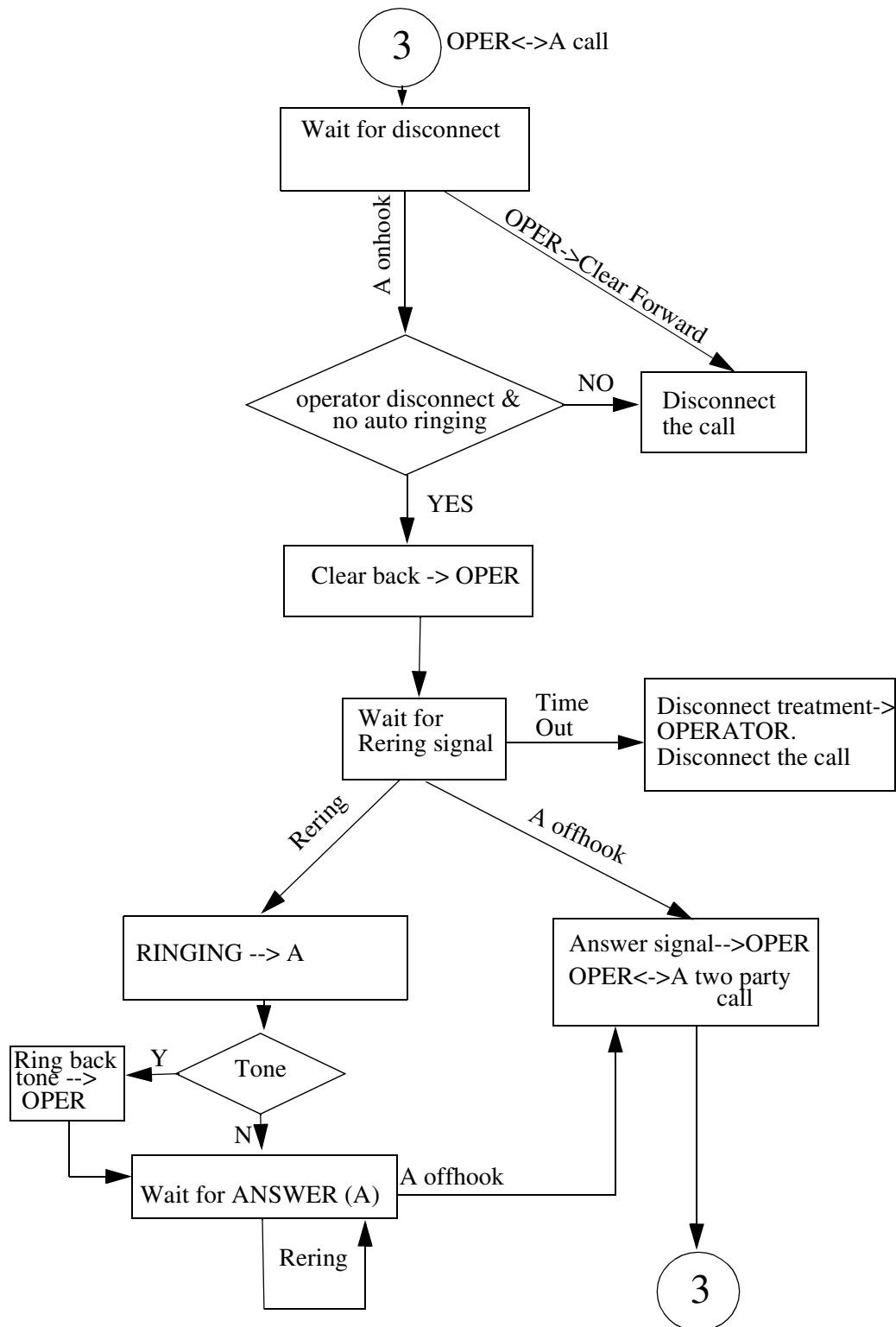
- ETSI ISUP V2 for Ethiopia market,
- ETSI ISUP V2 for Costa-Rica market,
- ETSI ISUP V2 for Vietnam market,
- ETSI ISUP V2 for Georgia market,
- FDCP MFC / R2 and TYPE A.

In addition this FN reflects the Warning tone functionality for Ethiopia market.

## LOGICAL VIEW



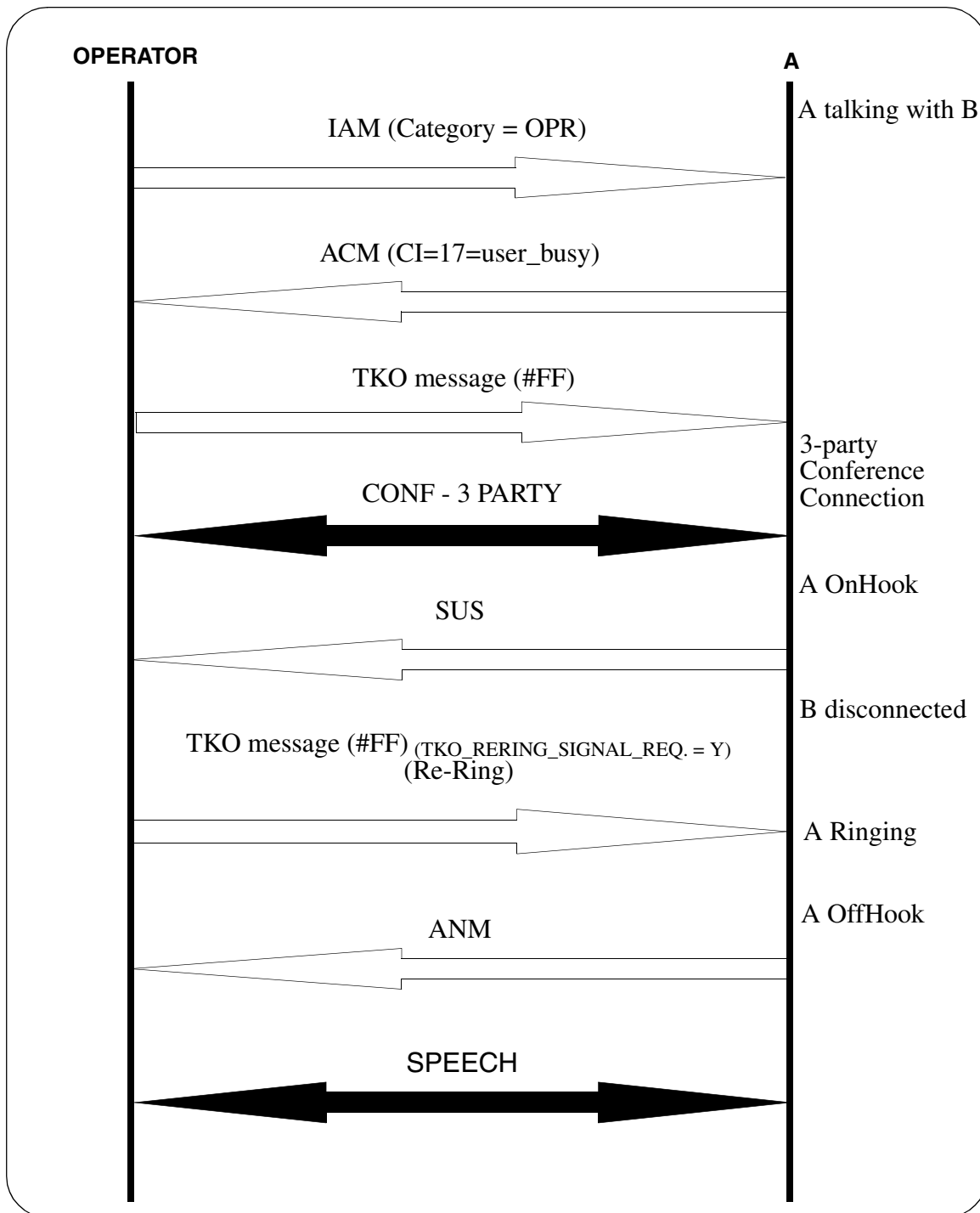


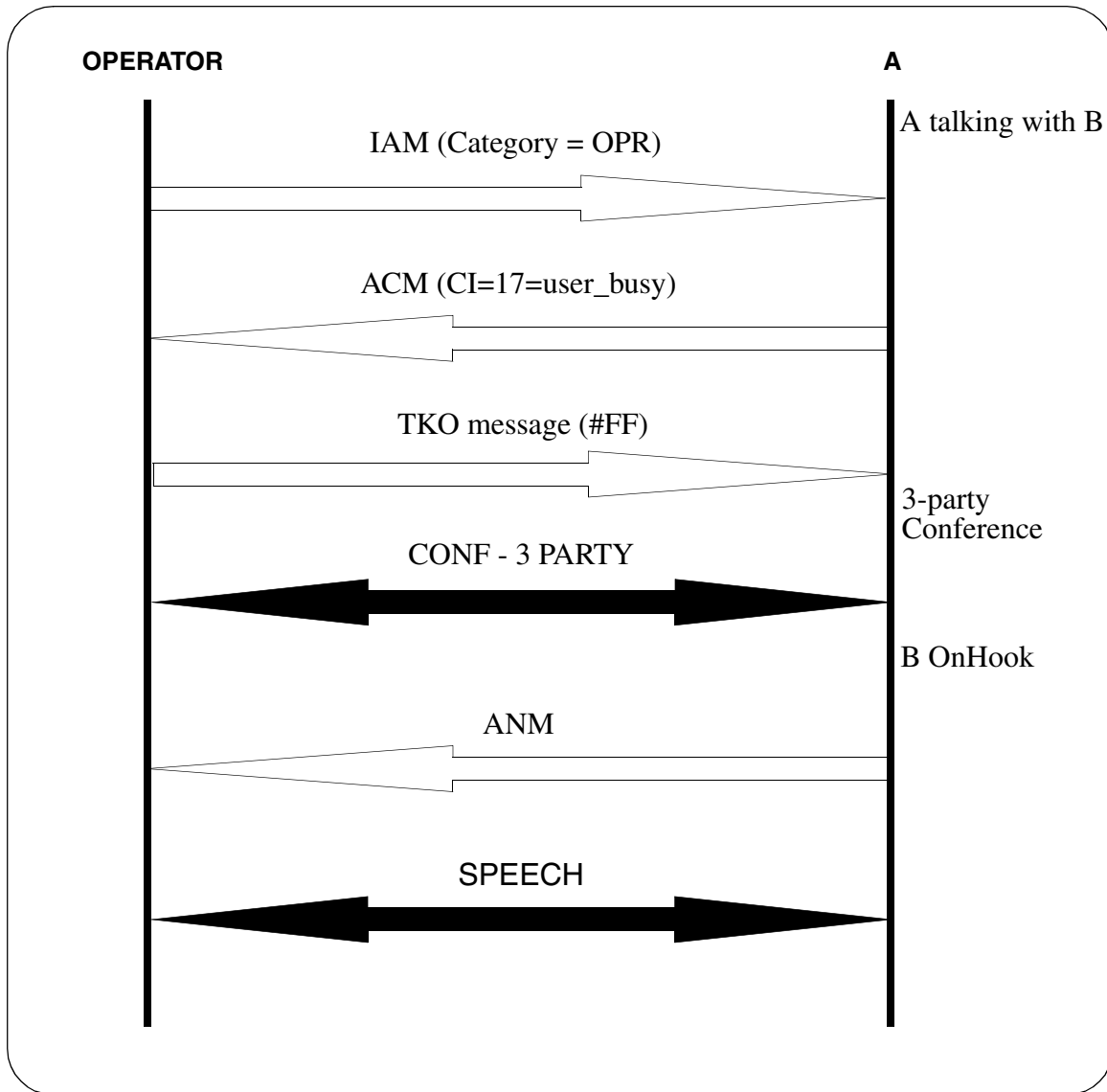


## TKO support over ETSI ISUP trunks

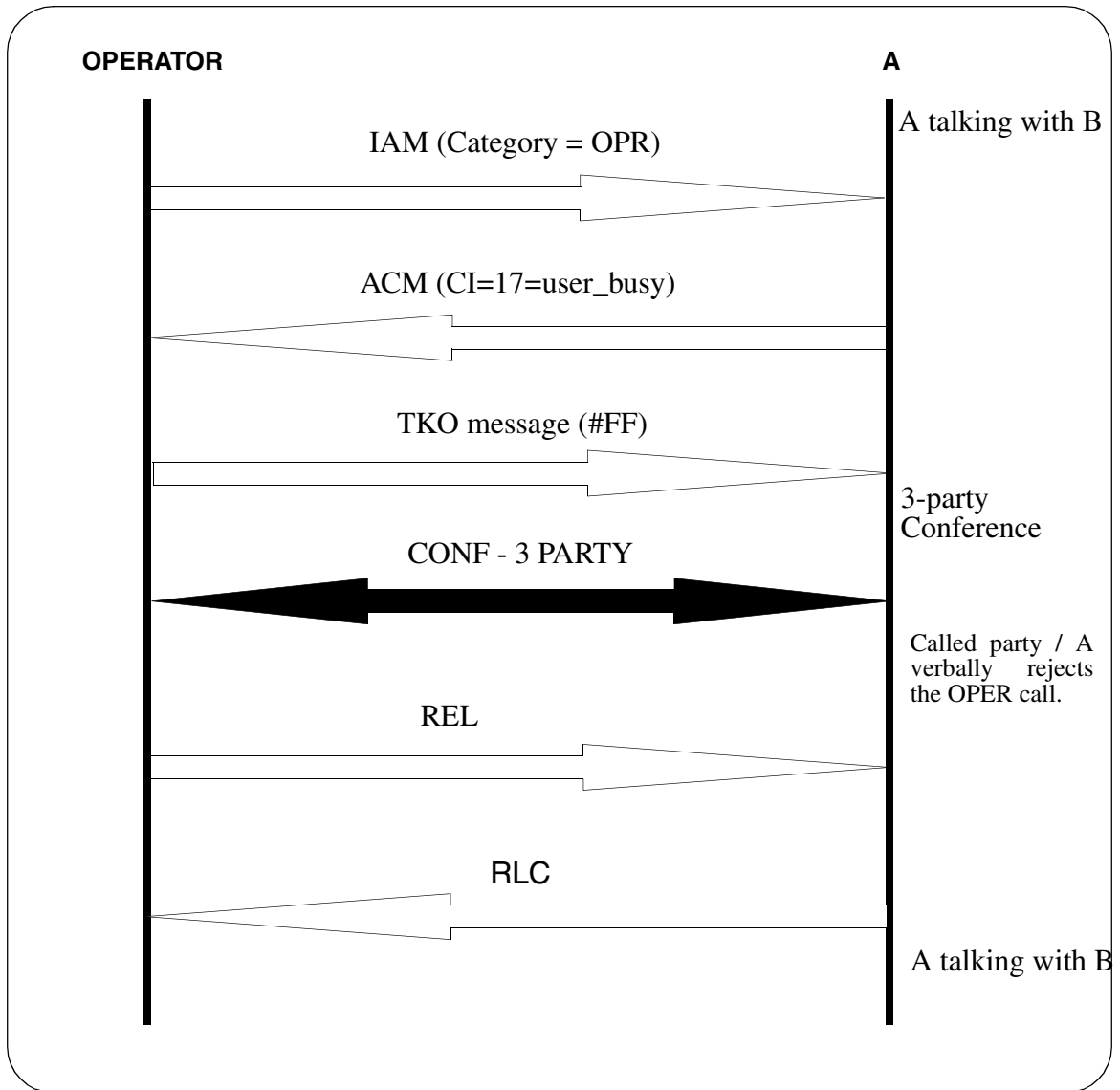
### ETSI ISUP TKO protocol differences

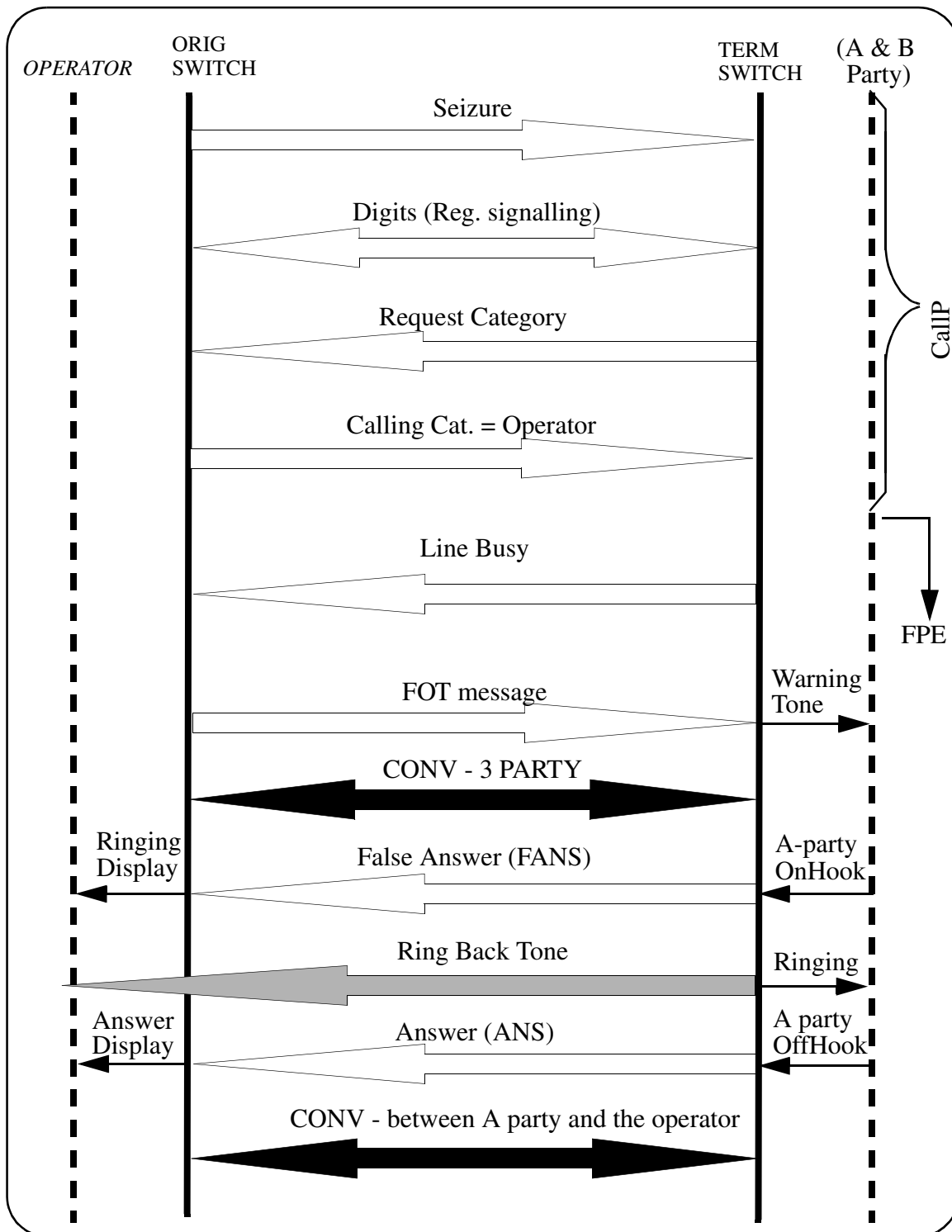
| Event                                                           | Variations for Telrad markets                                                                               | Existing behavior for other markets                                                                                      |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| TKO signal                                                      | Ethiopia, Vietnam, Georgia:<br>ISUP_FF_NATL (#FF)<br><br>Costa-Rica:<br>ISUP_F9_NATL (#F9)                  | Various values, e.g.<br><br>ISUP_FF_NATL (#FF) (egypt),<br>ISUP_FD_NATL (#FD) (Mexico),<br>etc.                          |
| OPER Calling Party Category                                     | Vietnam, Costa-Rica, Georgia:<br>ISUP_CPC_OP_NATIONAL (#09)<br><br>Ethiopia:<br>ISUP_CPC_TKO_OPERATOR (#E6) | Various values, e.g.<br><br>ISUP_CPC_OP_FRENCH (#01),<br>ISUP_CPC_OP_ENGLISH (#02),<br>ISUP_CPC_OP_GERMAN (#03),<br>etc. |
| Party A goes OffHook in response to the operator Re-Ring signal | A sends SUS message only                                                                                    | A sends ANM message followed by SUS message                                                                              |
| Party B goes OnHook to terminate the conference                 | A sends ANM message                                                                                         | A sends RES message                                                                                                      |

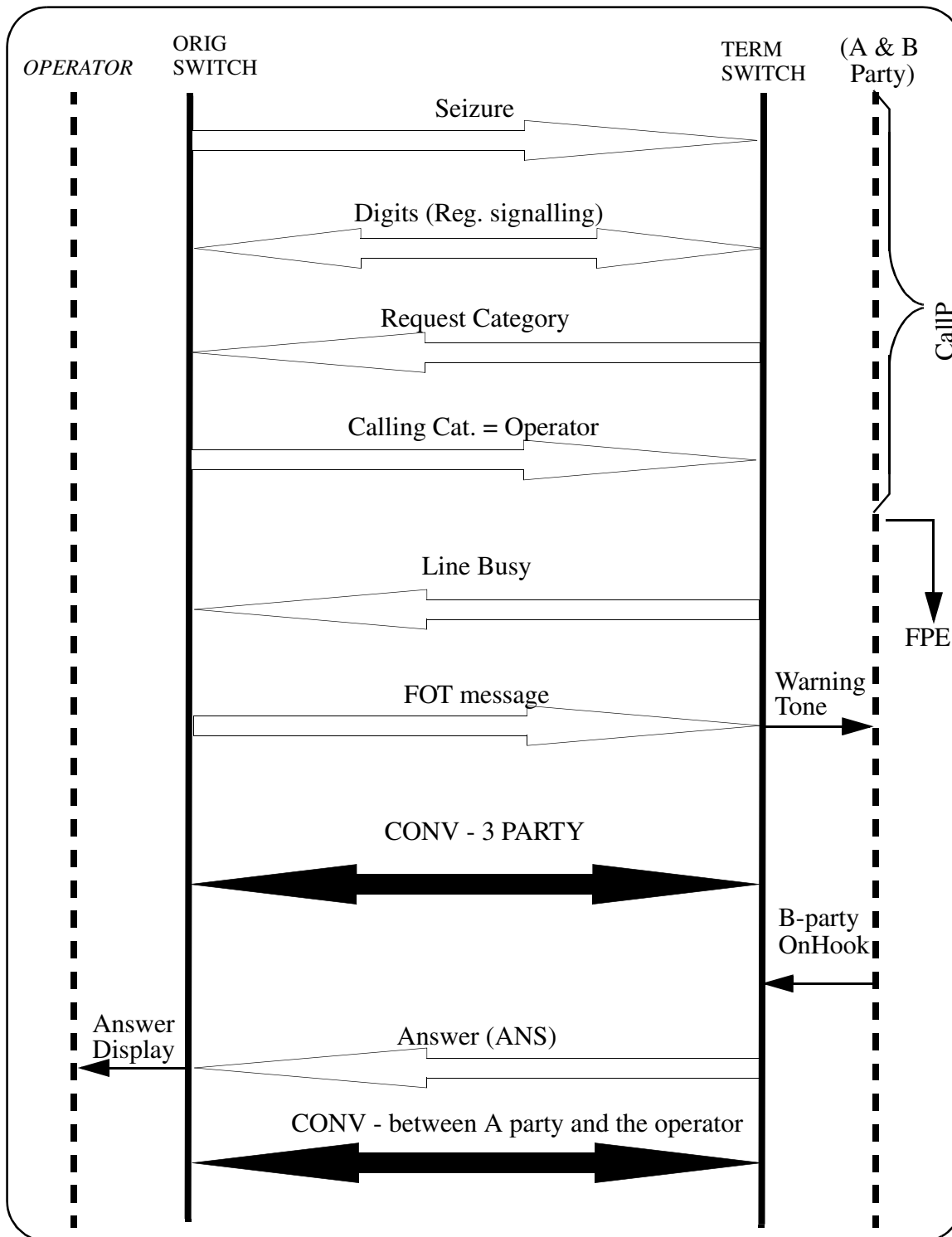
**ISUP TKO messaging flow: Basic case A: A OnHook after conference.**

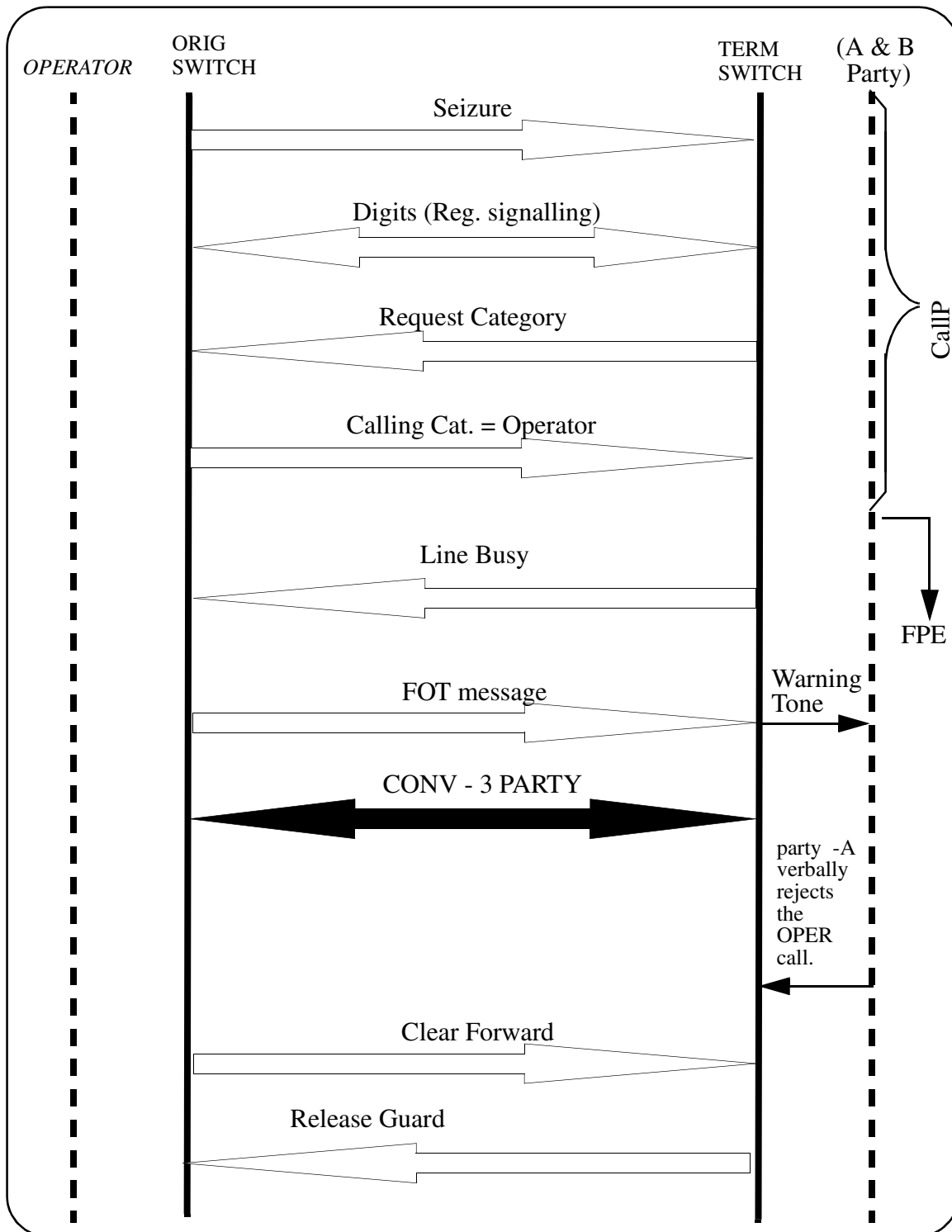
**ISUP TKO messaging flow: Basic case B: B OnHook after conference**



**ISUP TKO messaging flow: Basic case C: A reject the operator call**

**TKO support over FDCP MFC/R2 trunks****MFC/R2 FOT messaging flow: Basic case A: A OnHook after conference**

**MFC/R2 FOT messaging flow: Basic case B: B OnHook after conference**

**MFC/R2 FOT messaging flow: Basic case C: A reject the operator call**

## TKO support in Interworking switch of FDCP <-> ETSI ISUP trunks cross

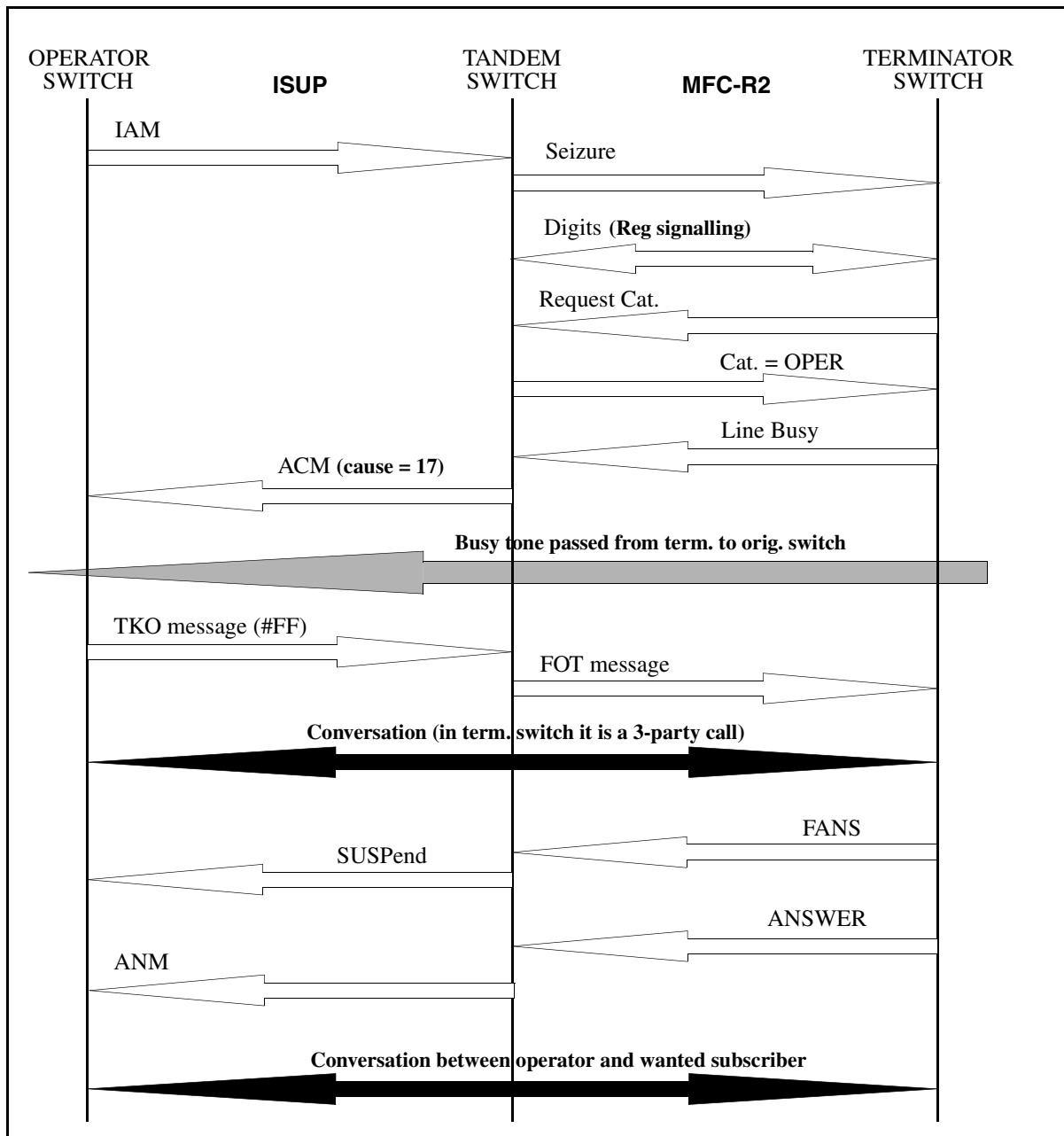
This feature supports cross situations between the two protocols FDCP and ETSI ISUP in the tandem switch, that includes the following cases:

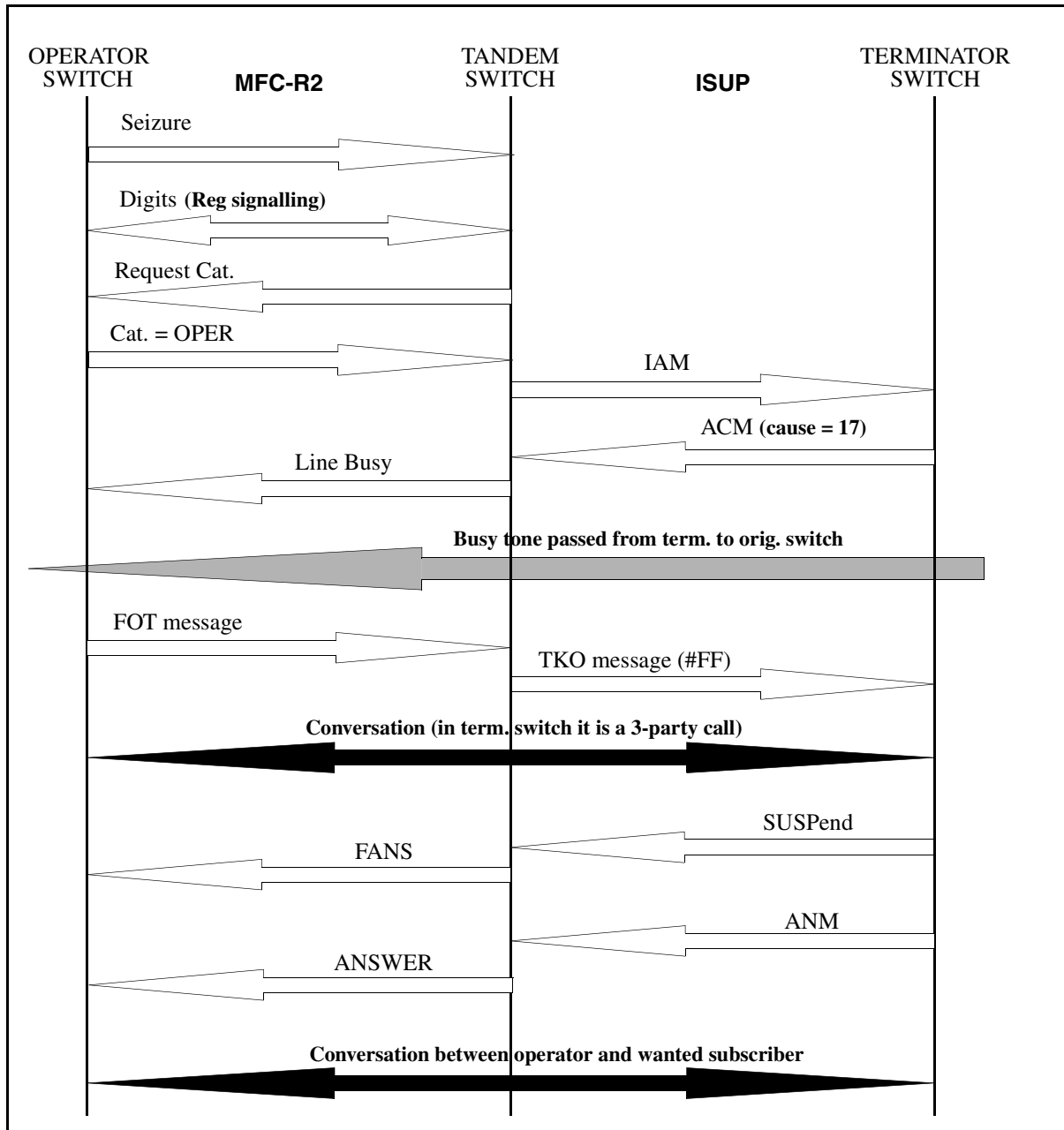
1. Interworking switch of ETSI ISUP to ETSI ISUP trunks cross.
2. Interworking switch of ETSI ISUP to FDCP trunks cross.
3. Interworking switch of FDCP to ETSI ISUP trunks cross.
4. Interworking switch of FDCP to FDCP trunks cross.

### ISUP - FDCP equivalence

| ISUP Signal | R2 MFC Equivalent Signal | Notes                                                                                                                                                                                                                                                                         |
|-------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISUP_ACM    | Line busy                | Sent as a response to IAM event by TKO. This is done because CPC=Operator, and ACM is sent instead of RLS.<br><br>For R2-MFC, busy signal (B-3) is sent by CALLP BEFORE feature is activated, regardless of the fact that CPC=Operator.                                       |
| ISUP_SUS    | FANS (False Answer)      | 'FALSE_ANSWER' signal - Notify operator switch of one of the following events: <ul style="list-style-type: none"> <li>Terminator is onhook and operator-terminator call is now being established.</li> <li>Terminator has gone onhook while talking with operator.</li> </ul> |
| ISUP_ANM    | ANS (Answer Message)     | Used to notify operator that terminator has gone offhook.                                                                                                                                                                                                                     |
| ISUP_RES    | ANS (Answer Message)     | Used for notifying operator switch that call is re-established (i.e. parties are now talking again).                                                                                                                                                                          |

## TKO call on tandem switch with ISUP-FDCP cross



**TKO call on tandem switch with FDCP-ISUP cross**

## Warning tone for Ethiopia market

This feature supports warning tone for the existing TLR425 toneset.

The warning tone is used in the Fix Price Service (FPS) feature.

The warning tone is given when FPS credit limit is exhausted and timer to clear call started.

### Warning tone requirements

| Frequency<br>(Hz) | Level<br>(dbm0) | Tone Id.<br>in hex |
|-------------------|-----------------|--------------------|
| 1400              | -10             | 9D                 |

The tone consists from 3 repeated patterns of tone 08 for 0.5 secs with a break for 11.5 secs between the tones (tone-brake-tone-brake-tone).

## Hardware Requirements or Dependencies

N/A

## Software Requirements or Dependencies

N/A

## Data Requirements or Dependencies

To enable the Trunk Offering feature in the switch, the office parameter TBI\_OFFER in table OFCVAR should be set to one of the following values:

- “MANUAL”, which means that the operator has to send a TKO signal manually in order to enter into A-B call, or:
- “AUTO”, which means that a TKO signal is not needed, and the operator enters A-B call automatically after the intrusion tone is heard.

In the off-stream TLR13 CM load, eight office parameters defined in tables OFCOPT and OFCENG are used for Trunk Offering.

In the on-stream MMP19 CM load, five office parameters defined in table OFCVAR are already used for Trunk Offering.

Merging the off-stream parameters in the on-stream release is done as follows:

1. The parameters TBI\_OFFER and TBI\_OPR\_TIMEOUT are used by this feature in MMP instead of the TLR off-stream parameters TKO\_IS\_ACTIVE, TKO\_AUTO and TKO\_TIMEOUT.
2. The parameters:
  - TKO\_INTRUSION\_TONE,
  - TKO\_TONE,



- TKO\_RERING\_SIGNAL\_REQ,
- TKO\_OPER\_ONLY\_CAN\_DISC,
- TKO\_BREAK\_FTR,

are added by this feature in MMP20.

3. The new parameters are added in table OFCENG, to comply with the definition of the existing parameters in MMP.
4. The new parameter TKO\_INTRUSION\_TONE is used in combination with the existing parameter TBI\_BACKGROUND\_TONE, thus allowing the user to select the desired tone from the toneset. The original hardcoded tone is used as default.

#### Office parameters for TKO in MMP20

| Table      | Office Parameter        | New /<br>Unchanged<br>in WT20 | Range                | Default<br>value | Description                                                                                                                                                                                                                                                                                                    | Notes                                                                                                                                                                                                                                                                 |
|------------|-------------------------|-------------------------------|----------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OFC<br>VAR | TBI_OFFER               | Unchanged                     | OFF, AUTO,<br>MANUAL | OFF              | Sets feature activity and mode                                                                                                                                                                                                                                                                                 | For Telrad markets, this parameter replaces TKO_IS_ACTIVE and TKO_AUTO used in TLR.                                                                                                                                                                                   |
| OFC<br>VAR | TBI_OPR_TIMEO<br>UT     | Unchanged                     | 100 TO 300<br>sec    | 100              | Timeout value for operator message                                                                                                                                                                                                                                                                             | Same as TKO_TIMEOUT in TLR.                                                                                                                                                                                                                                           |
| OFC<br>VAR | LOCAL_TBI_TON<br>E      | Unchanged                     | N,Y                  | Y                | Indicates whether the call being broken into will hear any tone (offering tone and/or background tone) during the intrusion by the operator.                                                                                                                                                                   | Telrad markets should use the default value "Y".                                                                                                                                                                                                                      |
| OFC<br>VAR | TBI_OFFERING_<br>TONE   | Unchanged                     | N,Y                  | N                | If set to 'Y', an offering tone will be played from the toneset for one second only before the operator enters the call.<br>The tone is hardcoded.                                                                                                                                                             | Not applicable for Telrad markets.                                                                                                                                                                                                                                    |
| OFC<br>VAR | TBI_BACKGROU<br>ND_TONE | Unchanged                     | N,Y                  | Y                | If set to 'Y', a continuous intrusion tone will be played from the conference card during the conference call.<br>If set to 'N', an intrusion tone will be played from the toneset for one second only before the operator enters the call.<br>The tone is hardcoded, and is different from the offering tone. | Telrad markets should use the default value "Y".<br>Up to this feature, the tone was hardcoded as 450HZ_15DBM.<br>In this feature, the tone is defined by the parameter TKO_INTRUSION_TONE (see next). The previously hardcoded tone is used now as the default tone. |

**Office parameters for TKO in MMP20**

| Table      | Office Parameter                 | New /<br>Unchange<br>d in WT20 | Range                                                 | Default<br>value | Description                                                                                                                  | Notes                                                                                                                                                                                                                                                                                      |
|------------|----------------------------------|--------------------------------|-------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OFC<br>ENG | TKO_INTRUSION_TONE               | Unchanged                      | CONFERENCE_TONE_SET: a range of 7 tones or "no tone". | 450HZ_15DBM      | Defines the intrusion tone that is played from the conference card during the conference call.                               | The default tone is set to 450HZ_15DBM to comply with the existing application.<br><br>In TLR off-stream release, any tone from the set can be used. The default is 450HZ_20DBM.<br><br>Telrad customers using MMP20 release will retain their own tone either by ONP or by load building. |
| OFC<br>ENG | TKO_TONE                         | Unchanged                      | N,Y                                                   | Y                | Defines whether the operator receives 'busy' and 'ring-back' tones                                                           | Applicable for Telrad markets only.                                                                                                                                                                                                                                                        |
| OFC<br>ENG | TKO_RERING_SIGNAL_REQ            | Unchanged                      | N,Y                                                   | Y                | Defines whether a "Re-Ring" signal is required (second operator message)                                                     | Applicable for Telrad markets only.                                                                                                                                                                                                                                                        |
| OFC<br>ENG | TKO_OPERATOR_ONLY_CAN_DISCONNECT | Unchanged                      | N,Y                                                   | N                | Defines whether the terminator subscriber can disconnect the call with the operator, or the operator only can disconnect it. | Applicable for Telrad markets only.                                                                                                                                                                                                                                                        |
| OFC<br>ENG | TKO_BREAK_FTR                    | Unchanged                      | N,Y                                                   | N                | Enables/disables TKO to a subscriber that has features that disallow calls received (DTM)                                    | Applicable for Telrad markets only.                                                                                                                                                                                                                                                        |

**Limitations and restrictions**

The new trunk option TKO\_FDCP should be assigned to incoming FDCP trunk in the table TRKOPTS. It will allow TKO feature **for specific incoming directions**.

Trunk Offering via ETSI ISUP Trunks will be supported only for Costa-Rica, Vietnam, Ethiopia and Georgia markets.

Trunk Offering via FDCP Trunks will not be supported for 2W Trunks.

OPERATOR to Busy ISDN subscriber: OPERATOR can not break in.

**TREATMENT**

In case of TKO can not be applied, a PTOF (Premature\_Trunk\_Offering) treatment should be applied to the InComing Trunk.

## Interactions

### **OPERATOR to call with regret time.**

In a scenario where the OPERATOR tries to call A and A is involved in a call with B: If A or B are in regret time, the OPERATOR can break in and disconnect B.

In case a scenario where A or B has been involved in a CWT or 3WC features before OPERATOR call, if A or B was On-Hook and now A or B are in regret time: in this case OPERATOR can not break in.

Example for above mentioned case:

- A (CWT option) in call with B.
- C calls A. A was got CWT tone.
- C On-Hook.
- A and B continue to be in conversation.
- A On-Hook.
- OPERATOR can not break in.

### **OPERATOR to call with OPERATOR on line**

In a scenario where the OPERATOR tries to call A and A is involved in a call with another OPERATOR, the operator can not break in.

When an OPERATOR is in the process of breaking in to a call another OPERATOR can not initiate a break in process.

### **OPERATOR to noneTALKING call**

OPERATOR can not break in to the following call states: Off-Hook before dialing, dialing and ringing.

### **Call Wait (CWT)**

The possible situations are:

A has the CWT feature but he is involved in a regular call - The OPERATOR can break in to the call (regular call).

A is involved in a CWT call - Break in can not be effected.

B is involved in a CWT call and A is on the same office - Break in can not be effected.

B is involved in a CWT call and A is not on the same office - There is therefor, no indication that B is involved in a CWT call - The OPERATOR can break in.

A cannot FLASH after OPERATOR enter the call.

### **3WC**

The possible situations are:

A has the 3WC feature but he is involved in a regular call - The OPERATOR can break in to the call (regular call).

A is involved in a 3WC call - Break in can not be effected.

B is involved in a 3WC call and A is on the same office - Break in can not be effected.

B is involved in a 3WC call and A is not on the same office - There is therefor, no indication that B is involved in a 3WC call - The OPERATOR can break in.

A cannot FLASH after OPERATOR entered the call.

### **Call Forward (CFW) / CFBL / CFDA**

The call forward is transferred. If the second call is BUSY the OPERATOR can break in.

### **Denied Terminator (DTM)**

The OPERATOR can break in only if office parameter TKO\_BREAK\_FTR is set to Y.

*Note.* Office parameter TKO\_BREAK\_FTR for connection via FDCP trunks works only in case when calling party category was received before all the called party digits were delivered to the switch. For this purpose appropriate entry in the table R2PROT should be datafilled with option ANI\_AFTER\_1\_DIG or CAT\_AFTER\_1\_DIG.

### **SUS / RSUS**

The OPERATOR can not break in.

### **MCT**

The OPERATOR can not break in to any call involving MCT.

The OPERATOR can not break in - When B has MCT and the AB call is a line to line call or the AB call is a line to trunk call and when A receives a holding indication.

The OPERATOR can not break in - When A has activated MCT by pressing FLASH.

A cannot FLASH after OPERATOR enter the call.

### **OPERATOR to Line who was connected to TREATMENT or TONE call**

The OPERATOR can not break in.

**OPERATOR to HUNT GROUP**

In case of all HUNT GROUP (DNH) members are in Busy state, the operator can break in last busy member call.

**OPERATOR to Busy ISDN subscriber**

OPERATOR can not break in.

**OPERATOR to Line with CLI option**

In case of OPERATOR calls Line with CLI option, no information Log will be printed - neither when line is in the call, nor when line is idle.

**Applicable customer facing sections****Fault Management**

Logs \_\_\_N/A\_\_\_

Alarms \_\_\_N/A\_\_\_

**Configuration**

Data Schema \_\_\_Y\_\_\_

User Interface \_\_\_N/A\_\_\_

Element Management \_\_\_N/A\_\_\_

Security \_\_\_N/A\_\_\_

Service Order \_\_\_N/A\_\_\_

Office Parameters \_\_\_N/A\_\_\_

Accounting (includes AMA billing) \_\_\_N/A\_\_\_

Performance (includes operational measurements) \_\_\_N/A\_\_\_

**Glossary**

| Term      | Description                    |
|-----------|--------------------------------|
| TKO, TOF  | Trunk Offering                 |
| CP, CALLP | Call Process                   |
| FPE       | Feature Processing Environment |
| CM        | Computing Module               |
| IAM       | Initial Address Message        |
| ISUP      | ISDN User Part                 |

| Term  | Description               |
|-------|---------------------------|
| MFC   | Multi Frequency           |
| OFFHK | Off Hook                  |
| ONHK  | On Hook                   |
| OPR   | Operator                  |
| RNG   | Ring                      |
| ACM   | Address Complete Message  |
| FOT   | Forward Operator Transfer |
| RGB   | RinG Back                 |
| CPC   | Calling Party Category    |

### ***Configuration for A00002291***

#### **Hardware and Software Requirements**

There are no special Hardware/Software Requirements.

#### **Initial Configuration**

N/A

#### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

#### **Upgrade Impact**

N/A

#### **Data schema (DS) (CM, MIBS, RDB)**

##### **New/modified tables, MIBs, or Database Schema**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| TRKOPTS        | CHANGED                  | UNCHANGED                          |

##### **Table/MIB/Remote Database Schema information**

**Table Name: TRKOPTS**

**Functional description**

The new trunk option TKO\_FDCP should be assigned to incoming FDCP trunk in the table TRKOPTS. It will allow TKO feature **for specific incoming directions**.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| TRKOPTS                | 0              |                |                       |

**Fields/OIDs****Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry    | Explanation and action                                                                                                                                                          |
|---------|----------------|------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OPTINFO | Changed        | refinement             | TKO_FDCP | The new trunk option <b><i>TKO_FDCP</i></b> should be assigned to incoming FDCP trunk in the table TRKOPTS. It will allow TKO feature <b>for specific incoming directions</b> . |

**Datafill example****New trunk option TKO\_FDCP in table TRKOPTS**

|                        |          |          |  |
|------------------------|----------|----------|--|
| <b>TABLE: TRKOPTS.</b> |          |          |  |
| >                      |          |          |  |
|                        | OPTKEY   | OPTINFO  |  |
| -----                  |          |          |  |
| R2IC                   | TKO_FDCP | TKO_FDCP |  |

**New trunk option TKO\_FDCP in table TRKOPTS****TABLE: TRKOPTS.**

ran 2

|         |                          |                                  |
|---------|--------------------------|----------------------------------|
| TYPE IS | TRKOPTS_OPTINFO_VAR_AREA | MULTIPLE WITH                    |
|         | OPTION                   | TRKOPTS_OPTION REFINEMENTS:      |
|         | {SLOWREL}                | TRKOPTS_OPTINFO_BOOL_AREA        |
|         | {FLEXCLI}                | MULTIPLE WITH                    |
|         | .....                    |                                  |
|         | .....                    |                                  |
|         | .....                    |                                  |
|         | {BWRLSIND}               | TRKOPTS_OPTINFO_BOOL_AREA        |
|         | {FWRLSIND}               | TRKOPTS_OPTINFO_BOOL_AREA        |
|         | {RINGBACK}               | TRKOPTS_OPTINFO_BOOL_AREA        |
|         | <b>{TKO_FDCP}</b>        | <b>TRKOPTS_OPTINFO_BOOL_AREA</b> |

**Table release history update**

N/A

**Supplementary information**

None.

**Translation verification other tools**

Table TRKOPTS does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A



## ***Product = CS2000***

### **A00002365 -- CWR Support over Trunks for Brazil market (Int'l IAW)**

#### ***Functional Description***

This activity adds the support for the Call Waiting Ringback (CWR)<sup>1</sup> service over ETSI ISUP including national variants, SIP-T, IBN7 and R2 trunks for the Brazilian Market.

When a call is made to a subscriber with CWR and Call Waiting Terminating (CWT) enabled, the CWR service provides an indication to the originating line as to the state of the terminating line. If the terminating line is currently engaged in a stable two-port call that is available for call waiting, a distinctive audible ringback is returned to the originating agent. Otherwise standard audible ringback or busy tone is provided.

The CWR feature is already available. A detailed description of the feature CWR is available in the following documents:

- Activity AF1271 (PLS OLDOC3)

This activity focuses on the support for CWR over trunks (ETSI ISUP including national variants, SIP-T, IBN7 and R2) for both TDM and CS2K. This feature enables the support of CWR over trunks if the CWR option is set for the specific trunk types in table ISERVOPT.

As an additional part, a CWR deactivation utility is provided for specific trunk groups. This option provides the possibility to exclude specific trunk groups from the support of CWR.

#### **CWR Option in Table ISERVOPT**

In table ISERVOPT a new option (CWR\_ON\_TRUNK) is introduced to support CWR over specific trunk types. The CWR\_ON\_TRUNK option contains the following trunk types:

- ETSI\_ISUP
- IBN7
- R2

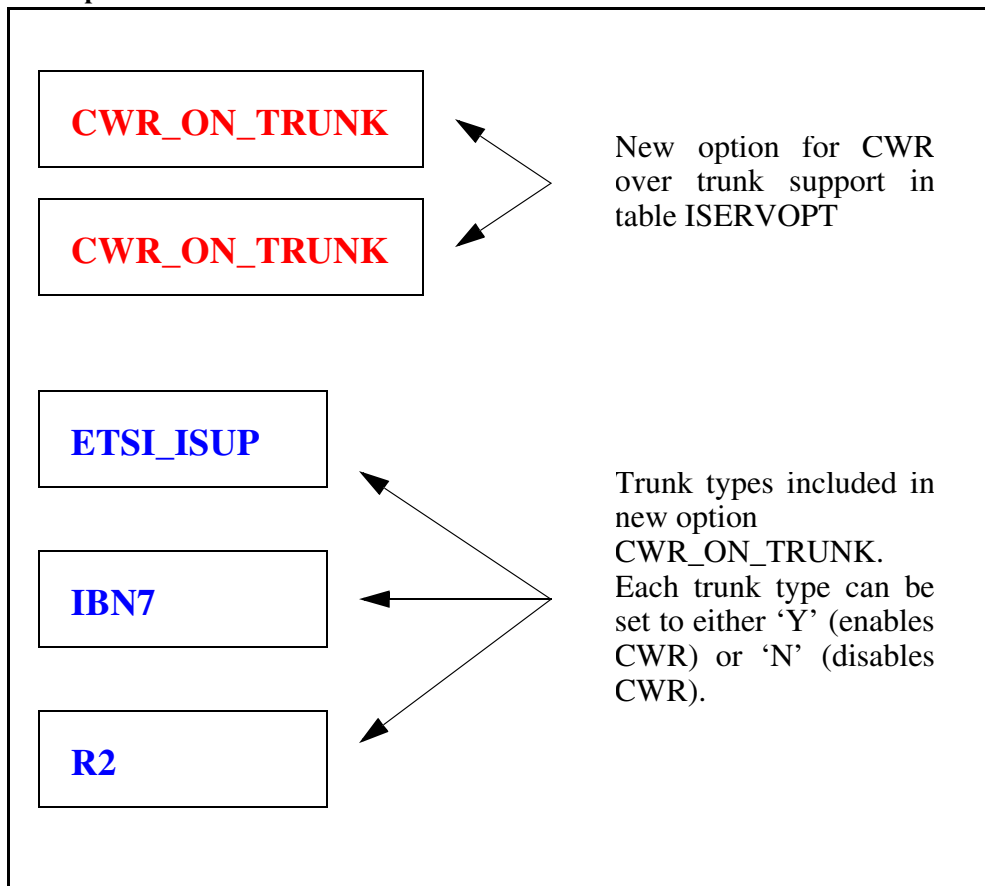
If CWR is desired for a trunk type the corresponding trunk type in option CWR\_ON\_TRUNK needs to be set to 'Y'. All the trunks groups that belong to a trunk type listed above will support CWR as soon as the trunk type is set

---

1. GVT Anatel 252 Compliance

to 'Y' in table ISERVOPT. The following figure shows the structure of the new option CWR\_ON\_TRUNK.

#### New Option in Table ISERVOPT



#### CWR Activation for Trunk Type

The standard audible ringback is the default tone for CWR over trunk that is provided to the originating party. The new option CWR\_ON\_TRUNK needs to be added in table ISERVOPT to allow distinctive audible ringback (CWR tone) for a trunk type. Every trunk type can be set to either 'Y' or 'N' individually. The trunk type in option CWR\_ON\_TRUNK is set to 'Y' if the activation of CWR over this trunk type is desired. The following figure shows an example on how the option CWR\_ON\_TRUNK is added and activated for the trunk types ETSI\_ISUP and R2 in table ISERVOPT.

**Example for Adding and Activating CWR\_ON\_TRUNK**

```
>table iservopt
>pos cwr_on_trunk
TUPLE NOT FOUND
>add cwr_on_trunk
>y
OPTION:
>cwr_on_trunk
ETSI_ISUP:
>y
IBN7:
>n
R2:
>y
TUPLE TO BE ADDED:
    CWR_ON_TRUNK
                                CWR_ON_TRUNK Y N Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
>pos cwr_on_trunk
    CWR_ON_TRUNK
                                CWR_ON_TRUNK Y N Y
>
```

The following figure shows an example of how to change the content of the existing option CWR\_ON\_TRUNK. The trunk type IBN7 will be enabled for CWR over trunk.

**Example for Changing Option CWR\_ON\_TRUNK**

```

>table iservopt
>pos cwr_on_trunk
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y N Y
>cha
>y
OPTION: CWR_ON_TRUNK
>
ETSI_ISUP: Y
>
IBN7: N
>Y
R2: Y
>
TUPLE TO BE CHANGED:
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
>pos cwr_on_trunk
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y Y
>

```

**CWR Deactivation for Trunk Type**

The option CWR\_ON\_TRUNK controls the settings for the trunk types ETSI\_ISUP, IBN7 and R2. Each trunk type is considered individually, therefore it is possible to enable or disable CWR over trunk for each trunk type. If the deactivation of CWR over trunk is desired, the corresponding trunk type is set to 'N' in option CWR\_ON\_TRUNK.

There are two possibilities to disable CWR over trunk for the trunk type:

- Change the setting for a trunk type from 'Y' to 'N':  
In this case only the trunk type that does not require the CWR over trunk ability is disabled. The option CWR\_ON\_TRUNK remains in table ISERVOPT. The deactivation of a trunk type is shown in the following figure.

**Deactivation of a Trunk Type**

```

>table iservopt
>pos cwr_on_trunk
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y Y

>cha
>y
OPTION: CWR_ON_TRUNK
>
ETSI_ISUP: Y
>
IBN7: Y
>
R2: Y
>n
TUPLE TO BE CHANGED:
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
>pos cwr_on_trunk
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y N

>

```

- **Remove the option CWR\_ON\_TRUNK from table ISERVOPT:**  
The CWR over trunk ability is disabled for all the trunk types in option CWR\_ON\_TRUNK if the option is deleted in table ISERVOPT. The deletion of the CWR option is shown in the following figure.

**Deletion of Option CWR\_ON\_TRUNK**

```

>table iservopt
>pos cwr_on_trunk
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y N

>del
>y
TUPLE TO BE DELETED:
      CWR_ON_TRUNK
                                CWR_ON_TRUNK Y Y N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE DELETED
>pos cwr_on_trunk
TUPLE NOT FOUND

>

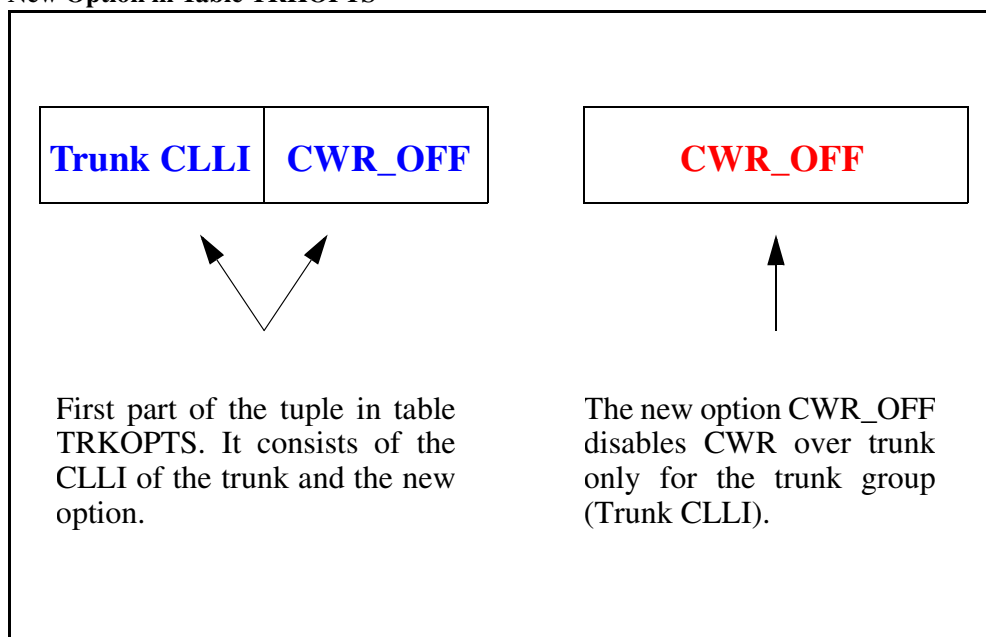
```

## CWR\_OFF Option in Table TRKOPTS

The option CWR\_ON\_TRUNK in table ISERVOPT enables CWR over trunk for the trunk type including all the trunk groups of this trunk type. The new option CWR\_OFF in table TRKOPTS provides the possibility to disable CWR over trunk for a specific trunk group without the need of disabling the whole trunk type.

If the CWR\_OFF option is assigned to a trunk group in table TRKOPTS the CWR over trunk ability is disabled for the trunk group even if the trunk type is enabled for CWR in option CWR\_ON\_TRUNK. The option CWR\_OFF is independent of the settings in option CWR\_ON\_TRUNK in table ISERVOPT. The following figure shows the structure of the new option in table TRKOPTS.

### New Option in Table TRKOPTS



### Deactivation of CWR for Specific Trunk Group

The new option CWR\_OFF is assigned to the trunk group in table TRKOPTS to disable CWR over trunk only for this trunk group. An example of assigning the new option to a trunk group is shown in the following figure.

**Deactivate CWR for Specific Trunk Group**

```

>table trkopts
>add rua501isupv2lp cwr_off
>y
OPTION:
>cwr_off
TUPLE TO BE ADDED:
  RUA501ISUPV2LP          CWR_OFF          CWR_OFF
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
>pos rua501isupv2lp cwr_off
  RUA501ISUPV2LP          CWR_OFF          CWR_OFF
>

```

The CWR\_OFF option in table TRKOPTS disables CWR over trunk for the specific trunk group independent from the settings of option CWR\_ON\_TRUNK in table ISERVOPT.

If the CWR\_OFF option is removed from a trunk group the settings in option CWR\_ON\_TRUNK are considered again for CWR over trunk ability. The following figure shows how the CWR\_OFF option is removed from a trunk.

**Remove CWR\_OFF from Trunk Group**

```

>table trkopts
>pos rua501isupv2lp cwr_off
  RUA501ISUPV2LP          CWR_OFF          CWR_OFF
>del rua501isupv2lp cwr_off cwr_off
>y
TUPLE TO BE DELETED:
  RUA501ISUPV2LP          CWR_OFF          CWR_OFF
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE DELETED
>pos rua501isupv2lp cwr_off
TUPLE NOT FOUND
>

```

**Note:**

There is no explicit relationship or dependency between the settings in table ISERVOPT and TRKOPTS. It is possible to assign the CWR\_OFF option to a trunk group even if the trunk type of the trunk group is disabled in option CWR\_ON\_TRUNK.

## Hardware Requirements or Dependencies

N/A - Refer to “Limitations and restrictions”.

## Software Requirements or Dependencies

N/A - Refer to “Limitations and restrictions”.

## Limitations and restrictions

### TDM Trunks

This activity instructs the PDTC to play distinctive audible ringback (CWR tone) to the originating party. The PDTC must be capable of providing the CWR tone.

The Brazilian toneset, e.g. on the PDTC, supports the CWR tone.

### Succession Trunks

This activity instructs the trunk gateway to play distinctive audible ringback (CWR tone) to the originating party. The gateway must be capable of providing the CWR tone.

### SIP-T Trunks

SIP-T trunks require an APG in order to play distinctive audible ringback (CWR tone) to the originating party. The APG must be capable of providing the CWR tone.

## Interactions

The interactions are unchanged.

Please refer to Activity AF1271 (PLS OLDOC3)

## Applicable customer facing sections

### Fault Management

|      |     |
|------|-----|
| Logs | N/A |
|------|-----|

|        |     |
|--------|-----|
| Alarms | N/A |
|--------|-----|

### Configuration

|             |   |
|-------------|---|
| Data Schema | X |
|-------------|---|

|                |     |
|----------------|-----|
| User Interface | N/A |
|----------------|-----|

|                    |     |
|--------------------|-----|
| Element Management | N/A |
|--------------------|-----|

|          |     |
|----------|-----|
| Security | N/A |
|----------|-----|

|               |     |
|---------------|-----|
| Service Order | N/A |
|---------------|-----|

|                   |     |
|-------------------|-----|
| Office Parameters | N/A |
|-------------------|-----|



Accounting (includes AMA billing)

N/A

Performance (includes operational measurements) N/A

## Glossary

| Term  | Description                                     |
|-------|-------------------------------------------------|
| APG   | Anchor Packet Gateway                           |
| CLLI  | Common Language Location Identifier             |
| CS2K  | Call Server 2000                                |
| CWR   | Call Waiting Ringback                           |
| CWT   | Call Waiting Terminating                        |
| ETSI  | European Telecommunications Standards Institute |
| IBN7  | Integrated Business Network CCS7                |
| ISUP  | ISDN User Part                                  |
| PDTC  | PCM-30 Digital Trunk Controller                 |
| R2    | Regional No.2                                   |
| SIP-T | Session Initiation Protocol for Telephony       |
| TDM   | Time Division Multiplexing                      |

## Appendix for A00002365

The following table shows an abstract of the translation of “GVT Anatel 252 Compliance”. It contains the characteristics of the CWT and CWR signals.

### Abstract of GVT Anatel 252 Compliance

| Signal Identification                | Visual Form | Audible Form        |                |              |                |              |
|--------------------------------------|-------------|---------------------|----------------|--------------|----------------|--------------|
|                                      |             | Periods, Continuous |                |              |                | Frequency    |
|                                      |             | Presence            | Absence        | Presence     | Absence        |              |
| Call Waiting Alerting Signal         | Calling     | 60 +- 06 ms         | 250 +- 25 ms   | 60 +- 06 ms  | 9000 +- 900 ms | 425 +- 25 Hz |
| Call Waiting Alerting Control Signal | Waiting     | 400 +- 40 ms        | 5000 +- 500 ms | 400 +- 40 ms | 5000 +- 500 ms | 425 +- 25 Hz |

## Configuration for A00002365

### Data schema (DS) (CM, MIBS, RDB)

#### New/modified tables, MIBs, or Database Schema

##### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | changed                  | unchanged                          |
| TRKOPTS        | changed                  | unchanged                          |

#### Table information

##### Name: ISERVOPT

International Service Option

##### Functional description

N/A

##### Usage sequence and implications (CM Only)

Tables must be datafilled in the following sequence:

There is no requirement to datafill tables in a specific order.

##### Size

N/A

##### Fields/OIDs

The following table lists fields/OIDs for ISERVOPT.

#### Table field descriptions

| Field    | New or Changed | Subfield or refinement | Entry        | Explanation and action                                                                                                  |
|----------|----------------|------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------|
| SOPTSKEY | Changed        | -                      | CWR_ON_TRUNK | The new option CWR_ON_TRUNK is added to table ISERVOPT.                                                                 |
| SOPTSVAR | New            | Option                 | CWR_ON_TRUNK | The option CWR_ON_TRUNK contains trunk types ETSI_ISUP, IBN7 and R2 that can be enabled or disabled for CWR over trunk. |

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry | Explanation and action                                                              |
|----------|----------------|------------------------|-------|-------------------------------------------------------------------------------------|
| SOPTSVAR | New            | ETSI_ISUP              | Y, N  | The subfield ETSI_ISUP can be set to Y or N. Y enables and N disables CWR on trunk. |
| SOPTSVAR | New            | IBN7                   | Y, N  | The subfield IBN7 can be set to Y or N. Y enables and N disables CWR on trunk.      |
| SOPTSVAR | New            | R2                     | Y, N  | The subfield R2 can be set to Y or N. Y enables and N disables CWR on trunk.        |

The following figure shows the list of table ISERVOPT including the new option CWR\_ON\_TRUNK.

**List of CWR\_ON\_TRUNK in Table ISERVOPT**

```

>table iservopt
TABLE: ISERVOPT
>ran
  1 SOPTSKEY          SERVOPTS_KEY
  2 SOPTSVAR          SERVOPTS_VAR_AREA
LOGICAL TUPLE TYPE: SERVOPTS_LOG_TUPLE
>ran 1
  1 SOPTSKEY          SERVOPTS_KEY
TYPE IS SERVOPTS_KEY MULTIPLE WITH
      SOPTNAME        SERVOPTSKEY
>ran 2
  2 SOPTSVAR          SERVOPTS_VAR_AREA
TYPE IS SERVOPTS_VAR_AREA MULTIPLE WITH
      OPTION           SERVOPTSKEY REFINEMENTS:
...
      {CWR_ON_TRUNK} MULTIPLE WITH
      ETSI_ISUP {N,Y}
      IBN7 {N,Y}
      R2 {N,Y}
...

```

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Example for Adding and Activating CWR\_ON\_TRUNK**

```

>table iservopt
>pos cwr_on_trunk
TUPLE NOT FOUND
>add cwr_on_trunk
>y
OPTION:
>cwr_on_trunk
ETSI_ISUP:
>y
IBN7:
>n
R2:
>y
TUPLE TO BE ADDED:
CWR_ON_TRUNK
CWR_ON_TRUNK Y N Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
>pos cwr_on_trunk
CWR_ON_TRUNK
CWR_ON_TRUNK Y N Y

>

```

**Table release history update**

Option CWR\_ON\_TRUNK added to field SOPTSVAR.

Option contains the subfields ETSI\_ISUP, ISUP and R2.

Entries for the subfields are Y or N.

**Supplementary information**

N/A

**Translation verification other tools**

N/A

**Table information****Name: TRKOPTS**

Trunk Options

**Functional description**

N/A

### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

### Size

N/A

### Fields/OIDs

The following table lists fields/OIDs for TRKOPTS.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry   | Explanation and action                                                                |
|---------|----------------|------------------------|---------|---------------------------------------------------------------------------------------|
| OPTINFO | Changed        | -                      | CWR_OFF | CWR_OFF option is assigned to a trunk group if CWR over trunk needs to be deactivated |
| OPTINFO | New            | -                      | CWR_OFF | CWR_OFF option is assigned to a trunk group if CWR over trunk needs to be deactivated |

### Datafill example

The following example shows sample datafill for table TRKOPTS.

Deactivate CWR for Specific Trunk Group

```

>table trkopts
>add rua501isupv2lp cwr_off
>y
OPTION:
>cwr_off
TUPLE TO BE ADDED:
  RUA501ISUPV2LP CWR_OFF
                                CWR_OFF
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
>pos rua501isupv2lp cwr_off
  RUA501ISUPV2LP          CWR_OFF
                                CWR_OFF
>

```

### Table release history update

Option CWR\_OFF added to field OPTINFO.

### Supplementary information

N/A

**Translation verification other tools**

N/A

***Product = CS 2000*****A00002367 -- BRI Preset Conference Base (Succession on DMS)*****Functional Description***

This activity allows an ETSI BRI (p-to-mp) station or ETSI ISUP V2 trunk to set up a preset conference with up to 35 conferees by dialling a specific directory number. This invokes simultaneous ringing of preselected conference members. The originator of a preset conference (served user) which has AFC & HOLD line options, is able to add-on additional local conferees once the conference is established.

This activity is based on the existing IBN Preset Conference and uses same datafill requirements and restrictions for IBN Preset conference. See the appendix A- section for IBN preset conference background.

In additional, this feature also provides supporting IEs related to CGN, GAP, MLPP, UII to be sent to conferees.

**Preset Conference Call establishment and termination****Preconditions**

The datafill of existing IBN preset preconf table PRECONF meets the BRI preset Conference requirements.

According to the requirements of spec 'SIM: PRCONF\_BRI issue3' related to conference call establish, add-on functionality and takedown process, the existing table PRECONF should be datafilled as follows:

- BRI Preset Conference should be datafilled to be allowed for the customer group. And the preset conference originator (served user) is a member of the preset conference's customer group. Conferees does not need to belong to the same customer group.
- ADDON bool must be set to 'yes' in the existing table PRECONF. Only originator can add on conferees.
- In order to enable add-on functionality, line options AFC and HOLD should be assigned to preset conference originator via Servord first.
- The conferees are specified in advance in a data table. According to the existing feature AF2014 -Preset conference (large), already allows 50

conferee numbers can be assigned to each preset conference DN (Directory Number). In other words, the preset conference can have up to 50 conferees. This includes the originator, all preset conferees and all add on conferees.

- Maximum 64 preset conference DN can be datafilled per office.
- The preset conference may be datafilled up to 14 digits and conferee numbers may be a string of up to 30 digits.
- It is required that when the first conferee answers, the conference begins. In order to provide this functionality, the field IMMSTART of PRECONF should be datafilled as 'yes.'
- The field ORIGCONT should be set to 'yes' to allow that the served user is in control of the conference. when he goes on-hook, the conference is taken down even if there are conferees still on the bridge.
- Associated with each conferee DN will be timeout interval of 15 to 60 seconds and an optional one alternate DN. If the conferee does not answer within the timeout interval, the call attempt ends. But if an alternate DN is datafilled, two call attempts are made on primary address with no answer, then the call is routed to alternate address. Two call attempts will be also directed to the alternate address

### Example of BRI Preset Conference

Table "PRECONF Datafill example" on page 100 gives the example of BRI preset conference datafill. In this datafill example;

- a. 7835599 is the predefined preset conference DN. The customer group of the originator should be 'CONF6C' option in the table CUSTENG to be activated conference. Up to 64 preset conference DN can be datafilled in the table PRECONF.
- b. 7831016 and 7831002 are the conferees for preset conference DN by index 0. 35 conferees can be datafilled for preset conference DN (7835599). First conferee has the alternate address. Second conferee has no alternate address. The timeouts interval is 15 seconds for both conferees and its alternate address.

-If the conferee 7831002 does not answer within the timeout interval, the call attempt ends.

-If the conferee 7831016 does not answer within two trials, two call attempts will be directed to alternate address.

For the more datafill details for PRECONF table, please see Appendix A.

#### PRECONF Datafill example

| PCNFKEY CONFADDR PCNFVAR OPTIONS |   |            |   |         |          |    |   |   |   |   |   |    |
|----------------------------------|---|------------|---|---------|----------|----|---|---|---|---|---|----|
| 0                                | 0 | 1027835599 | D | IBN     | CUST783A | 0  | Y | N | Y | N | N | \$ |
| 0                                | 1 | 7831016    | A | 7831003 | 15       | \$ |   |   |   |   |   |    |
| 0                                | 2 | 7831002    | C | 15      | \$       |    |   |   |   |   |   |    |

#### CUSTENG datafill example

| CUSTNAME ADNUM NONCOS NOIBNTMT CONSOLES DOMAIN GROUPID |    |     |    |   |         |     |   |        |     |    |  |
|--------------------------------------------------------|----|-----|----|---|---------|-----|---|--------|-----|----|--|
| CUST783A                                               | 22 | 256 | 63 | Y | PRIVATE | 105 | ( | CONF6C | 12) | \$ |  |

#### Preset conference initiation

A served user initiates one preset conference (PRECONF) by dialling a predefined DN, which is associated with conference. The directory number is recognized as a request for a preset conference. Translations check the originator's data against the data of preset conference DN. A check is made if required number of six-port conference bridges can be seized for the conference and the conference is not already in use. If call is valid, the originator will hear audible ringing while calls are originated to all the addresses stored for the desired preset conference. If invalid, the originator will be routed to treatment.

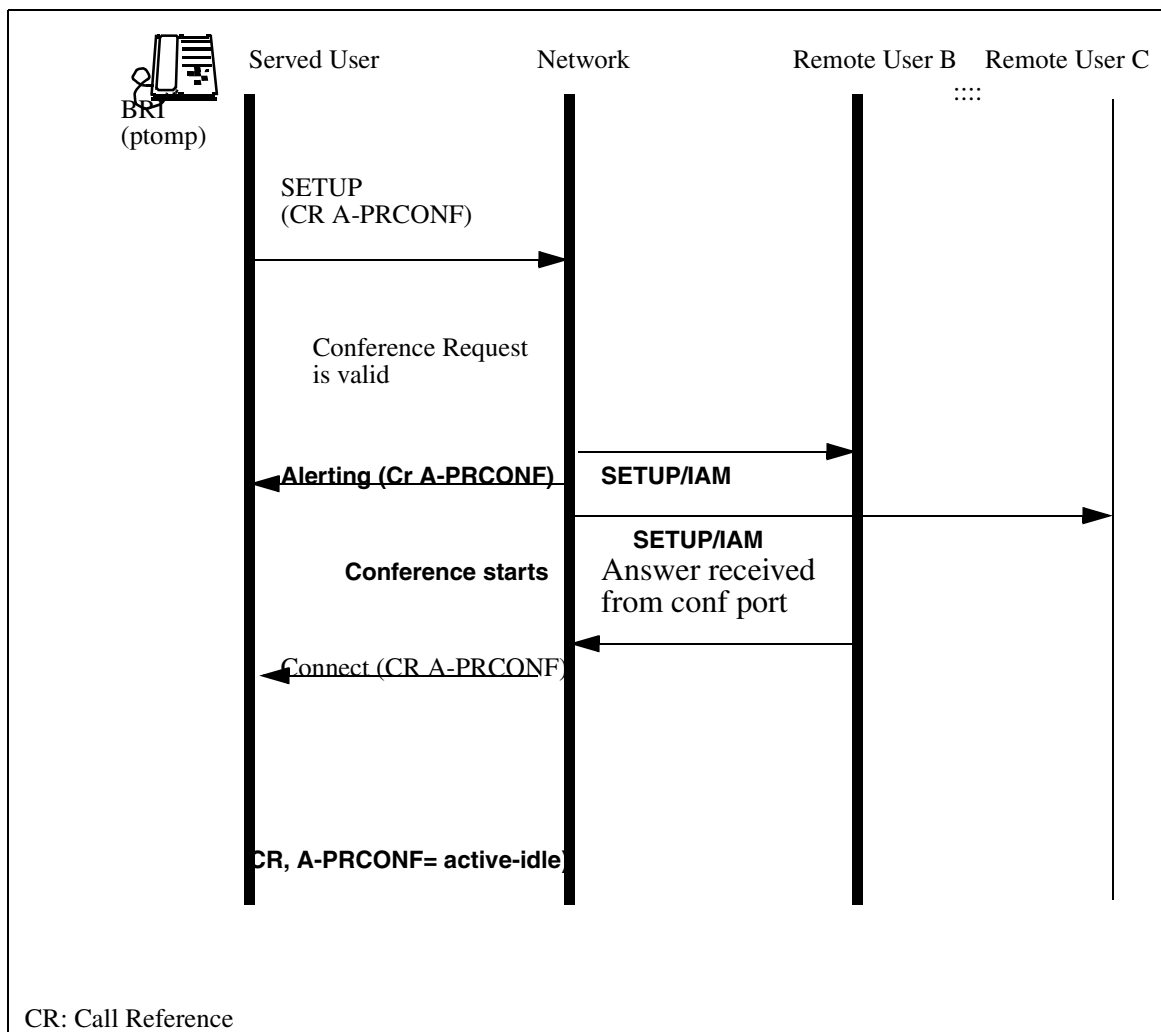
Dialling PRECONF DN invokes simultaneous ringing of the preselected conference members.

There could be more than one served user for a conference, when an attempt is made to originate a conference which has already been initiated, the second served user will be routed to busy tone.

The served user's directory number (DN) can be part of preset conference list of numbers. But originator can not be called as conferee for this preset conference. In other words, if the originator is a predefined preset conferee, we do not call this conferee unless the call is over trunk call.

The conference starts as soon as the first conferee answers (IMMSTART = Y in PRECONF). In this case, the answer will cause the audible ringing to the originator to stop and the conference to begin. Attempts to complete the calls to unanswered conferees will continue, with no audible ringing to originator.



**Preset Conference Initiation****Add-on functionality**

The originator of a preset conference can add on conferees as local call, once the preset conference is established. In order to provide this functionality, the field ADDON of the table PRECONF should be set to 'yes' and line options AFC and HOLD. Once the maximum number of conferees is reached, no more conferees may be added. The add-on functionality is based on the existing ETSI BRI 6-part conference

**Coding Requirements for DSS1**

All components (invoke, return result, return error and reject) is included within a Facility information element. Facility information element can be conveyed in any appropriate message. Setup, Connect, Facility and Disconnect messages are used within this specification.

**ETSI -Q.931 FACILITY Information Element (FIE) with a Service Component embedded.**

| FACILITY IE                 |   |   |   |   |   |   |   |         |
|-----------------------------|---|---|---|---|---|---|---|---------|
| 0                           | 0 | 0 | 1 | 1 | 1 | 0 | 0 | Octet 1 |
| Length of FACILITY contents |   |   |   |   |   |   |   | 2       |
| 1<br>Ext.                   | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3       |
| Remote Operations Protocol  |   |   |   |   |   |   |   |         |
| Component(s)                |   |   |   |   |   |   |   | 4..n    |

Table “Definition of Operations and Errors for PRCONF” on page 103 shows the definition of operations and errors required for the add-on functionality of ETSI BRI preset conference using ASN.1.

**Definition of Operations and Errors for PRCONF**

```

Conference-Add-On-Operations { ccitt identified organization etsi (0) 185
operations - and- types (1) }

DEFINITIONS EXPLICIT TAGS::=
BEGIN

EXPORTS
    BeginCONF, AddCONF,

    IllConferenceId, NumberOfPartiesExceeded,
    NotAllowed, PartyId, ConferenceId, ConfSize;

IMPORTS
    OPERATION,
    ERROR
    FROM Remote-Operation-Notation
        { joint-iso-ccitt remote- operations(4) notation(0) }

    notAvailable,
    invalidCallState,
    supplementaryServiceInteractionNotAllowed
    FROM General-Error-List
        { ccitt identified organization etsi (0) 196 general-errors (2)};

BeginCONF(40)::=
    OPERATION
    ARGUMENT
    RESULT
    ERRORS
    {
        ConfSize--optional
        SEQUENCE {
            ConferenceId,
            PartyId OPTIONAL }
        { notAvailable,
        supplemntaryServiceInteractionNotAllowed,
        invalidCallState }
    }

AddConf(41)::=
    OPERATION
    ARGUMENT
    RESULT
    ERRORS
    {
        ConferenceId
        PartyId
        { IllConferenceId,
        NumberOfPartiesExceeded,
        NotAllowed,
        supplementaryServiceInteractionNotAllowed,
        InvalidCallState }
    }

IllConferenceID(28)::=ERROR
NumberOfPartiesExceeded(30) ::=ERROR
Notallowed(32)::=ERROR

PartyId, ConferenceID,ConfSize ::=INTEGER(0..127)

```

The served user sends a Facility message with the call reference of the existing call and a facility information element including beginCONF-invoke component. This component may contain a ConfSize parameter, if not the conference size sets to a network dependent value by the network. The beginCONF-return-result component sent to the user includes a ConferenceId and a PartyId parameter which is used to identify the remote user.

To add a new party, the connection to the conference bridge can be either in the (Active, Idle) state or in the (Active, Held) state and the connection to the party to be added can either be in (Active, Idle) state or in the (Active, Held) state. Which means that one of the connections should be held and other should be in (active, idle) state. A Facility message with the call reference of the call to be added and an Add-CONF-invoke component including conferenceId parameter is sent by the user to the network. Then the network sends a DISCONNECT message with AddCONF-return-result component including PartyId parameter which identifies the added party.

CRx, CRy: Call Reference used-

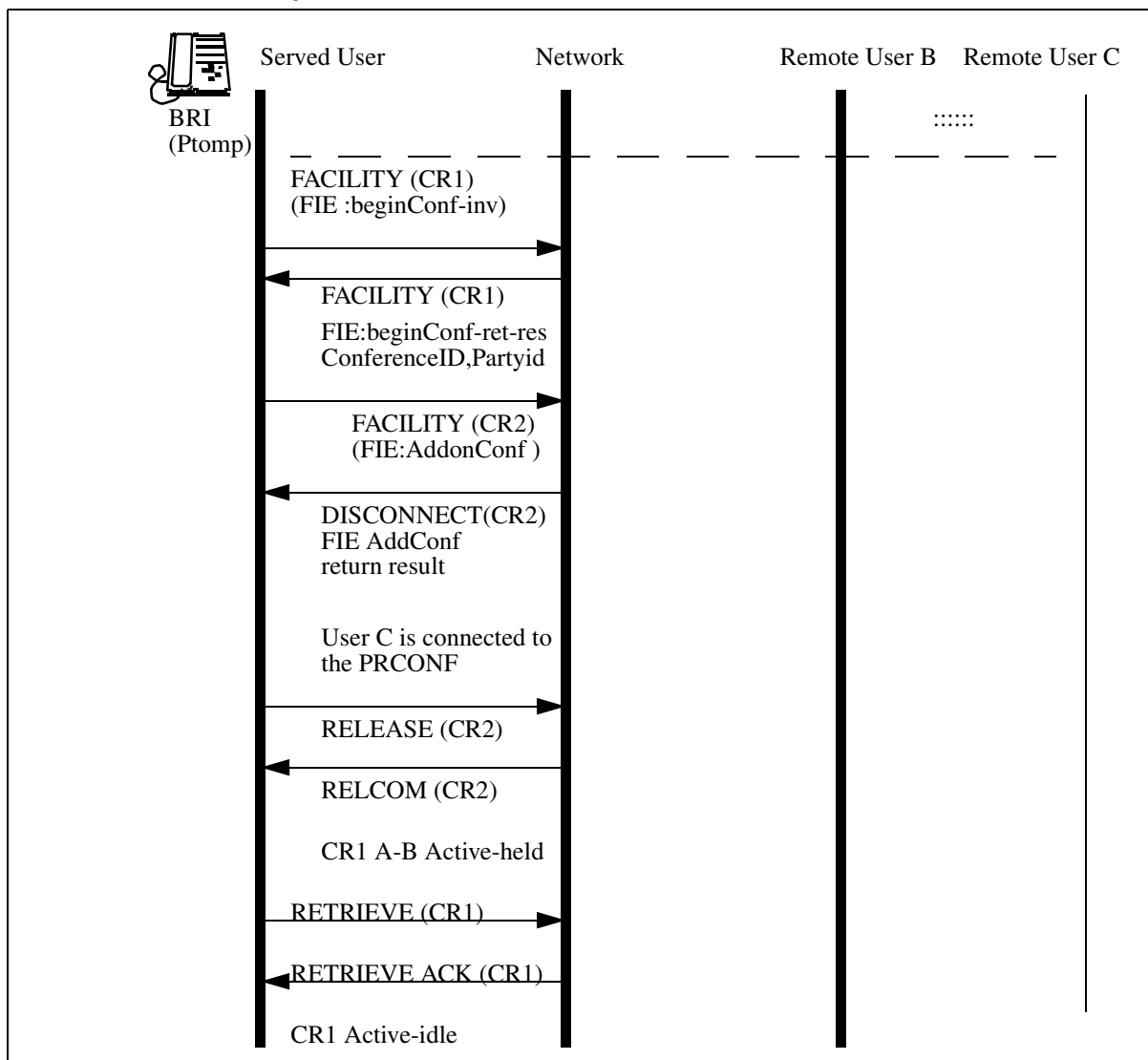
A-B :call between user A and PRCONF

A-C :call between user A and user C

FIE:Facility information element

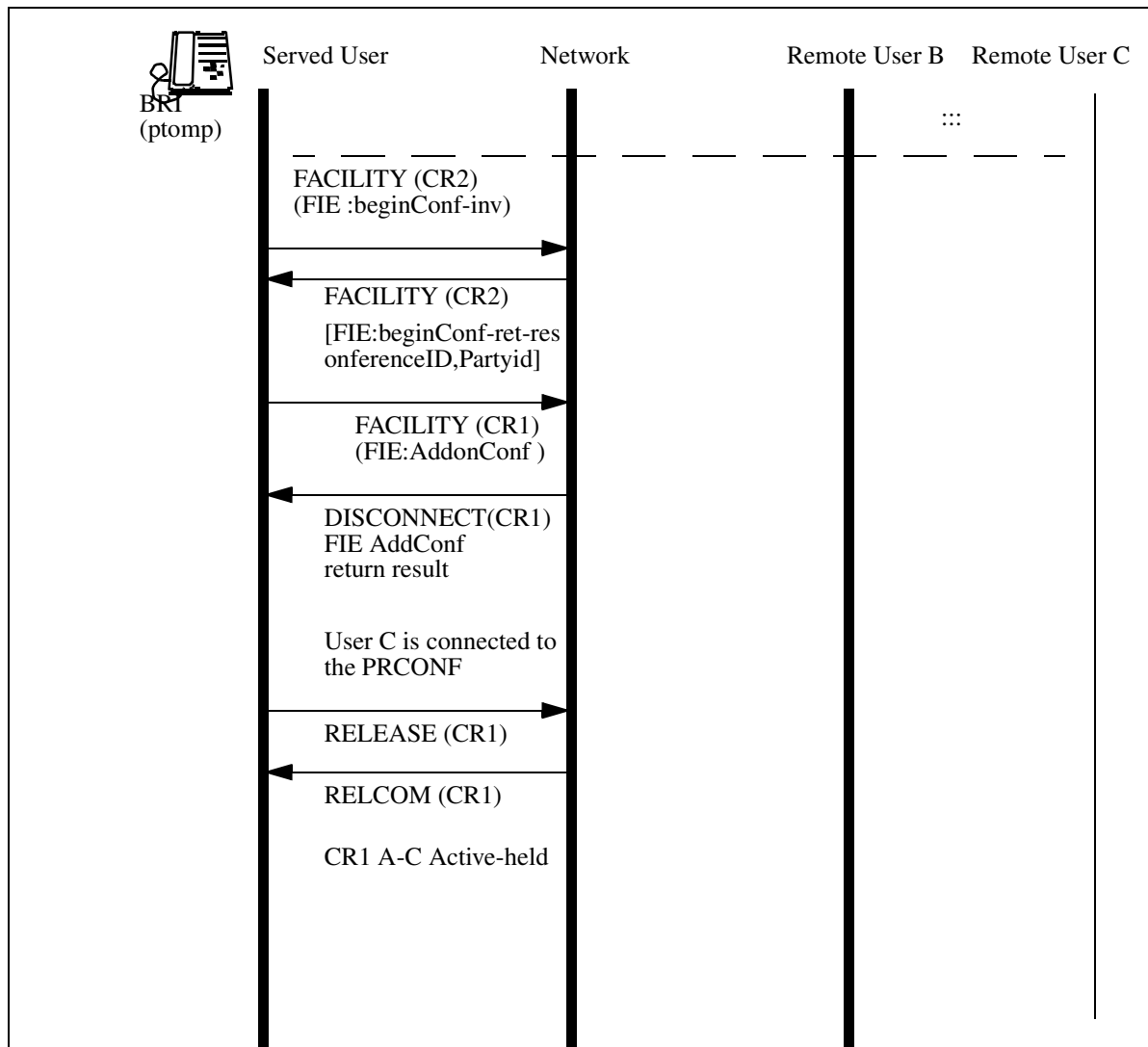
CR1, A-B (Active, Held)

CR2, A-C (Active, Idle)

**Add-on conferee, when preset conference is in held state**

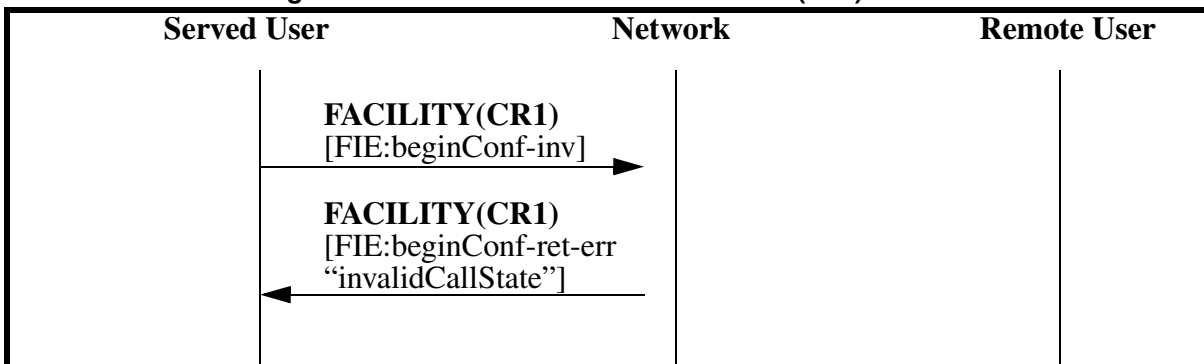
CR1, A-C (active-held)

CR2, A-B (active, idle)

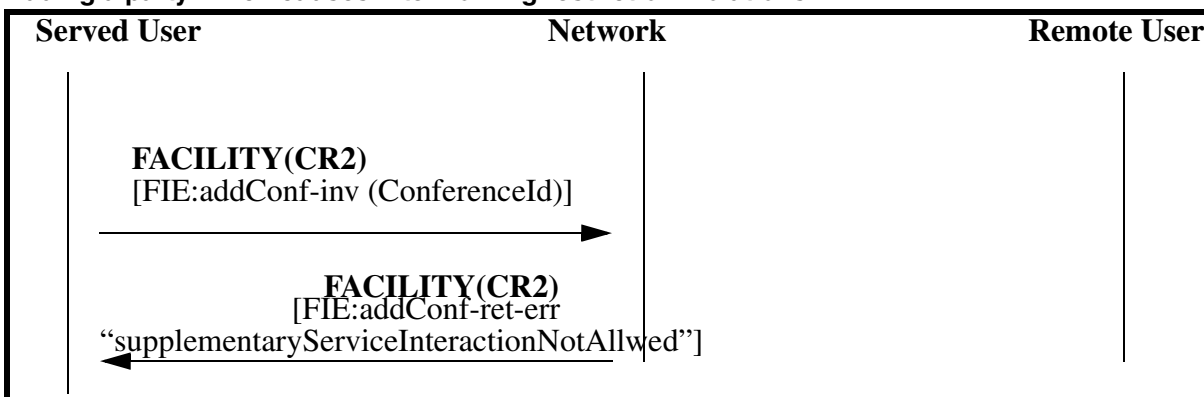
**Add-on conferee, when preset conference is active**

### Unsuccessful cases

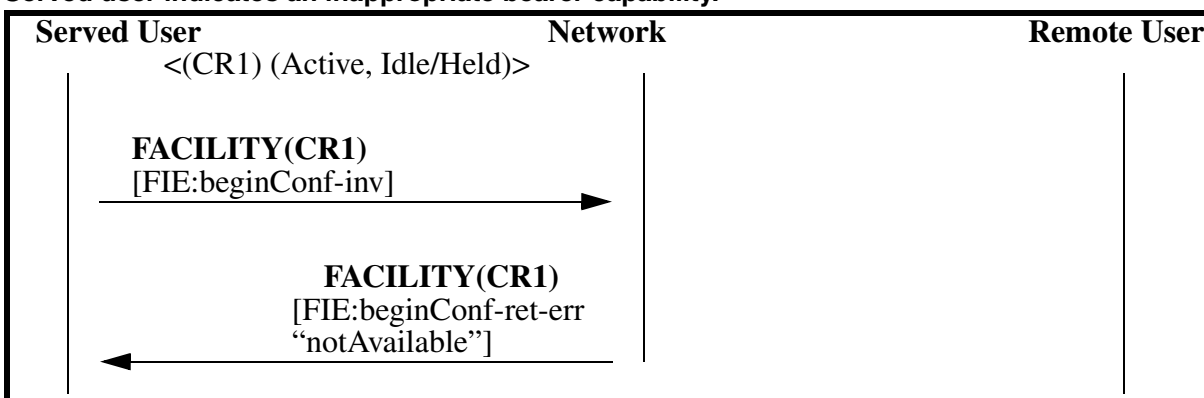
Network receives a BeginCONF-inv in a state other then Active(N10)

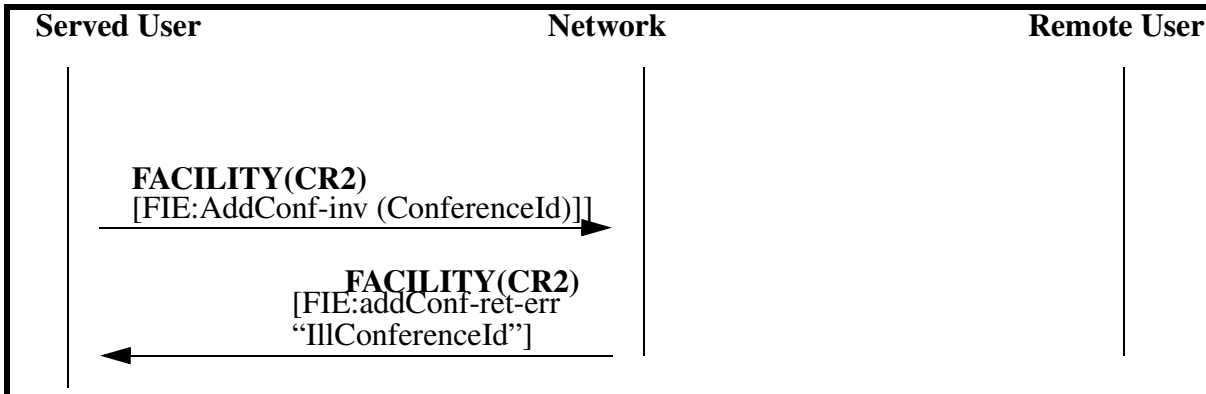
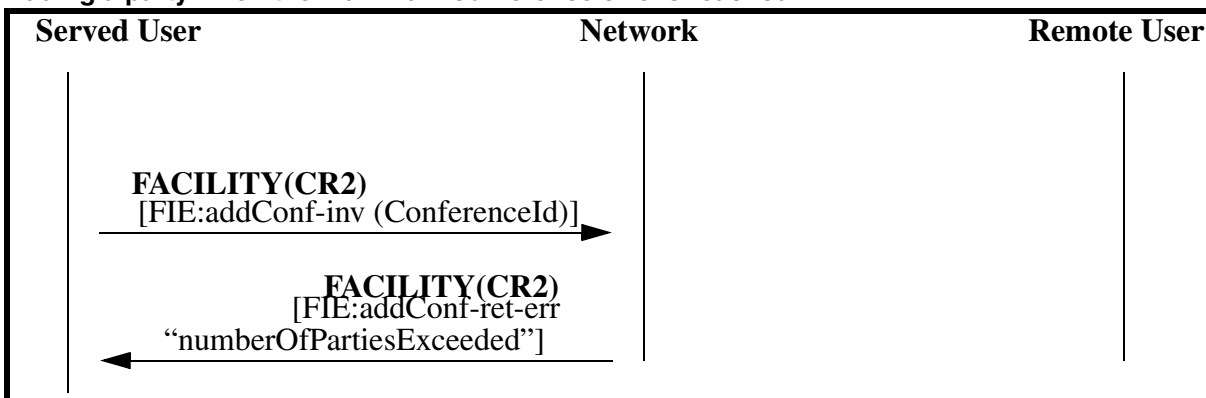


Adding a party which causes interworking restriction violations



Served user indicates an inappropriate bearer capability.



**ConferenceId used is not associated with a conference known to the network****Adding a party when the maximum conference size is reached****BRI Facility information Element formats****BEGINCONFinvoke**

| Hex Value                                                     | Description                 |
|---------------------------------------------------------------|-----------------------------|
| 1C                                                            | Facility                    |
| 0B                                                            | Facility Length             |
| 91                                                            | Supplementary Service Spare |
| A1                                                            | Invoke Operation            |
| 09<br>(depending on the length of<br>invoke identifier field) | Invoke Length               |
| 02 - Universal Integer                                        | Invoke ID Tag               |



**BEGINCONFinvoke**

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| 01                                     | Invoke ID Length                         |
| A unique identifier for the identifier | Invoke Identifier                        |
| 02 - Universal Integer                 | Operation Tag                            |
| 01                                     | Operation Length                         |
| 28 - BCONF                             | Operation Identifier                     |
| 02 - Universal Integer                 | Parameters Tag                           |
| 01                                     | Parameters Length                        |
| 05                                     | Parameters identifier (ConSize) optional |

Return Result component of the BEGINCONF operation is sent by the network to the terminal to inform the terminal.

**BEGINCONF Request.ReturnResult**

| Hex Value                                                             | Description                 |
|-----------------------------------------------------------------------|-----------------------------|
| 1C                                                                    | Facility                    |
| 11                                                                    | Facility Length             |
| 91                                                                    | Supplementary Service Spare |
| A2                                                                    | Return Result Operation     |
| 0E<br>(depending on the length of invoke identifier field)            | Return Result Length        |
| 02 - Universal Integer                                                | Invoke ID Tag               |
| 01<br>(depending on the length of invoke identifier field)            | Invoke ID Length            |
| Invoke identifier from the previous BEGINCONF FAC IE Invoke component | Invoke ID                   |
| 30 - Universal Sequence                                               | Opcode and Param Tag        |
| 09                                                                    | Sequence Length             |
| 02 - Universal Integer                                                | --- Opcode Tag              |
| 01                                                                    | --- Opcode Length           |
| 28 - BCONF                                                            | --- Opcode                  |

**BEGINCONF Request.ReturnResult**

|                        |                          |
|------------------------|--------------------------|
| 02 - Universal Integer | --- Parameter Tag        |
| 01                     | --- Parameter Length     |
| 00 -Conference id-     | --- Parameter Identifier |
| 02 - Universal Integer | --- Parameter Tag        |
| 01                     | --- Parameter Length     |
| 7F Partyid (optional)  | --- Parameter Identifier |

Return Error component of the BEGINCONF operation is sent by the network to the terminal to inform the terminal about any problems.

**BEGINCONF ReturnError**

| Hex Value                                                             | Description                 |
|-----------------------------------------------------------------------|-----------------------------|
| 1C                                                                    | Facility                    |
| 09                                                                    | Facility Length             |
| 91                                                                    | Supplementary Service Spare |
| A3                                                                    | Return Error Operation      |
| 06                                                                    | Return Error Length         |
| 02 - Universal Integer                                                | Invoke ID Tag               |
| 01                                                                    | Invoke ID Length            |
| Invoke identifier from the previous BEGINCONF FAC IE Invoke component | Invoke ID                   |
| 02 - Universal Integer                                                | Error Value Tag             |
| 01                                                                    | Error Value Length          |
| NotSubscribed<br>Not available<br>invalid callstate                   | Error Value                 |

Invoke component of the ADDCONF operation is sent by the network to the terminal.

#### **ADDCONF.Invoke**

| <b>Hex Value</b>                      | <b>Description</b>          |
|---------------------------------------|-----------------------------|
| 1C                                    | Facility                    |
| 0B                                    | Facility Length             |
| 91                                    | Supplementary Service Spare |
| A1                                    | Invoke Operation            |
| 09                                    | Invoke Length               |
| 02 - Universal Integer                | Invoke ID Tag               |
| 01                                    | Invoke ID Length            |
| A unique identifier for the operation | Invoke Identifier           |
| 02 - Universal Integer                | Operation Tag               |
| 01                                    | Operation Length            |
| 29 -ADDCONF                           | Operation Identifier        |
| 02 - Universal integer                | Parameters Tag              |
| 01                                    | Parameters Length           |
| 01 -Confid                            | Parameters Identifier       |

Return Result component of the ADDCONF operation is sent by the network to the terminal in DISCONNECT message to inform the terminal about the result of the ADDCONF service invocation.

#### **ADDCONF Request.ReturnResult in DISC message**

| <b>Hex Value</b>       | <b>Description</b>          |
|------------------------|-----------------------------|
| 1C                     | Facility                    |
| F                      | Facility Length             |
| 91                     | Supplementary Service Spare |
| A2                     | Return Result Operation     |
| 0C                     | Return Result Length        |
| 02 - Universal Integer | Invoke ID Tag               |

**ADDCONF Request.ReturnResult in DISC message**

|                                                                     |                          |
|---------------------------------------------------------------------|--------------------------|
| 01<br>(depending on the length of invoke identifier field)          | Invoke ID Length         |
| Invoke identifier from the previous ADDCONF FAC IE Invoke component | Invoke ID                |
| 30 - Universal Sequence                                             | Opcode and Param Tag     |
| 07                                                                  | Sequence Length          |
| 02 - Universal Integer                                              | --- Opcode Tag           |
| 01                                                                  | --- Opcode Length        |
| 29 -ADDCONF                                                         | --- Opcode               |
| 02 - Universal Integer                                              | --- Parameter Tag        |
| 02                                                                  | --- Parameter Length     |
| 00 Party id-                                                        | --- Parameter Identifier |
| 08 -party id                                                        |                          |

Return Error component of the ADDCONF operation is sent by the network to the terminal to inform the terminal about any problems.

**ADDCONF ReturnError**

| Hex Value                                                           | Description                 |
|---------------------------------------------------------------------|-----------------------------|
| 1C                                                                  | Facility                    |
| 09                                                                  | Facility Length             |
| 91                                                                  | Supplementary Service Spare |
| A3                                                                  | Return Error Operation      |
| 06                                                                  | Return Error Length         |
| 02 - Universal Integer                                              | Invoke ID Tag               |
| 01                                                                  | Invoke ID Length            |
| Invoke identifier from the previous ADDCONF FAC IE Invoke component | Invoke ID                   |
| 02 - Universal Integer                                              | Error Value Tag             |
| 01                                                                  | Error Value Length          |

**ADDCONF ReturnError**

| Number of parties exceeded                    | Error Value |
|-----------------------------------------------|-------------|
| Not allowed                                   |             |
| supplementary service interaction not allowed |             |
| invalid callstate                             |             |

**Preset Call Termination**

According to the datafill (ORIGCONT field is set to yes), the originator is in control of conference. In this case when he goes on-hook, the conference is taken down, even if there are conferees are still on the bridge.

**Supporting Information Elements**

If information elements (IEs) explained below, is preset in the SETUP message which is sent by originator of preset conference, it is required that these IEs are included in SETUP/IAM messages to all conferees.

The following IEs are supported by this activity:

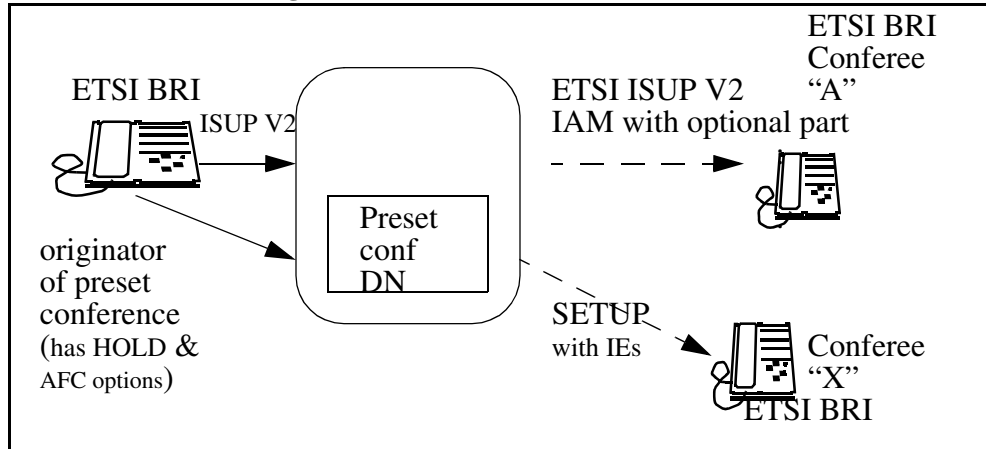
- 1 Calling Number (CGN) IE
- 2 Generic Address Parameter (GAP) IE

**Note:** NOSCREEN should be datafilled for origination in LTDEF table. And CGN IE should be exist in SETUP message sent by originator.

- 3 Multi Level Precedence Preemption (MLPP) IE
- 4 User to User Implicit (UUI) IE

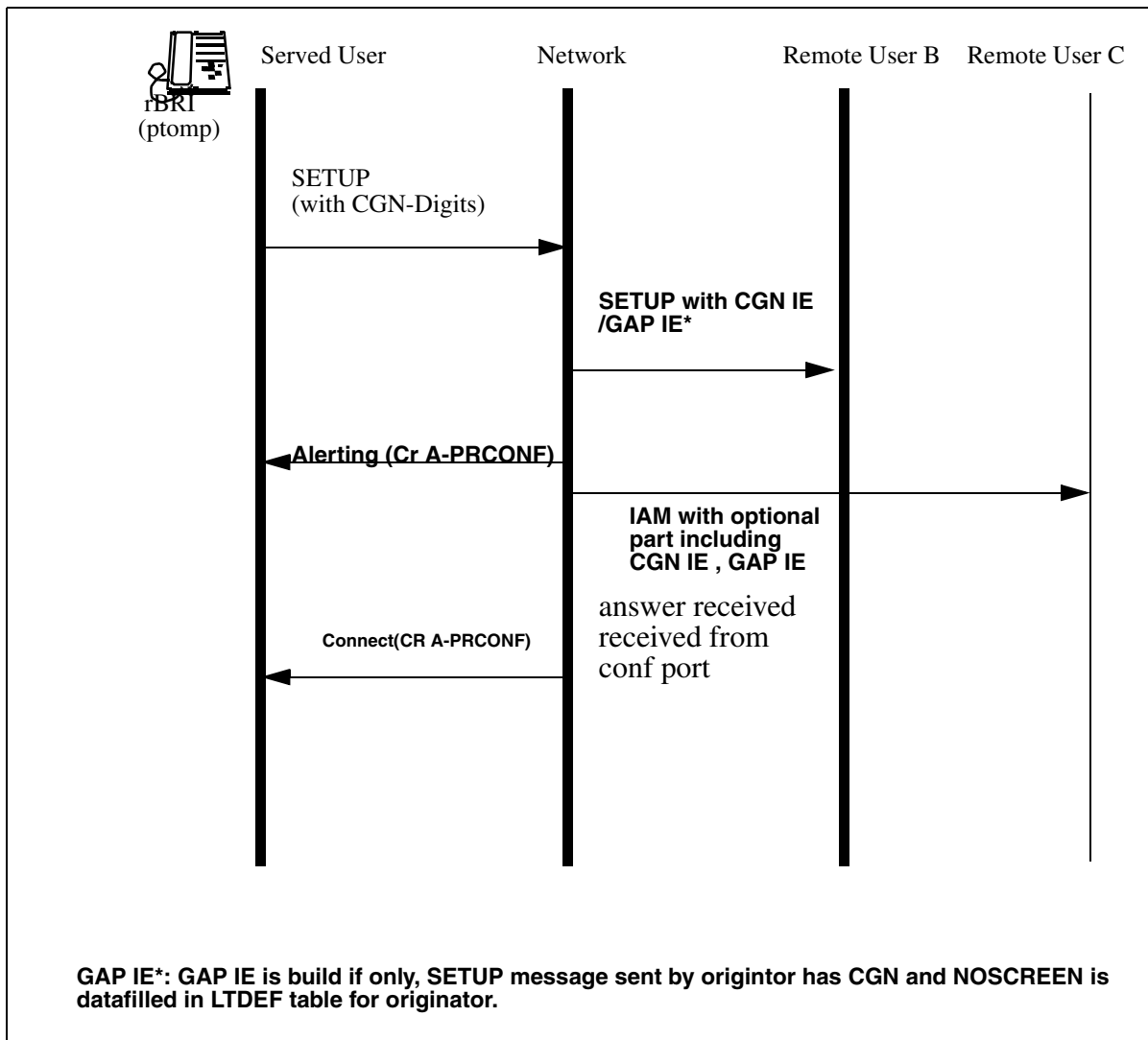
Mapping of the IEs to conferees are supported for the following interworkings:

- ETSI BRI (ptomp)-CONF port- ETSI BRI(ptomp),
- ETSI BRI (ptomp)- CONF port-ETSI ISUP V2,
- ETSI ISUP V2-CONF port- ETSI BRI (ptomp) ,
- ETSI ISUP V2-CONF port-ETSI ISUP V2

**Functional Behavior Diagram****CGN IE and GAP IE**

The purpose of the calling party number information element is to identify the origin of a call. This information element may be present in the SETUP message transmitted by the originator to network and in the SETUP message transmitted by the network to conferees. Calling party number field in the SETUP message which is sent from originator may be either actual network number or presentation number (GAP IE is available when NOSCREEN datafill is entered) that the originator wishes to display. In other words, the user is allowed to send any CGN to the switch and the switch does not screen this CGN and does not override it with the provisioned DN. (NOSCREEN datafill is not required for incoming ISUP)

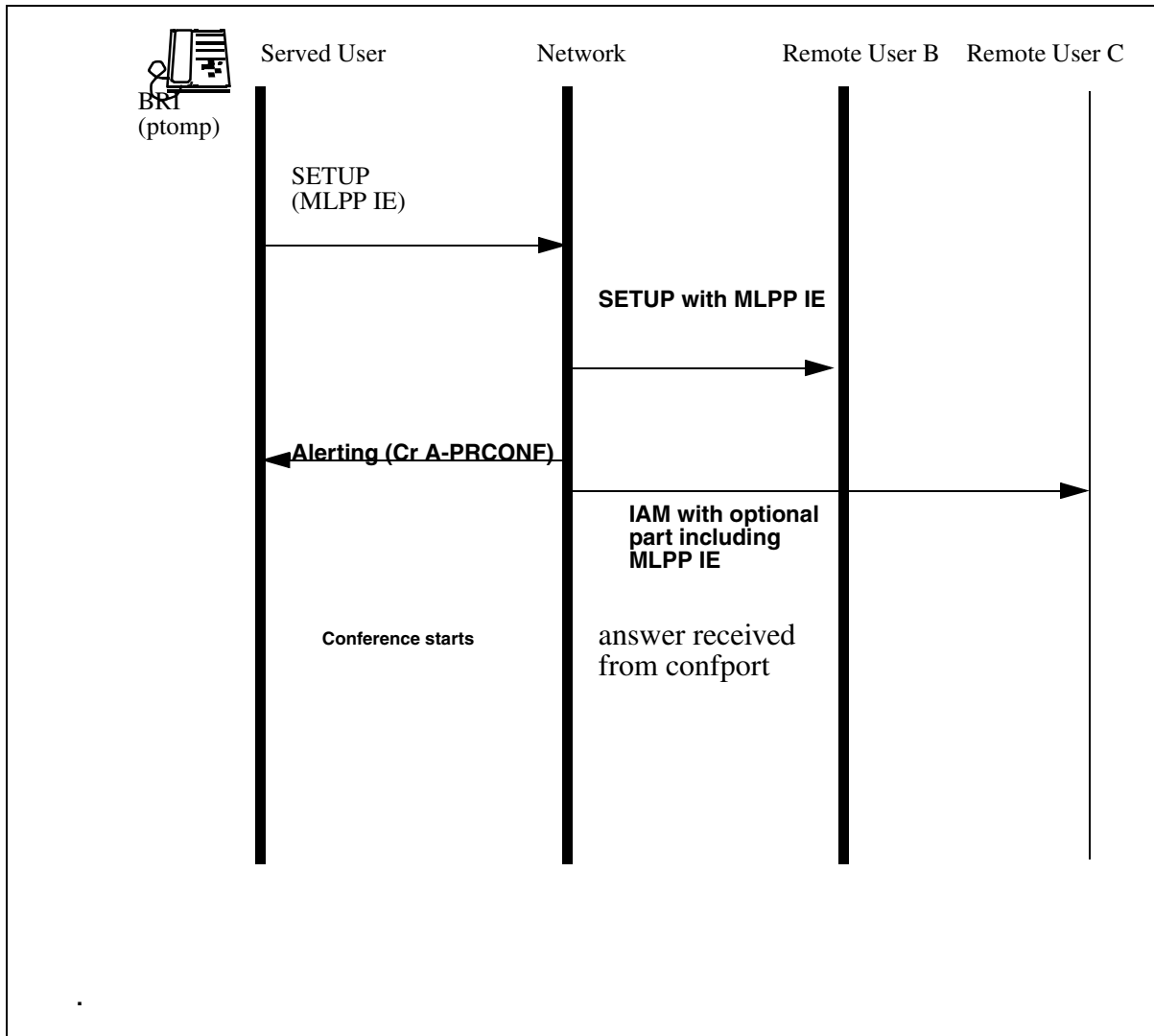
According to spec SIM.PRCONF\_BRI issue3, It is required that CGN IE sent by originator (in the SETUP) and GAP IE are sent to all conferees in the SETUP/IAM messages

**Mapping CGN IE/GAP IE**

## MLPP IE

The MLPP IE may be present in the SETUP message sent by origination which has MLPP line option to network. It is required that in the SETUP/IAM messages sent by network to conferees should include MLPP IE, if originator has MLPP

### Mapping MLPP IE

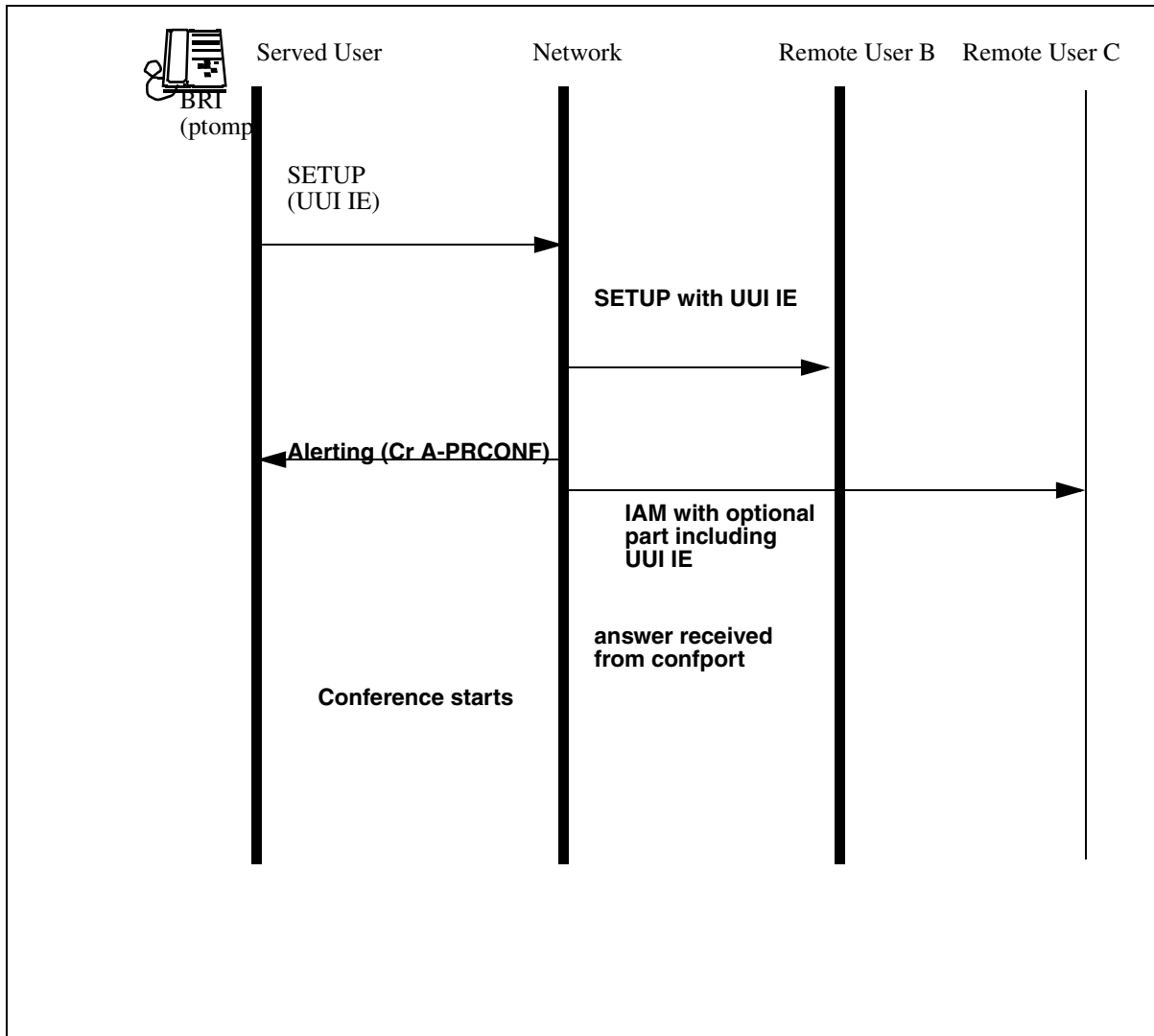




## UII IE

Only User to User implicit IE will be propagated to conferees, if originator sends SETUP message with UII IE.

### Mapping UII IE



### OM class for Preset Conference

Since this activity is based on the existing IBN preset conference, the existing OM class PCNF is used.

### Billing

No AMA/Billing changes for this activity.

## Hardware Requirements or Dependencies

The NT3X67 six-party conference card provides conference facilities on a single card for use with DMS-100 switches. This activity uses same hardware as IBN Preset Conference.

## Software Requirements or Dependencies

The existing IBN preset Conference is used by this activity.

## Limitations and restrictions

Since the feature is based on the existing IBN Preset Conference, the restrictions of IBN preset conference are also valid for this activity.

Only Local calls can be add-on to conference.

The originator of Preset Conference can not start another preset conference.

The call attempts end to a conferee when it is unplugged.

Recommended datafill explained in this FN, should be provided for required functionality

- Served user is in the control of conference (ORIGCONT field is set to yes)
- When the first conferee answers, the conference begins (IMMSTART field is set to yes)
- In order to enable the add-on functionality, ADDON field is set to yes.
- 35 conferee can be datafilled in PRECONF.

This activity is implemented for the following interworkings only, the rest of the interworkings are out of scope of this feature:

- ETSI BRI(ptomp)-CONF port- ETSI BRI(ptomp),
- ETSI BRI(ptomp)- CONF port-ETSI ISUP V2,
- ETSI ISUP V2-CONF port- ETSI BRI (ptomp) ,
- ETSI ISUP V2-CONF port-ETSI ISUP V2

## Interactions

### Calling Line Identification Presentation/Presentation Restriction

This activity only supports CGN IE to be sent to the conferees in the terminating message. For Special Arrangement (no screening option), if required datafill exists, GAP IE is sent to conferees.

**User to User Signalling**

This activity only provides UUI IE in setup message to conferees. UUS1 explicit is ignored. But if the originator requests in the FAC IE of the SETUP message that UUS1 is required and the terminator does not accept it, the call should be released according to the UUS1 ETSI spec.

**MLPP**

The served user provides MLPP information, the same MLPP Information is included into call setup to conferees.

For all feature interactions please refer to the activity A00002884 - 'ETSI BRI Preset Conference service interactions' available elsewhere in this document.

**Applicable customer facing sections****Fault Management**

|        |    |
|--------|----|
| Logs   | no |
| Alarms | no |

**Configuration**

|                    |     |
|--------------------|-----|
| Data Schema        | n/a |
| User Interface     | n/a |
| Element Management | n/a |
| Security           | n/a |
| Service Order      | n/a |
| Office Parameters  | n/a |

|                                   |     |
|-----------------------------------|-----|
| Accounting (includes AMA billing) | n/a |
|-----------------------------------|-----|

|                                                 |     |
|-------------------------------------------------|-----|
| Performance (includes operational measurements) | n/a |
|-------------------------------------------------|-----|

|          |     |
|----------|-----|
| Realtime | n/a |
|----------|-----|

|                         |   |
|-------------------------|---|
| Engineering Information | X |
|-------------------------|---|

**Glossary**

| Term | Description                       |
|------|-----------------------------------|
| BRI  | Basic Rate Interface              |
| CGN  | CallinG Number                    |
| MLPP | Multi Level Precedence Preemption |

| Term | Description           |
|------|-----------------------|
| UUI  | User to User implicit |

## Appendix A for A00002367 - IBN Preset Conference background

The originator (conference controller / served user) dials the predefined DN (specified in table PRECONF) to start the Preset Conference. Once the DN is dialled, the preset conference feature will try to connect to all of the pre-selected conference members simultaneously. Audible ringing is provided to all of the conferees. These conferees are specified in advance in a data table PRECONF indexed by conference number and conferee number. (The preset conference DN is always first entry and the conferee number is zero)

These conferees are datafilled in table PRECONF indexed by conference number and conferee number. If the preset predefined DN is dialled a check is made if the required number of six-port conference bridges can be seized for the conference. There are enough six-port conference bridges available the originator receives audible ringing while calls are originated to all the addresses stored for the desired preset conference.

An IMMSTART option can be set in the PRECONF table so that the conference starts as soon as the first conferee answers.

Associated with each conferee DN is a timeout interval and an optional alternate DN. Automatic retrial is attempted on all conferees that have not returned answer within a customer datafillable interval (TIMEOUT option of table PRECONF) of 15 to 60 seconds after the call to conferee was initiated. If a call to a primary address fails to complete within two retrials, and the conferee is provided with an alternate address (ALTADDR option of table PRECONF), then two additional attempts are made on the alternate DN.

Once the preset conference is established, add-on of additional conferees can begin if allowed by PRECONF table option ADDON.

The conference is terminated when all conferees disconnect, or if specified by ORIGCONT option in table PRECONF, when the originator of the conference goes on hook.

The following figure gives the brief description of the fields of PRECON.

**Table PRECONF**

| <b>Datafilling PRECONF</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>PRECONF : is a number (0-63) assigned to the preset conference assigned by operating company.</p> <p>CONFeree: is a number (0-49) assigned to conferee by the operating company. Conferee 0 which is used to hold the conference's DN must be entered first.</p> <p>CONFADDR:Conference address. Enter the 1-29 digit conference address.</p> <p>CLASS: Conference Class.</p> <p>CUSTGRP: Is used to indicate the customer group that owns this preset conference</p> <p>NCOS: is used to indicate NCOS</p> <p>ALTADDR: Is used when the class is A.</p> <p>ORIGCOUNT: is used to indicate whether the originator has control of the conference.</p> <p>TIMEOUT: Variable Timeout.</p> <p>ADDON: is used to add additional conferees, if yes, the originator is allowed to add on conferee.</p> <p>DIDORIG: DID Origination allowed</p> <p>IMMSTART: Is used to indicate immediate start.</p> |

## The range information for the fields of PRECONF

Table PRECONF

| Range of fields in PRECONF                                     |
|----------------------------------------------------------------|
| PRECONF : {0 TO 63}.                                           |
| CONFeree: {0 TO 49}                                            |
| CONFADDR: VECTOR OF UP TO 30 DIGIT'S.( THIRTY_DIGIT_REGISTER.) |
| CLASS: {P,A,C,D} .                                             |
| CUSTGRP: CUSTOMER_GROUP when D is selected.                    |
| NCOS:{0 TO 511} .                                              |
| ALTADDR: VECTOR OF UP TO 30 DIGIT'S (THIRTY_DIGIT_REGISTER .)  |
| ORIGCOUNT:{N,Y} ..                                             |
| TIMEOUT: {15 TO 300}..                                         |
| ADDON: {N,Y}..                                                 |
| DIDORIG: {N,Y.                                                 |
| IMMSTART:{N,Y}..                                               |

The preset conference DN can be datafilled up to 14 digits according to universal numbering plan .The conferee DN and alternate DN can be datafilled up to 30 digits.

## *Product = CS 2000*

### **A00002377 -- 10 AFC Keys for BRI Directory Number (Succession on DMS)**

#### *Functional Description*

This feature is required as part of the requirements for the German DBArt in ISN07. This feature allows up to 10 AFC (Additional Functional Call) Keys (and therefore 11 calls) on one DN (Directory Number). The master DN, known as SFC (Single Functional Call) key can have up to 10 AFC Keys associated with it.

This activity allows 11 Call Hold (all calls can be HELD calls) on one DN and 8 Call Waiting per loop if the customer is subscribed to these services.

This service is supported only in point-to-multipoint configurations.

The old capability allowed provisioning up to 4 AFC Keys (and therefore 5 calls) on one DN. This activity increases the provisioning number of AFC Keys to 10 per DN (and therefore 11 calls) for the DMS ETSI BRI implementation.

ETSI does not limit the number of calls on a TEI (Terminal Endpoint Identifier).

The old capability restricted the maximum call waiting calls per access with 2 and the maximum number of calls allowed on loop with six for terminations. Maximum call waiting calls per access is increased to 8 and maximum number of calls restriction for terminations is removed by this activity.

Summary of the capabilities provided by this activity:

- The maximum number of calls within an ETSI BRI (p-mp) configuration is 11 calls per DN.  
Number of calls per loop depends on the terminal capabilities.  
The maximum number per DN is provisionable in a range from 1 to 11.
- The maximum number of held calls within an ETSI BRI (p-mp) configuration is 11 calls per DN.  
All calls can be HELD calls.  
These values are not provisionable.
- The maximum number of waiting calls within an ETSI BRI (p-mp) configuration is 8 calls per access.  
These values are not provisionable.

A summary of the number of the AFC Keys per DN, HELD calls per DN and CW calls per loop depending on PtoMP and PtoP configurations is shown in the following table:

|                             | Before the activity |      | After the activity |      |
|-----------------------------|---------------------|------|--------------------|------|
|                             | PtoMP               | PtoP | PtoMP              | PtoP |
| Number of AFC Keys per DN   | 4                   | 4    | 10                 | 4    |
| Number of HELD calls per DN | 5                   | -    | 11                 | -    |
| Number of CW calls per loop | 2                   | -    | 8                  | -    |

**Note:** This activity is only applied to Point-to-Multipoint configurations and Point-to-Point configurations are kept unchanged as before the activity.

### **Software Optionality Control (SOC) Option**

A new SOC option SULN0028, 'SULN BRI Call Queuing' is introduced to restrict the usage of the "10 AFC KEYS for BRI DIRECTORY NUMBER" functionality. The following "10 AFC KEYS for BRI DIRECTORY NUMBER" functionality is dependent on the SOC option:

- Provisioning of 10 AFC Keys for a DN is possible only for Point-to-Multipoint configuration of ETSI BRI variant and if the SOC is in active state.

The SOC option restricts the datafilling of more than 4 AFC keys instead of restricting functionality of the AFC keys in this activity. In order to prevent the 10 AFC keys option is functioned while the SOC state is IDLE (this can be occur if 10 AFC keys option is assigned to a DN while SOC state is ON and then the SOC state is changed to the IDLE), referring to the Software Optionality Control Application Guidelines, prior to the SOC state transition from ON to IDLE, existing customer datafills for more than 4 AFC keys are determined and a warning is returned to the SOC. Also, a new CI command AFCLIS is created to list the available LTIDs with more than 4 AFC keys. After removing all datafills for more than 4 AFC keys, it can be possible to change the SOC state from ON to IDLE.

### **Hardware Requirements or Dependencies**

N/A

### **Software Requirements or Dependencies**

N/A

### **Limitations and Restrictions**

N/A

### **Interactions**

Since the number of AFC keys for BRI directory number and the number of waiting calls per loop are changed, there are some service interactions with some of the available BRI services. These service interactions are explained in this section.

### **Call Hold**

#### **Background**

Call Hold supplementary service allows a user to interrupt communications on an existing call and then, if desired, re-establish the communication.



When the Call Hold supplementary service is invoked, communication on a B-channel is interrupted and the B-channel is released from use by the existing call. A B-channel shall be reserved for use by the terminal (based on the TEI of the terminal) used to invoke Call Hold supplementary service and enable the user to retrieve a call from hold, originate a new call, and establish connection to an incoming call (Activity AR2179 Multi Party Services).

#### **Changes on the supplementary service with this activity**

This feature allows up to 10 AFC Keys (and therefore 11 calls) on one DN (Directory Number). The master DN, known as SFC (Single Functional Call) key can have up to 10 AFC Keys associated with it. This allows 11 Call Hold (all calls can be HELD calls) on one DN if the customer is subscribed to this service.

This activity increases the AFC range from {1 to 4} to {1 to 10} per DN.

This activity only increases the number of AFC and indirectly affect the HOLD supplementary service. This activity does not make any change on the functionality of HOLD supplementary service.

### **Call Waiting**

#### **Background**

Call waiting supplementary service enables the call can be offered without a B-channel. In CM terminating utilities exists that are dealing with B-channel idle or busy determination (Activity AR2179 Multi Party Services).

#### **Changes on the supplementary service with this activity**

This activity allows 8 Call Waiting per loop if the customer is subscribed to this service.

This activity increases the AFC range from {1 - 4} to {1 - 10} per DN and waiting call limit from 2 to 8 per loop.

This activity does not make any change on the functionality of CW supplementary service.

### **ECT**

#### **Background**

The user is engaged in a telephone call and additional connections have been established. The user can interconnect two of the partners (ECT - Explicit Call Transfer) (Activity A59023626 BRI Explicit Call Transfer).

#### **Implicit ECT Background**

If there is only one held call on a DN, an ECTExecute message is sent from that HELD call and network connects that call with the active idle call. If there

are more than one HELD call on a DN, user selects one of the HELD call. Then an ECTExecute message is sent from that selected call and network connects that selected HELD call with the active idle call.

### **Explicit ECT Background**

A LinkIDRequest message is sent from the active idle call. Then, network sends a LinkID to the user. If there is only one held call on a DN, an ECTExecute message is sent from that HELD call with the LinkID and network connects that call with the active idle call. If there are more than one HELD call on a DN, user selects one of the HELD call. Then an ECTExecute message is sent from that selected call with the LinkID and network connects that call with the active idle call.

### **Changes on the supplementary service with this activity**

#### **Implicit ECT**

Because the active held call is selected using the CR in the FAC message, there is no impact to ECT of allowing additional HELD calls.

This activity does not make any change on the implicit ECT supplementary service.

#### **Explicit ECT**

Because the active held call is selected using the CR in the FAC message, there is no impact to ECT of allowing additional HELD calls.

This activity does not make any change on the explicit ECT supplementary service.

### **Three Party Conference**

#### **Background**

The Three Party Conference (3PTY) supplementary service enables the subscribed user to establish, participate in and control a three-way conversation. It is invoked by the subscribed user who is involved in two calls (one active call and one held call), either of which may be an incoming or outgoing call. The connections are established on each of the two calls prior to invocation of 3PTY supplementary service (Activity AR2179 Multi Party Services).

### **Changes on the supplementary service with this activity**

In the old code, if there were more than one Active-Idle connection exists for the same TEI, the network accepted the transfer request and connected the parties.

This activity does not change this behavior and rejects the request if there are more than one Active-Idle connection exists for the same TEI.

## **Hunt Groups (MLH, DNH, DLH)**

### **Background**

ETSI BRI lines can have only one AFC assigned if they are in MLH (Multiline Hunt), DNH (Directory Number Hunt), DLH (Distributed Line Hunt) hunt groups. More than one AFC can not be assigned.

Up to two terminations are allowed on ETSI BRI terminals in hunt groups. One on the SFC key and on one AFC key.

### **Changes on the supplementary service with this activity**

This activity does not change this restriction and therefore this activity has no interaction with hunt groups.

## **Six Party Conference / Add On Conference**

### **Background**

The conference (Add On CONF) supplementary service enables a user who is connected to the network via a point to multipoint ISDN ETSI BRI to establish, participate in and control a simultaneous communication involving a number of users. The DMS implementation of the Add On CONF supplementary service restricts the total number of conference parties to 6 (Activity A59027439 ETSI BRI 6 PARTY CONFERENCE).

### **Changes on the supplementary service with this activity**

Since only one active held call on a DN was possible before this activity, adding a new party which is on HELD state to the CONFERENCE while conference is also on HELD state (two HOLD method) was not possible.

After the activity, since more than one HELD call on a DN is possible, adding a new party which is on HELD state to the CONFERENCE while conference is also on HELD state (two HOLD method) is possible.

This activity does not make any change on the Add On Conference supplementary service. It just allows two hold method as mentioned above.

### **Preset Conference**

The service interaction with 'Preset Conference' is handled under 'Preset Conference' activity.

Please refer to the ISN07 activity "A00002884 - ETSI BRI Preset Conference Service Interactions".

## **Applicable Customer Facing Sections**

Fault Management

Logs

\_NA\_\_

|                                                 |       |
|-------------------------------------------------|-------|
| Alarms                                          | _NA__ |
| Configuration                                   |       |
| Data Schema                                     | _NA__ |
| User Interface                                  | _NA__ |
| Element Management                              | _NA__ |
| Security                                        | _NA__ |
| Service Order                                   | _X__  |
| Office Parameters                               | _NA__ |
| Accounting (includes AMA billing)               | _NA__ |
| Performance (includes operational measurements) | _NA__ |

Please see Service Orders part of the Configuration section for details.

## Glossary

| Term  | Description                                        |
|-------|----------------------------------------------------|
| AFC   | Additional Functional Call                         |
| BRI   | Basic Rate Interface                               |
| CM    | Computing Module                                   |
| CW    | Call Waiting                                       |
| DLH   | Distributed Line Hunt                              |
| DN    | Directory Number                                   |
| DNH   | Directory Number Hunt                              |
| DRU   | Development Release Unit                           |
| ECT   | Explicit Call Transfer European Telecommunications |
| ETSI  | Standard Institute                                 |
| MLH   | Multiline Hunt                                     |
| PTOMP | Point to Multipoint                                |

|      |                              |
|------|------------------------------|
| PTOP | Point to point               |
| SFC  | Single Functional Call       |
| SOC  | Software Optionality Control |
| TEI  | Terminal Endpoint Identifier |
| 3PTY | Three Party Conference       |
| XPM  | eXtended Peripheral Module   |

### **Recommended Reading/References**

- a. A00003465 - Functional Description (FN) document of the feature ETSI BRI Channel Reservation Overwrite
- b. A00003466 - Functional Description (FN) document of the feature MLPP Default Precedence Level on Terminations

## ***Configuration for A00002377***

### **Hardware and Software Requirements**

N/A

### **Initial Configuration**

N/A

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

N/A

### **Data schema (DS) (CM, MIBS, RDB)**

N/A

### **Service Orders (SO) (CM & SESM)**

This activity does not add a new service order (SO), it just increases the upper limit of the provisionable number of AFC Keys.

The old code allowed provisioning up to 4 AFC Keys on one DN. This activity increases the provisioning number of AFC Keys to 10 per DN for the DMS ETSI BRI implementation.

The master DN, known as SFC (Single Functional Call) key is able to have up to 10 AFC Keys associated with it. This can be specified through servord by

using the AFC line option. If the AFC line option is added to a DN on a BRI set, the user is prompted for NUMCALLS indicating the number of call references permitted to be associated with that DN.

### Service order change details

Increasing the upper limit of the provisionable number of AFC Keys just affects the DMS ETSI BRI variant. Other DRUs (such as NA) and other BRI variants (such as VN4 and AUSTEL) is not affected from the SO change.

### New commands

N/A

### Examples

The followings are assumed:

```
>qlt isdn2 1
```

```
-----
LTID:   ISDN2           1
SNPA: 102
DIRECTORY NUMBER:      7831004
LT GROUP NO: 2
LTCLASS: BRAFS         DEFAULT LOGICAL TERMINAL: Y
EKTS: N   CACH: N
SLBRI: N
BEARER SERVICE ALLOWED: VOICE   VBD   CMD
CS: Y PS: N
ELN: N
VERSION:           ETSI   ISSUE: 0
LEN: HOST 25 0 00 04   TEI: UNATEI
CUSTGRP:           CUST783A SUBGRP: 0  NCOS: 2  RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 5
OPTIONS:
SFC
```

| KEY | DN |            |
|-----|----|------------|
| --- | -- |            |
| 1   | DN | 1027831004 |

| KEY | FEATURE |
|-----|---------|
| --- | -----   |
|     | NONE    |

**Before The Activity: Attempt to give 4 AFC (upper limit) to the SFC DN (for the ETSI and the NON-ETSI BRI variants)**

```

>servord
SO:
>ADO
SONUMBER:      NOW    3    7 14 AM
>
DN_OR_LEN:
>ISDN2 1
OPTKEY:
>1
OPTION:
>AFC
NUMCALLS:
>4
OPTKEY:
>$
COMMAND AS ENTERED:
ADO NOW 3 7 14 AM ISDN2 1 ( 1 AFC 4 ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>Y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED

```

JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED  
SHOULD ORDER BE DONE ANYWAY? (Y OR N)

>Y

additional functional calls now exist on keys 2 TO 5

>qlt isdn2 1

-----

LTID: ISDN2 1

SNPA: 102

DIRECTORY NUMBER: 7831004

LT GROUP NO: 2

LTCLASS: BRAFS DEFAULT LOGICAL TERMINAL: Y

EKTS: N CACH: N

SLBRI: N

BEARER SERVICE ALLOWED: VOICE VBD CMD

CS: Y PS: N

ELN: N

VERSION: ETSI ISSUE: 0

LEN: HOST 25 0 00 04 TEI: UNATEI

CUSTGRP: CUST783A SUBGRP: 0 NCOS: 2 RING: Y

LINE CLASS CODE: ISDNKSET

MAXKEYS: 5

OPTIONS:

AFC

SFC

KEY DN

---

1 DN 1027831004

KEY FEATURE



|     |       |
|-----|-------|
| --- | ----- |
| 2   | AFC   |
| 3   | AFC   |
| 4   | AFC   |
| 5   | AFC   |

-----

**Before The Activity: Attempt to give 5 AFC (exceeds the upper limit) to the SFC DN (for ETSI and the NON-ETSI BRI variants)**

```
>servord
SO:
>ADO
SONUMBER:      NOW    3    7 14 AM
>
DN_OR_LEN:
>ISDN2 1
OPTKEY:
>1
OPTION:
>AFC
NUMCALLS:
>5
5
***  ERROR  ***
|
TYPE OF NUMCALLS IS AFC_CALLS_ON_SFC_DN
PLEASE ENTER:
NUMCALLS:
>5
5
***  ERROR  ***
```

```
|
TYPE OF NUMCALLS IS AFC_CALLS_ON_SFC_DN
TYPE IS AFC_CALLS_ON_SFC_DN {1 TO 4}
PLEASE ENTER:
NUMCALLS:
>
```

**After The Activity: Attempt to give 10 AFC (upper limit for the ETSI BRI) to the SFC DN (for the ETSI BRI)**

```
>servord
SO:
>ADO
SONUMBER:      NOW    3    7 14 AM
>
DN_OR_LEN:
>ISDN2 1
OPTKEY:
>1
OPTION:
>AFC
NUMCALLS:
>10
OPTKEY:
>$
COMMAND AS ENTERED:
ADO NOW 3 7 14 AM ISDN2 1 ( 1 AFC 10 ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>Y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
```

>Y

additional functional calls now exist on keys 2 TO 11

**After The Activity: Attempt to give 11 AFC (exceeds the upper limit) to the SFC DN (for the ETSI BRI)**

>servord

SO:

>ADO

SONUMBER:        NOW     3    7 14 AM

>

DN\_OR\_LEN:

>ISDN2 1

OPTKEY:

>1

OPTION:

>AFC

NUMCALLS:

>11

11

\*\*\* ERROR \*\*\*

|

TYPE OF NUMCALLS IS AFC\_CALLS\_ON\_SFC\_DN

PLEASE ENTER:

NUMCALLS:

>11

11

\*\*\* ERROR \*\*\*

|

TYPE OF NUMCALLS IS AFC\_CALLS\_ON\_SFC\_DN

```
TYPE IS AFC_CALLS_ON_SFC_DN {1 TO 10}
PLEASE ENTER:
NUMCALLS:
>
```

**After The Activity: Attempt to give 10 AFC (exceeds the upper limit) to the SFC DN (for the NON-ETSI BRI variants)**

```
>servord
SO:
>ADO
SONUMBER:      NOW    3    7 14 AM
>
DN_OR_LEN:
>ISDN2 1
OPTKEY:
>1
OPTION:
>AFC
NUMCALLS:
>10
10
***  ERROR  ***
|
TYPE OF NUMCALLS IS AFC_CALLS_ON_SFC_DN
PLEASE ENTER:
NUMCALLS:
>10
10
***  ERROR  ***
|
TYPE OF NUMCALLS IS AFC_CALLS_ON_SFC_DN
```

```
TYPE IS AFC_CALLS_ON_SFC_DN {1 TO 4}
```

```
PLEASE ENTER:
```

```
NUMCALLS:
```

```
>
```

### **Software optionality control (SOC)**

N/A

### **Element Management**

N/A

### **Command interface changes**

N/A

## ***Product = CS 2000***

### **A00002512 -- GWCEM Internet Transparency VCAC Provisioning (Intl IAW, Intl IAC)**

#### ***Functional Description***

The Internet Transparency (“ITrans”) solution, implemented in the SN06.x stream, provides a means for CS2K to enable IP-telephony across and between VPNs (Virtual Private Networks). This is achieved by taking into account the presence of NAT (Network Address Translator) middleboxes between MGs (Media Gateways) and the ‘outside world’, and inserting publicly-addressable MP (Media Proxy) devices into the media path where required.

The SN06 provisioning component of this work dealt with:

- datafilling of Media Proxy and (virtual) NAT devices
- association of MGs to an ‘adjacent’ NAT
- association of MPs to GWCs (Gateway Controllers)
- downloading of MP/NAT information to GWCs as necessary

The present feature (SN07) builds on this provisioning functionality to add support for:

- datafilling of LBL (Limited Bandwidth Link) middleboxes in addition to NATs

- datafilling of RU (Resource Usage) data for use in the VCAC (Virtual Connections & Admissions Control) function of LBLs
- manual or automatic assignment of a GWC to carry out the RU capacity counting function on behalf of an LBL
- ‘chaining’ of middleboxes (NATs/LBLs) in a hierarchical network topology.
- downloading of MP/NAT/LBL/RU information to GWCs as necessary.

## VCAC Background

LBLs are a virtual representation of ‘policed’ capacity-restricted links in the network. An LBL carries a number (“max count”) representing maximum capacity through the link. Call set-up through the link causes a running total of used capacity to be incremented, and call take-down causes the running total to be decremented. If call set-up will cause the running total to exceed the LBL’s maximum capacity figure, the call attempt is rejected and routed to treatment (congestion tone).

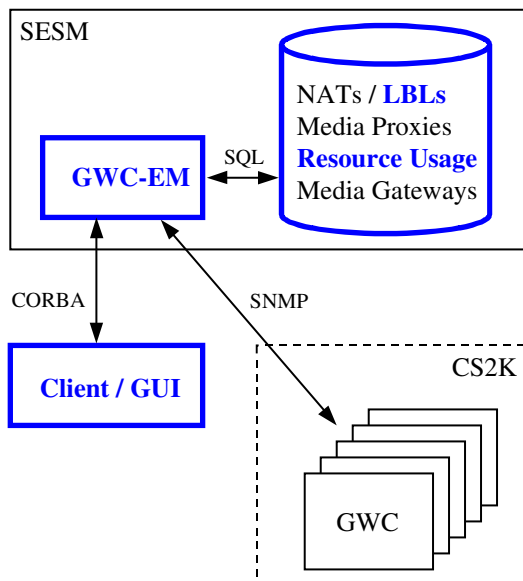
The specific amount used to increment/decrement the running total is supplied by the Resource Usage entry used by the LBL. Each Resource Usage entry has a set of ‘capacity-used-per-call’ values, depending on the codec and packetization rate in use on the call.

The running total is maintained by a counting device - in the SN07 release this device is a GWC. The counting device for a particular LBL is identified by entering the counter’s address into the LBL’s IP address field. There are two methods for allocating the LBL’s counting device:

- “auto-generated” - the LBL’s address field is left empty, and is filled automatically when the LBL is first downloaded to a GWC.
- manually - the IP address of a specific counting device is entered in the LBL’s address field during provisioning.

## Hardware Requirements or Dependencies

### System Configuration



**Note:** The components outlined in blue will be affected by this provisioning activity.

Requirements for the whole Pre-midcom solution:

- CS2K.
- SESM Platform (Succession Element and Sub-Element Manager).
- IMS manager to handle provisioning of the Media Proxy.
- Uncontrolled NATs.
- Media Proxies.
- MGs.

## Software Requirements or Dependencies

Dependencies:

- GWC should be running a software load of an equivalent stream to that of the SESM/GWC-EM, and should be running under a profile that enables ITrans functionality.

## Limitations and restrictions

- There is only one NAT exit point from a local network.
- A Media Gateway has one or no adjacent middlebox. A NAT/LBL has one or no parent middlebox.
- The maximum length of sequentially ‘chained’ middleboxes (e.g. A --> B --> C, etc.) is five.
- If two gateways are behind the same NAT then they can set up a call without requiring a Media Proxy.
- If two gateways are behind the same LBL, a call between them is not considered to use capacity on that LBL.
- The DQoS IAC solution (ACTID 59039082/59006771) uses “PepServer” middleboxes. The ITrans IAW solution uses NAT/LBL middleboxes. These two solutions are mutually exclusive as defined in the gateway profile service type (i.e. DQOS and ITRANS cannot be defined together in a profile).
- Where an LBL is ‘shared’ between two or more Succession Call Server networks (see ACTID.A00002644 “Common Topology Identifier Provisioning”), the LBL must be provisioned with exactly the same details on each network.

## Interactions

The provisioning of LBL/RU data brings changes to the following GUIs:

- GWC-EM Network Panel ([“Unmodified \(SN06\) view of GWC-EM Network Panel” on page 142](#), [“Modified Network Panel \(1\)” on page 143](#), [“Modified Network Panel \(2\)” on page 144](#))
- Associate Media Gateway window ([“Associate/Change Middlebox to a Media Gateway” on page 150](#)).

The following features will also make changes in the Network Panel GUI:

- ACTID.A00002644 “Common Topology Identifier Provisioning” available elsewhere in this document.

This feature provisions data for use by the SN07 GWC CallP feature ACTID A00002739 “Virtual Connections Admissions Control”.

## Applicable customer facing sections

### Fault Management

Logs \_N/A\_

Alarms \_N/A\_

### Configuration



|                                                 |       |
|-------------------------------------------------|-------|
| Data Schema                                     | _N/A_ |
| User Interface                                  | _X_   |
| Element Management                              | _X_   |
| Security                                        | _N/A_ |
| Service Order                                   | _N/A_ |
| Office Parameters                               | _N/A_ |
| Accounting (includes AMA billing)               | _N/A_ |
| Performance (includes operational measurements) | _N/A_ |
| Real-time                                       | _N/A_ |
| Engineering Information                         | _X_   |

### User Interface - GUI

The upper section of the GWC-EM Network Panel GUI is reorganized to put the existing three subsections into tabbed panes. VCAC Resource Usage data is provisioned via the new RU table in a fourth tab in the upper section.

NATs are provisioned as before, except that:

- the tab is renamed “IP-VPNs (Virtual NATs)”
- a new field is added to provision a “Parent” (northbound neighbor) middlebox in the topology.

LBLs are provisioned via a table in a new tab added to the central section of the Network Panel.

The following figure along with [“Modified Network Panel \(1\)” on page 143](#) and [“Modified Network Panel \(2\)” on page 144](#) show the Network Panel:

- before reorganization (SN06 version)
- after reorganization, NAT table visible
- after reorganization, new LBL table visible

The new RU data table can be seen in the upper part of the reorganized view.

## Unmodified (SN06) view of GWC-EM Network Panel

CS2000 Management Tools - 47.165.171.31

File Fault Configuration Maintenance Windows Help

Device Types

- APS
- GatewayController**
- UAS

Contents of GatewayController

Directory Find Go To

GatewayControllers:

- GWC-100
- GWC-101
- GWC-102
- GWC-103
- GWC-104
- GWC-105
- GWC-106
- GWC-107
- GWC-108
- GWC-109
- GWC-110
- GWC-111
- GWC-112
- GWC-113
- GWC-114
- GWC-200
- GWC-201
- GWC-202
- GWC-203
- GWC-204

< Prev Next >

Network Configuration

Bearer network type: IP

Compression codec: <none>

Default codec: G.711-a law

Alternative codec: <none>

Packetization rate: 20 ms

Local Control Options

T.38: Disabled

RFC2833: Disabled

Comfort noise: Disabled

DQoS Configuration

DS field:

Timer-T1 (seconds):

Keep alive timer (seconds):

Timer-T7 (seconds):

Timer-T8 (seconds):

Change...

Network Devices

PEP Servers Media Proxies NATs QoS Collectors

| Name              | nat type       |
|-------------------|----------------|
| cisco_827         | Non-Controlled |
| dg814             | Non-Controlled |
| robin             | Non-Controlled |
| shasta_32         | Non-Controlled |
| shasta_33         | Non-Controlled |
| wlan_ap_shasta_31 | Non-Controlled |

Add.. Delete

Maintenance Settings

GWC default domain name: nortel.net

Auto Imaging: disabled

Change...

Applet running...

**Modified Network Panel (1)**

CS2000 Management Tools - 47.165.171.34 (CM CLI: CS2K1\_MAJD)

File Fault Configuration Maintenance Windows Help

Device Types

- APS
- GatewayController**
- UAS

Contents of GatewayController

Directory Find

Go To

GatewayControllers:

GWC-102

GWC-114

< Prev

Next >

Last update: Sep 2, 2003 10:56 AM

Applet running...

Network Configuration

Network Fabric Local Control Options DQoS Configuration VCAC Resource Usage

| Description     | G.711/10 ms | G.711/20 ms | G.729/10 ms | G.729/20 ms |
|-----------------|-------------|-------------|-------------|-------------|
| voip-atm        | 128         | 106         | 85          | 43          |
| voip-ethernet   | 130         | 97          | 74          | 41          |
| never-blocked   | 0           | 0           | 0           | 0           |
| call-counting   | 1           | 1           | 1           | 1           |
| voip-frameRelay | 100         | 82          | 44          | 26          |

Add.. Delete Change..

Network Devices

PEP Servers Media Proxies IP-VPNs (Virtual NATs) Limited BW Links (VCAC) QoS Collectors

| Name                 | NAT Type       | Parent Middlebox         |
|----------------------|----------------|--------------------------|
| callCentresRus.co.ie | Non-Controlled | dublinPOP.uk.acmeISP.com |
| eastEndFoods.co.uk   | Non-Controlled | londonPOP.uk.acmeISP.com |
| liverpool.myBank.com | Non-Controlled | leedsPOP.uk.acmeISP.com  |
| london.myBank.com    | Non-Controlled | londonPOP.uk.acmeISP.com |

Add.. Delete Change..

Maintenance Settings

GWC default domain name: <not configured>

Auto Imaging: disabled

Change...

**Modified Network Panel (2)**

CS2000 Management Tools - 47.165.171.34 (CM CLI: CS2K1\_MAID)

File Fault Configuration Maintenance Windows Help

Device Types

- APS
- GatewayController
- UAS

Contents of GatewayController

Directory Find

Go To

GatewayControllers:

GWC-102

GWC-114

< Prev Next >

Last update: Sep 2, 2003 10:56 AM

Applet running...

Network Configuration

Network Fabric Local Control Options DQoS Configuration VCAC Resource Usage

| Description     | G.711/10 ms | G.711/20 ms | G.729/10 ms | G.729/20 ms |
|-----------------|-------------|-------------|-------------|-------------|
| voip-atm        | 128         | 106         | 85          | 43          |
| voip-ethernet   | 130         | 97          | 74          | 41          |
| never-blocked   | 0           | 0           | 0           | 0           |
| call-counting   | 1           | 1           | 1           | 1           |
| voip-frameRelay | 100         | 82          | 44          | 26          |

Add.. Delete Change..

Network Devices

PEP Servers Media Proxies IP-VPNs (Virtual NATs) Limited BW Links (VCAC) QoS Collectors

| Name                         | RU Name         | Counter GWC      | Max Count | Parent MiddleBox       |
|------------------------------|-----------------|------------------|-----------|------------------------|
| branch1.liverpool.myBank.com | voip-frameRelay | <auto-generated> | 350       | liverpool.myBank.com   |
| cork.callCentresRus.co.ie    | voip-atm        | <auto-generated> | 72500     | callCentresRus.co.ie   |
| dublinPOP.uk.acmelISP.com    | voip-frameRelay | <auto-generated> | 25000     | <none> (Top Level LBL) |
| hqlBL.eastEndFoods.co.uk     | voip-ethernet   | <auto-generated> | 1800      | eastEndFoods.co.uk     |
| leedsPOP.uk.acmelISP.com     | call-counting   | <auto-generated> | 88200     | <none> (Top Level LBL) |
| londonPOP.uk.acmelISP.com    | call-counting   | <auto-generated> | 143500    | <none> (Top Level LBL) |
| upton1.eastEndFoods.co.uk    | voip-ethernet   | <auto-generated> | 90        | eastEndFoods.co.uk     |

Add.. Delete Change..

Maintenance Settings

GWC default domain name: <not configured>

Auto Imaging: disabled

Change..

**Provisioning Resource Usage data: Add, Change, Delete**

These operations are accessed by clicking the appropriate buttons on the tabbed pane of the VCAC Resource Usage table.

**Add Resource Usage data:** click the “Add” button in the Resource Usage tab to obtain the following box.

Add Resource Usage Data

RU Description:

RU Value (G.711/10 ms):

RU Value (G.711/20 ms):

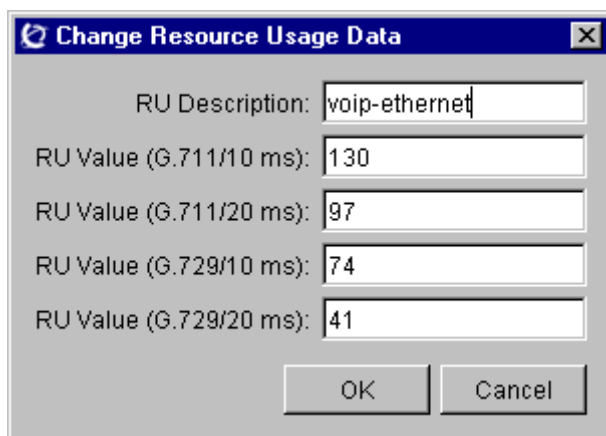
RU Value (G.729/10 ms):

RU Value (G.729/20 ms):

OK Cancel

Enter a valid text description, and non-negative integer entries for each “RU Value” (zero is provided as a default). Click “OK” to confirm.

**Change Resource Usage data:** select an RU table entry and click the “Change” button to obtain the following box:



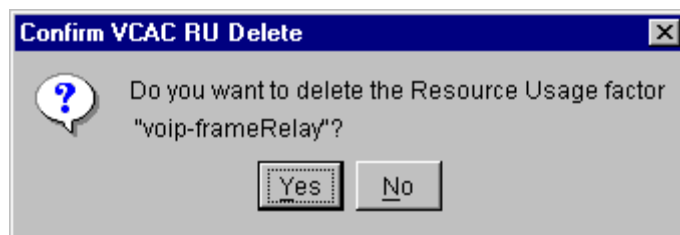
A dialog box titled "Change Resource Usage Data" with a close button (X) in the top right corner. It contains five input fields and two buttons at the bottom. The fields are labeled as follows:

| Field Label             | Value         |
|-------------------------|---------------|
| RU Description:         | voip-ethernet |
| RU Value (G.711/10 ms): | 130           |
| RU Value (G.711/20 ms): | 97            |
| RU Value (G.729/10 ms): | 74            |
| RU Value (G.729/20 ms): | 41            |

At the bottom right, there are two buttons: "OK" and "Cancel".

Modify the required data fields and click “OK” to confirm.

**Delete Resource Usage data:** select an RU table entry and click the “Delete” button to obtain the following confirmation box:



A confirmation dialog box titled "Confirm VCAC RU Delete" with a close button (X) in the top right corner. It contains a question mark icon, a text prompt, and two buttons at the bottom.

Do you want to delete the Resource Usage factor "voip-frameRelay"?

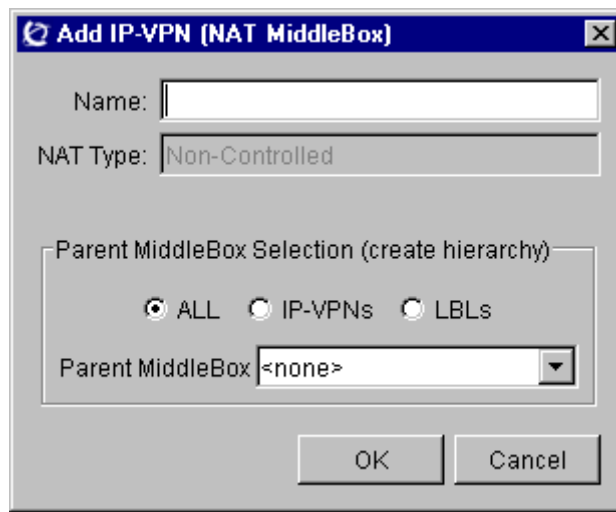
At the bottom, there are two buttons: "Yes" and "No".

Click “Yes” to confirm. Note that the operation will be rejected if the RU Factor is currently ‘in use’, i.e. is currently referred to by an LBL.

### Provisioning NAT middleboxes: Add, Change, Delete

These operations are accessed by clicking the appropriate buttons on the tabbed pane of the IP/VPN table (Figure “Modified Network Panel (1)” on page 143).

**Add NAT middlebox:** click the “Add” button on the “IP-VPNs (Virtual NATs)” tab to obtain the following box:



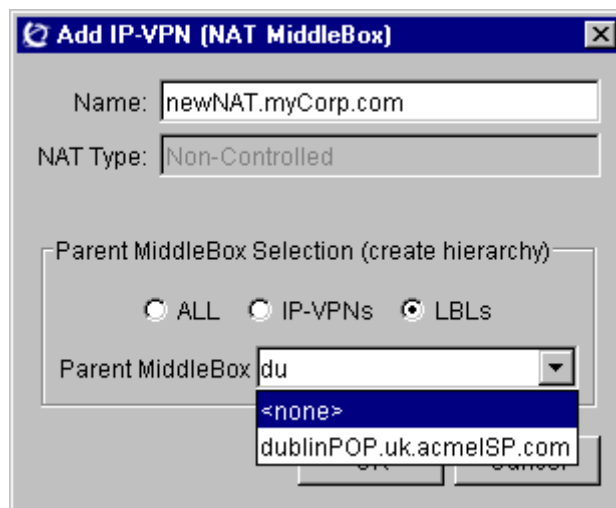
The dialog box titled "Add IP-VPN (NAT MiddleBox)" contains the following fields and controls:

- Name:** An empty text input field.
- NAT Type:** A dropdown menu with "Non-Controlled" selected.
- Parent MiddleBox Selection (create hierarchy):** A group box containing:
  - Three radio buttons: ☒ ALL, ☐ IP-VPNs, and ☐ LBLs.
  - A dropdown menu for "Parent MiddleBox" with "<none>" selected.
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

Enter a unique (DNS compliant, see ref 1) name. If appropriate use the filtered selection box to select a Parent Middlebox. Filtering is performed by one or both of:

- radio button selection to limit the choice to only NATs or only LBLs
- typing the starting letters of the Parent middlebox name to limit selection to those with matching starting letters.

An example of filtered selection is shown below:

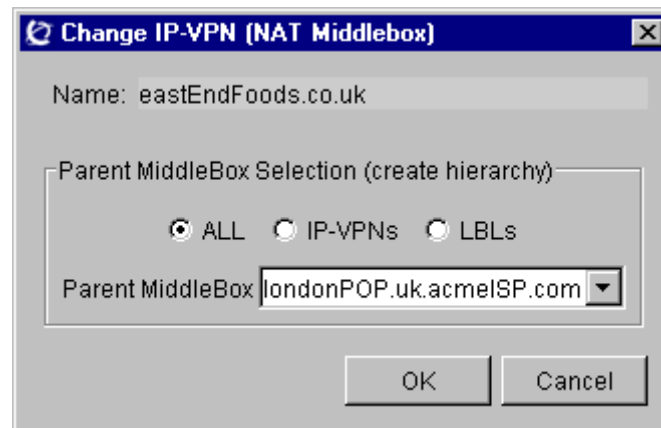


The dialog box titled "Add IP-VPN (NAT MiddleBox)" is shown with the following values and state:

- Name:** "newNAT.myCorp.com"
- NAT Type:** "Non-Controlled"
- Parent MiddleBox Selection (create hierarchy):**
  - Radio buttons: ☐ ALL, ☐ IP-VPNs, ☒ LBLs.
  - The "Parent MiddleBox" dropdown menu is open, showing a filtered list of options: "<none>" and "dublinPOP.uk.acmeISP.com". The text "du" is visible in the input field of the dropdown, indicating the filter applied.
- Buttons:** "OK" and "Cancel" buttons are partially visible at the bottom.

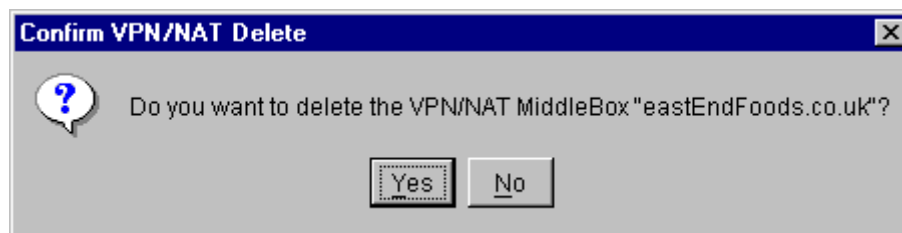
Selection of Parent middlebox is restricted to already provisioned middleboxes. Both NAT and LBL middleboxes can have either a NAT or an LBL as parent. Click “OK” to confirm.

**Change NAT middlebox:** select a NAT table entry and click the “Change” button to obtain the following box:



Modify the selected Parent middlebox as required (i.e. select another middlebox or <none>), and click “OK” to confirm.

**Delete NAT middlebox:** select a NAT table entry and click the “Delete” button to obtain the following confirmation box:



Click “Yes” to confirm. Note that the operation will be rejected if the NAT is currently ‘in use’, i.e. is currently referred to:

- as a parent by another middlebox
- as an adjacent middlebox by a Media Gateway.

**Provisioning LBL middleboxes: Add, Change, Delete**

These operations are accessed by clicking the appropriate buttons on the tabbed pane of the Low B/W Links table (Figure “Modified Network Panel (2)” on page 144).

**Add LBL middlebox:** click the “Add” button on the “Low B/W Links (VCAC)” tab to obtain the following box:

**Add Limited B/W Link [VCAC MiddleBox]**

Name:

Default Counter GWC: ☒

Counter GWC:

Resource Usage:

Max Count Value:

Parent MiddleBox Selection (create hierarchy)

☒ ALL ☐ IP-VPNs ☐ LBLs

Parent MiddleBox:

OK Cancel

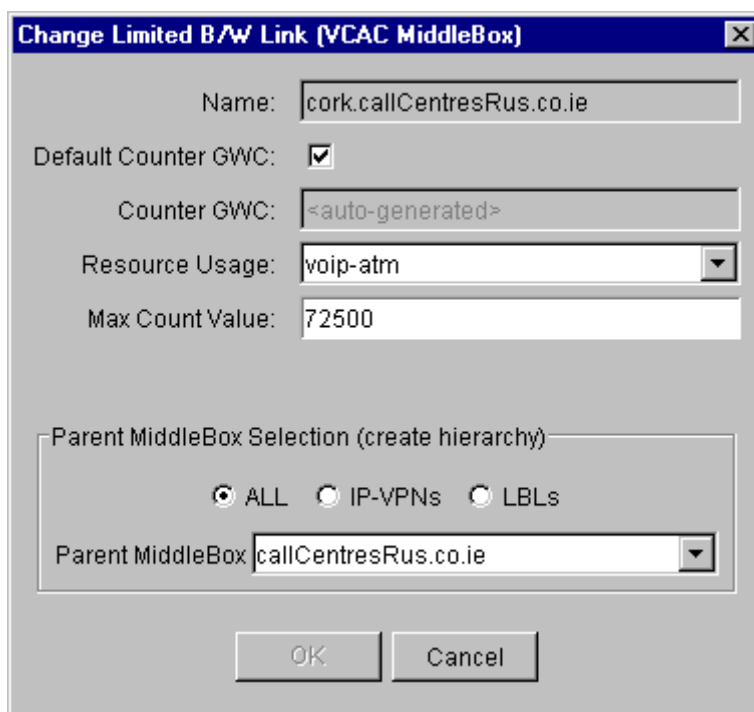
Enter the following information:

- valid text name (DNS compliant, see ref. 1)
- deselect the “Default Counter GWC” check-box and enter in the “Counter GWC” field the IP address of the GWC chosen as VCAC counter, or leave the check-box selected to leave the selection of counter as automatic.
- select RU Factor from the list provided
- enter a non-negative integer value for “Max Count Value”
- select Parent middlebox from the (filtered) list. Remember that an LBL can have either another LBL or a NAT as Parent middlebox.

Click “OK” to confirm.



**Change LBL middlebox:** select an LBL table entry and click the “Change” button to obtain the following box:

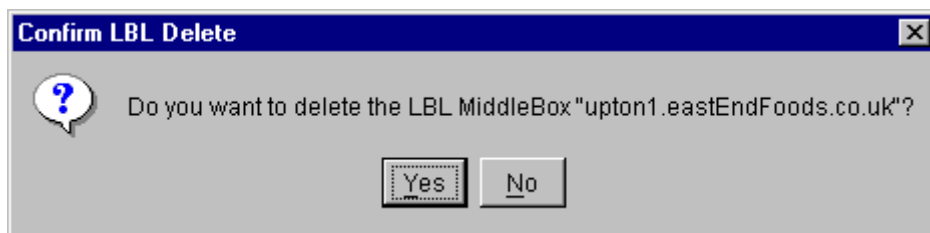


The dialog box titled "Change Limited B/W Link (VCAC MiddleBox)" contains the following fields and controls:

- Name:
- Default Counter GWC: ☒
- Counter GWC:
- Resource Usage:
- Max Count Value:
- Parent MiddleBox Selection (create hierarchy):
  - ☒ ALL ☐ IP-VPNs ☐ LBLs
  - Parent MiddleBox:
- Buttons: OK, Cancel

The name field is not modifiable, other fields may be edited as required. Parent middlebox may be changed to either another middlebox or <none>. Click “OK” to confirm. NB: the RU Factor and the Parent may not be changed in the same operation - they must be modified in separate change operations.

**Delete LBL middlebox:** select an LBL table entry and click the “Change” button to obtain the following confirmation box:



The dialog box titled "Confirm LBL Delete" contains the following elements:

- Question: Do you want to delete the LBL MiddleBox "upton1.eastEndFoods.co.uk"?
- Buttons: Yes, No

Click “Yes” to confirm. Note that the operation will be rejected if the LBL is currently ‘in use’, i.e. is currently referred to:

- as a parent by another middlebox
- as an adjacent middlebox by a Media Gateway.

### Associate/Change Middlebox to a Media Gateway

This is unchanged from SN06 functionality except that filtered selection is used to choose an Adjacent Middlebox, as shown below for the Associate operation:

**Associate Media Gateway**

Gateway name: aslwg4.1.upton1

Gateway IP address:

Gateway controller name: GWC-102

Gateway profile name: ASKEY\_LINE\_GW\_4

Reserved terminations: 4

Gateway site name: LG

Internet Transparency

☐ MG outside CB2K VPN, not behind NAT

IP/VPN Site Selection

☐ VPNs/NATs ☒ LBLs

MiddleBox: up

<none>

Signal Protocol: upton1.eastEndFoods.co.uk

Protocol type:

Protocol port:

Protocol version:

OK Cancel

**Note:** Attempting to remove an adjacent middlebox from a Media Gateway will be rejected if the middlebox or any member of it's 'northbound' topology chain is a NAT.

### XML Interfaces

Modified Interfaces in SN07

- Add/Query NATs - added parent middlebox attribute

New Interfaces introduced in SN07 are as follows:

- Change NATs
- Add/Delete and Change Media Proxies.
- Add/Delete/Query and Change Resource Usage profiles
- Add/Delete/Query and Change LBL entries.

### Add NAT XML command

Add NAT is modified SN07 the <parentMB> tag has been added. The value of this tag must have been previously provisioned into the system to successfully complete this command.

The XML for this command is shown in Figure “XML command to Add NAT device” and Figure “XML response to Add NAT”. Error messages returned are described in Appendix B.

### XML command to Add NAT device

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <addNAT usn="1" version="1.0">
        <Parameters>
          <NATname>NAT-A</NATname>
          <ParentMB>VPN-Eastenders</ParentMB>
        </Parameters>
      </addNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Add NAT**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <addNAT usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </addNAT>
    </Methods>
  </Response>
</CommandList>
```

**Query NAT XML command**

The Query NAT response is modified SN07 the <parentMB> tag has been added

The XML for this command is shown in Figure “XML command to Query a NAT”, Figure “XML response to Query NAT”. Error messages returned are described in Appendix B.

**XML command to Query a NAT**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <Parameters>
          <NATName>NAT-A</NATName>
        </Parameters>
      </queryNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Query NAT**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <ReturnData>
          <NATname>NAT-A</NATname>
          <ParentMB>VPN-Eastenders</ParentMB>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryNAT>
    </Methods>
  </Response>
</CommandList>
```

**Change NAT XML command**

Change NAT is new to SN07 because there was no data in the SN06 releases to change, in SN07 the only attribute that can change is the <ParentMB> tag. The value of this tag must have been previously provisioned into the system to successfully complete this command.

The XML for this command is shown in the following two figures. Error messages returned are described in Appendix B.

**XML command to Change specified NAT parent middlebox**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeNAT usn="1" version="1.0">
        <Parameters>
          <NATname>NAT-A</NATname>
          <ParentMB>VPN-Eastenders</ParentMB>
        </Parameters>
      </changeNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Change specified NAT**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeNAT usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </changeNAT>
    </Methods>
  </Response>
</CommandList>
```

**Add Media Proxy XML command**

Media Proxy provisioning via XML is new to SN07.

The XML for this command is shown in Figure “XML command to Create a new Media Proxy” and Figure “XML response to Creating a new Media Proxy command”. Error messages returned are described in Appendix B.

**XML command to Create a new Media Proxy**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <addMP usn="1" version="1.0">
        <Parameters>
          <MPname>MP-A</MPname>
          <IPAddress>47.165.32.23</IPAddress>
          <Protocol>MGCP+</Protocol>
          <ProtocolVersion>1.1</ProtocolVersion>
        </Parameters>
      </addMP>
    </Methods>
  </Command>
```

**XML response to Creating a new Media Proxy command**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <addMP usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </addMP>
    </Methods>
  </Response>
</CommandList>
```

**Change Media Proxy XML command**

Media Proxy provisioning via XML is new to SN07.

The XML for this command is shown in Figure “XML command to Change IP data of a Media Proxy” and Figure “XML response to Change Media Proxy IP data”. Error messages returned are described in Appendix B.

**XML command to Change IP data of a Media Proxy**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeMP usn="1" version="1.0">
        <Parameters>
          <MPname>MP-A</MPname>
          <IPAddress>47.165.32.22</IPAddress>
        </Parameters>
      </changeMP>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Change Media Proxy IP data**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <changeMP usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </changeMP>
    </Methods>
  </Response>
</CommandList>
```

**Delete Media Proxy XML command**

Media Proxy provisioning via XML is new to SN07.

The XML for this command is shown in Figure “XML command to Delete a Media Proxy” and Figure “XML response to Deleting Media Proxy”. Error messages returned are described in Appendix B.

**XML command to Delete a Media Proxy**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <deleteMP usn="1" version="1.0">
        <Parameters>
          <MPname>MP-A</MPname>
        </Parameters>
      </deleteMP>
    </Methods>
  </Command>
</CommandList>
```



**XML response to Deleting Media Proxy**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <deleteMP usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </deleteMP>
    </Methods>
  </Response>
</CommandList>
```

**Creating RU profile command**

Resource Usage provisioning is new to SN07. To successfully create an RU profile the XML client must provide every Codec/packetRate combination that has been entered into the CS2K config manager.

The XML for this command is shown in Figure “XML command to Create an RU profile” and Figure “XML response to Creating an RU profile” on page 159. Error messages returned are described in Appendix B.

**XML command to Create an RU profile**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <addRU usn="1" version="1.0">
        <Parameters>
          <RUDescription>AAL1/IP40</RUDescription>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>103</Value>
          </RUValue>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>133</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>132</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>103</Value>
          </RUValue>
        </Parameters>
      </addRU>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Creating an RU profile**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <addRU usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </addRU>
    </Methods>
  </Response>
</CommandList>
```

**Changing RU profile command**

Resource Usage provisioning is new to SN07. To successfully change an RU profile the XML client must either provide a <RUNewDescription> OR every Codec/packetRate combination that has been entered into the CS2K config manager.

The XML for this command is shown in Figure “XML to Change an RU profile Description”, Figure “XML command Change RU profile data” on page 160 and Figure “XML response to Changing an RU profile” on page 160. Error messages returned are described in Appendix B.

**XML to Change an RU profile Description**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeRU usn="1" version="1.0">
        <Parameters>
          <RUDescription>AAL1/IP40</RUDescription>
          <RUNewDescription>AAL1/IP71 </RUNewDescription>
        </Parameters>
      </changeRU>
    </Methods>
  </Response>
</CommandList>
```

**XML command Change RU profile data**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeRU usn="1" version="1.0">
        <Parameters>
          <RUDescription>AAL1/IP40</RUDescription>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>123</Value>
          </RUValue>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>133</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>152</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>163</Value>
          </RUValue>
        </Parameters>
      </changeRU>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Changing an RU profile**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <changeRU usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </changeRU>
    </Methods>
  </Response>
</CommandList>
```

## Query RU profile XML command

Resource Usage provisioning is new to SN07. The XML client has the option to either Query all the RU profiles, or the RU data for a particular profile.

The XML for this command is shown in Figure “XML command to Query all RU Profiles”, Figure “XML response to query all RU profiles”, Figure “XML command to Query an RU Profile data” on page 162 and Figure “XML response to Querying an RU profile” on page 162. Error messages returned are described in Appendix B.

### XML command to Query all RU Profiles

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryRU usn="1" version="1.0">
        <Parameters>
        </Parameters>
      </queryRU>
    </Methods>
  </Command>
</CommandList>
```

### XML response to query all RU profiles

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryRU usn="1" version="1.0">
        <ReturnData>
          <RUDescription>AAL1/IP40</RUDescription>
          <RUDescription>AAL2/IP40</RUDescription>
          <RUDescription>AAL1/IP40-B</RUDescription>
          <RUDescription>AAL2/IP40-B</RUDescription>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryRU>
    </Methods>
  </Response>
</CommandList>
```

**XML command to Query an RU Profile data**

```

<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryRU usn="1" version="1.0">
        <Parameters>
          <RUDescription>AAL1/IP40</RUDescription>
        </Parameters>
      </queryRU>
    </Methods>
  </Command>
</CommandList>

```

**XML response to Querying an RU profile**

```

<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryRU usn="1" version="1.0">
        <ReturnData>
          <RUDescription>AAL1/IP40</RUDescription>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>123</Value>
          </RUValue>
          <RUValue>
            <Codec>G.711</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>133</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>10 ms</PacketRate>
            <Value>152</Value>
          </RUValue>
          <RUValue>
            <Codec>G.729</Codec>
            <PacketRate>20 ms</PacketRate>
            <Value>163</Value>
          </RUValue>
        </ReturnData>
        <ReturnCode value="0" text="Successful result" />
      </queryRU>
    </Methods>
  </Response>
</CommandList>

```

## Delete RU profile XML command

Resource Usage provisioning is new to SN07.

The XML for this command is shown in Figure “XML command to Delete an RU Profile” on page 163 and Figure “XML response to Deleting an RU profile” on page 163. Error messages returned are described in Appendix B.

### XML command to Delete an RU Profile

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <deleteRU usn="1" version="1.0">
        <Parameters>
          <RUDescription>AAL1/IP40</RUDescription>
        </Parameters>
      </deleteRU>
    </Methods>
  </Command>
</CommandList>
```

### XML response to Deleting an RU profile

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <deleteRU usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </deleteRU>
    </Methods>
  </Response>
</CommandList>
```

## Add LBL XML command

Limited Bandwidth Links provisioning is new to SN07. The <CounterGWC> tag is optional, if omitted the counterGWC is automatically assigned. The <RUDescription> and <ParentMB> values must have been previously provisioned into the system to successfully complete this operation.

The XML for this command is shown in Figure “XML command to Create an LBL device” on page 164 and Figure “XML response to Creating an LBL device” on page 164. Error messages returned are described in Appendix B.

**XML command to Create an LBL device**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <addLBL usn="1" version="1.0">
        <Parameters>
          <LBLname>LBL1</LBLname>
          <CounterGWC>47.132.132.12</CounterGWC>
          <RUDescription>AAL1/ip40</RUDescription>
          <MaxCount>1000</MaxCount>
          <ParentMB>VPN-A</ParentMB>
        </Parameters>
      </addLBL>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Creating an LBL device**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <addLBL usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </addLBL>
    </Methods>
  </Response>
</CommandList>
```

**Change LBL XML command**

Limited Bandwidth Links provisioning is new to SN07. The <LBLname> tag is required the other changing data tags are optional. The <RUDescription> and <ParentMB> values must have been previously provisioned into the system to successfully complete this operation.

The XML for this command is shown in Figure “XML command to Change an LBL device RU profile” on page 165 and Figure “XML response to Changing an LBL device” on page 165. Error messages returned are described in Appendix B.



**XML command to Change an LBL device RU profile**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <changeLBL usn="1" version="1.0">
        <Parameters>
          <LBLname>LBL1</LBLname>
          <RUDescription>AAL2/ip40</RUDescription>
        </Parameters>
      </changeLBL>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Changing an LBL device**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <changeLBL usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </changeLBL>
    </Methods>
  </Response>
</CommandList>
```

**Query LBL XML command**

The Query LBL is new to SN07

The XML for this command is shown in Figure “XML command to Query an LBL” on page 166 and Figure “XML response to Query LBL” on page 166. Error messages returned are described in Appendix B.

**XML command to Query an LBL**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryLBL usn="1" version="1.0">
        <Parameters>
          <LBLname>LBL-A</LBLname>
        </Parameters>
      </queryLBL>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Query LBL**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryLBL usn="1" version="1.0">
        <ReturnData>
          <LBLname>LBL1</LBLname>
          <CounterGWC>47.132.132.12</CounterGWC>
          <RUDescription>AAL1/ip40</RUDescription>
          <MaxCount>1000</MaxCount>
          <ParentMB>VPN-A</ParentMB>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryLBL>
    </Methods>
  </Response>
</CommandList>
```

**Delete LBL XML command**

Limited Bandwidth Links provisioning is new to SN07.

The XML for this command is shown in Figure “XML command to Delete an LBL device” on page 167 and Figure “XML response to Deleting an LBL device” on page 167. Error messages returned are described in Appendix B.

**XML command to Delete an LBL device**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <deleteLBL usn="1" version="1.0">
        <Parameters>
          <LBLname>LBL1</LBLname>
        </Parameters>
      </deleteLBL>
    </Methods>
  </Command>
</CommandList>
```

**XML response to Deleting an LBL device**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <deleteLBL usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </deleteLBL>
    </Methods>
  </Response>
</CommandList>
```

**Authorization for Commands**

The security for the GUI Client and OSSgate interface includes support for permission or 'Authorization' levels for commands. Each command is associated with one or more user groups. In order to execute a command, a user must belong to at least one of the associated user groups. The user groups associated with the new /modified commands associated with this feature are specified in the following table.

**Internet Transparency Commands Authorization**

| Command          | User Group |       |        |         |       |
|------------------|------------|-------|--------|---------|-------|
|                  | mgcadm     | mgcrw | mgcmte | mgcprov | mgcro |
| <b>addNat</b>    | X          | X     |        |         |       |
| <b>changeNAT</b> | X          | X     |        |         |       |
| <b>queryNAT</b>  | X          | X     | X      | X       | X     |
| <b>addMP</b>     | X          | X     |        |         |       |
| <b>changeMP</b>  | X          | X     |        |         |       |
| <b>deleteMP</b>  | X          | X     |        |         |       |
| <b>addRU</b>     | X          | X     |        |         |       |
| <b>changeRU</b>  | X          | X     |        |         |       |
| <b>queryRU</b>   | X          | X     | X      | X       | X     |
| <b>deleteRU</b>  | X          | X     |        |         |       |
| <b>addLBL</b>    | X          | X     |        |         |       |
| <b>changeLBL</b> | X          | X     |        |         |       |
| <b>queryLBL</b>  | X          | X     | X      | X       | X     |
| <b>deleteLBL</b> | X          | X     |        |         |       |

**References**

1. DNS naming conventions: see for example IETF RFC 1034, or <http://www.dns.net>

**Glossary**

| Term   | Description                               |
|--------|-------------------------------------------|
| CORBA  | Common Object Request Broker Architecture |
| DNS    | Domain Naming System                      |
| GUI    | Graphical User Interface                  |
| GWC    | Gateway Controller                        |
| GWC-EM | GWC Element Manager                       |

| Term   | Description                                |
|--------|--------------------------------------------|
| IAC    | Cable solution                             |
| IAW    | Wireline                                   |
| IP     | Internet Protocol                          |
| ITrans | Internet Transparency solution             |
| LBL    | Low Bandwidth Link                         |
| MG     | Media Gateway                              |
| MP     | Media Proxy                                |
| NAT    | Network Address Translation                |
| RU     | VCAC Resource Usage                        |
| SESM   | Succession Element and Sub-Element Manager |
| SNMP   | Simple Network Management Protocol         |
| VCAC   | Virtual Connection Admission Control       |
| VPN    | Virtual Private Network                    |

## Appendix A for A00002512: ITrans/VCAC Provisioning Steps

This section provides a high-level overview of the provisioning steps required to set up the ITrans VCAC functionality NEW installation SN07.

- 1 Network Analysis/Modelling: identify the key locations in the network for NAT and LBL **functions** (not physical devices). Model and provision the Resource Usage values required for the VCAC functionality (see the Engineering Information section of this document).
- 2 On the CS2K Config Manager provision model as defined by step 1. Starting with individual NAT/LBL middleboxes: these are provisioned in top-down hierarchical order, i.e. starting with those closest to the network core. Remember that a 'parent' middlebox must be already provisioned before a 'child' that refers to it can be provisioned.
- 3 On the CS2K Config Manager provision MGs: select the appropriate ITrans middlebox (NAT or LBL) from the topological model as the 'adjacent middlebox' for the MG.

Existing ITrans network models (SN06.x stream, NATs and MGs) may be adapted to the SN07 form by:

- 1 following steps 1 and 2 above for new middleboxes.
- 2 changing the parent middlebox fields of existing (NAT) middleboxes as required to insert them at the correct location in the topology.
- 3 changing the adjacent middlebox field of existing MGs as required to associate them to the appropriate middlebox (NAT or LBL) in the topology.

## Appendix B for A00002512: XML validation schemas

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  version="1.0"
  xml:lang="en" >

  <!-- ***** -->
  <!-- * Define addNAT Method Parameters -->
  <!-- ***** -->
  <xsd:complexType name="addNATmethodType">
    <xsd:all>
      <xsd:element name="Parameters" type="addNATparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
  </xsd:complexType>
  <xsd:complexType name="addNATparamsType">
    <xsd:sequence>
      <xsd:element name="NATname" type="NoSpaceNameType" />
      <xsd:element name="ParentMB" type="NoSpaceNameType" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  version="1.0"
  xml:lang="en" >

  <!-- ***** -->
  <!-- * Define changeNAT Method Parameters -->
  <!-- ***** -->
  <xsd:complexType name="changeNATmethodType">
    <xsd:all>
      <xsd:element name="Parameters" type="changeNATparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
  </xsd:complexType>
  <xsd:complexType name="changeNATparamsType">
    <xsd:sequence>
      <xsd:element name="NATname" type="NoSpaceNameType" />
      <xsd:element name="ParentMB" type="NoSpaceNameType" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```

```

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
            version="1.0"
            xml:lang="en" >

<!-- ***** -->
<!-- * Define addMP Method Parameters -->
<!-- ***** -->
<xsd:complexType name="addMPmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="addMPparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="addMPparamsType">
    <xsd:sequence>
        <xsd:element name="MPname" type="NoSpaceNameType" />
        <xsd:element name="IPAddress" type="IPAddressType" />
        <xsd:element name="Protocol" type="NoSpaceNameType" />
        <xsd:element name="ProtocolVersion" type="NoSpaceNameType" />
    </xsd:sequence>
</xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
            version="1.0"
            xml:lang="en" >

<!-- ***** -->
<!-- * Define changeMP Method Parameters -->
<!-- ***** -->
<xsd:complexType name="changeMPmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="changeMPparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="changeMPparamsType">
    <xsd:sequence>
        <xsd:element name="MPname" type="NoSpaceNameType" />
        <xsd:element name="IPAddress" type="IPAddressType" />
    </xsd:sequence>
</xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
            version="1.0"
            xml:lang="en" >

<!-- ***** -->
<!-- * Define deleteMP Method Parameters -->
<!-- ***** -->
<xsd:complexType name="deleteMPmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="deleteMPparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="deleteMPparamsType">

```

```

    <xsd:sequence>
      <xsd:element name="MPname" type="NoSpaceNameType" />
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  version="1.0"
  xml:lang="en" >

<!-- ***** -->
<!-- * Define addRU Method Parameters -->
<!-- ***** -->
<xsd:complexType name="addRUMethodType">
  <xsd:all>
    <xsd:element name="Parameters" type="addRUparamsType" />
  </xsd:all>
  <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="addRUparamsType">
  <xsd:sequence>
    <xsd:element name="RUDescription" type="xsd:string" />
    <xsd:element name="RUValue" type="CodecPacketValue" maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CodecPacketValue">
  <xsd:sequence>
    <xsd:element name="Codec" type="CodecType" />
    <xsd:element name="PacketRate" type="PacketType" />
    <xsd:element name="Value" type="NoSpaceNumberType" />
  </xsd:sequence>
</xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  version="1.0"
  xml:lang="en" >

<!-- ***** -->
<!-- * Define changeRU Method Parameters -->
<!-- ***** -->
<xsd:complexType name="changeRUMethodType">
  <xsd:all>
    <xsd:element name="Parameters" type="changeRUparamsType" />
  </xsd:all>
  <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="changeRUparamsType">
  <xsd:sequence>
    <xsd:element name="RUDescription" type="xsd:string" />
    <xsd:choice minOccurs="0">
      <xsd:element name="RUNewDescription" type="xsd:string" />
      <xsd:element name="RUValue" type="ChangeCodecPacketValue" maxOccurs="unbounded" />
    </xsd:choice>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ChangeCodecPacketValue">
  <xsd:sequence>

```



```

        <xsd:element name="Codec" type="CodecType" />
        <xsd:element name="PacketRate" type="PacketType" />
        <xsd:element name="Value" type="NoSpaceNumberType" />
    </xsd:sequence>
</xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    version="1.0"
    xml:lang="en" >

<!-- ***** -->
<!-- * Define queryRU Method Parameters -->
<!-- ***** -->
<xsd:complexType name="queryRUmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="queryRUparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="queryRUparamsType">
    <xsd:choice minOccurs="0">
        <xsd:element name="RUDescription" type="xsd:string" />
    </xsd:choice>
</xsd:complexType>
</xsd:schema>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    version="1.0"
    xml:lang="en" >

<!-- ***** -->
<!-- * Define deleteRU Method Parameters -->
<!-- ***** -->
<xsd:complexType name="deleteRUmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="deleteRUparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="deleteRUparamsType">
    <xsd:sequence>
        <xsd:element name="RUDescription" type="xsd:string" />
    </xsd:sequence>
</xsd:complexType>
</xsd:schema>

```

## Appendix C for A00002512: Error codes and messages

### Return codes when command is unsuccessful

| Cause of error                                                                                                 | Return code | Example return messages                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Incorrect command version in query                                                                             | 301         | Unsupported version                                                                                                                                                                                                                  |
| Platform applications internal error: OSS Interface applications cannot connect to required server application | 302         | Interfacing error                                                                                                                                                                                                                    |
| Unable to provision requested Itrans data because of a database error occurred                                 | 303         | Database error occurred during setting of RU data                                                                                                                                                                                    |
| Unable to provision requested Itrans data because of invalid input data                                        | 304         | Cannot set LBL Max count, value must be between 1 and <Max int><br><br>Cannot set LBL ParentMB, value not configured.<br><br>Cannot set LBL RUDescription, value not configured.<br><br>Cannot provision RU profile, RUvalue missing |
| No Itrans data for this query. e.g. no NAT meets selection criteria or the NAT/GWC specified does not exist    | 305         | NAT not found<br><br>No NAT found for GWC                                                                                                                                                                                            |
| User is not a member of any of the user groups allowed to perform this action                                  | 501         | Insufficient permissions to perform this operation                                                                                                                                                                                   |

### Example Error Message

```

<?xml version='1.0'?>
  <CommandList>
    <Response>
      <Interface>ITranslf</Interface>
      <Methods>
        <queryNAT usn="1.0" version="1.0">
          <ReturnData>
            <NATname>nat1111</NATname>
            <ReturnCode value= "305" text="NAT not found"/>
          </ReturnData>
        </queryNAT usn="1.0">
      </Methods>
    </Response>
  </CommandList>

```

## Appendix D: XML Commands: description of method parameters

### Parameter definitions (new in SN07)

- **ParentMB** - The name of the parent Middlebox for this device. This allows ITrans devices to be connected into a hierarchy. A value of <none> indicates that this device has no parent. TYPE *NoSpaceNameType*. (32 character token without spaces, see xsd definitions in Appendix A).
- **MPname** - The unique name of the Media Proxy. This must be in a valid DNS format. TYPE *NoSpaceNameType*.
- **IPAddress** - The Media Proxy IP address. TYPE *IPAddressType*.
- **Protocol** - The Media Proxy communication protocol (GWC to MP). This must be either MGCP+ or MPCP. TYPE *NoSpaceNameType*.
- **ProtocolVersion** - The Media Proxy communication protocol version. This must be 1.0 or 2.0?????? TO DO. TYPE *NoSpaceNameType*.
- **RUDescription** - The Resource Usage profile name. TYPE *NoSpaceNameType*.
- **RUValue** - a composite of the following parameters. Codec, PacketRate, Value TYPE *CodecPacketValue*
- **Codec** - A valid codec that has been entered in the CS2K config manager. E.G. G.711 or G.729. TYPE *CodecType*
- **PacketRate** - A valid Packetisation rate. E.G. 10 ms, 20 ms. TYPE *PacketType*
- **Value** - A resource usage value that one call will use. This is the basic call count value that VCAC uses to measure calls through a Limited Bandwidth Link. TYPE *NoSpaceNumberType*
- **RUNewDescription** - The new name of an RU profile. TYPE *NoSpaceNameType*
- **LBLName** - The unique name of the Limited Bandwidth Link device. This must be in a valid DNS format. TYPE *NoSpaceNameType*.
- **CounterGWC** - The VCAC counter GWC IP address. TYPE *IPAddressType*
- **MaxCount** - The VCAC count maximum limit. TYPE?

### Method Parameters

Method parameters are defined below. Input data is mandatory except where indicated otherwise.

1. **addNAT** - Method to create a new NAT (virtual NAT function). This method has the following parameters:

- Input data:
    - usn
    - version
    - NATname. The unique name of the NAT device
    - ParentMB (Optional). The name of the parent Middlebox for this device. This allows ITrans devices to be connected into a hierarchy. A value of <none> indicates that this device has no parent. (default = <none>)
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - CallAgentId - The value of the Call Agent Id for this Call Agent (CS2k).
    - ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.
2. **queryNAT** - Method to list the NATs. Optional parameters allow the client to choose the data returned. This method has the following parameters:
- Input data:
    - usn
    - version
    - NATname (Optional, cannot be included as well as GWCname)- A Unique Name of a NAT device, to get full info on a device
    - GWCname (Optional, cannot be included as well as NATname) - To obtain a list of all NATs on a GWC (Use GWC-XX format)
    - ListNATid (Optional) - Set to true if the NAT ids are required.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - GWCname (only when the GWCname option requested)
    - NATname
    - ParentMB (only when the full details are requested)
    - NATType (returned only when the full details are requested)
    - NATid (returned only when ListNATid is set to 'true' in the input data)
    - ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.

3. **changeNAT** - Method that changes a provisioned NAT information into the CS2k Mgr. This method has the following parameters:
  - Input data:
    - usn
    - version
    - NATname - unique name for the NAT to be changed
    - ParentMB - The new parent middlebox name. Enter <none> to remove the topology for this NAT device. Note: the parent Middlebox name entered must have been already provisioned into the CS2k Mgr.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - ReturnCode
4. **addMP** - Method that creates a Media Proxy device into the CS2k Mgr. This method has the following parameters:
  - Input data:
    - usn
    - version
    - MPname - unique name for the MP to be provisioned
    - IPAddress - The IP address of the MP device
    - Protocol - Enter “MGCP+” for the control protocol of the device
    - ProtocolVersion - Enter “1.1” for the control protocol version.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - ReturnCode
5. **changeMP** - Method that changes a provisioned MP information into the CS2k Mgr. This method has the following parameters:
  - Input data:
    - usn
    - version
    - MPname - unique name for the MP to be changed
    - IPAddress - The new IPAddress of the MP device.
  - Output data:

- usn (value should be the same as the input)
  - version (value should be the same as the input)
  - ReturnCode
6. **deleteMP** - Method that deletes provisioned MP information from the CS2k Mgr. This method has the following parameters:
- Input data:
  - usn
  - version
  - MPname - unique name for the MP to be deleted
  - Output data:
  - usn (value should be the same as the input)
  - version (value should be the same as the input)
  - ReturnCode
7. **addRU** - Method that creates resource usage information into the CS2k Mgr. This method has the following parameters:
- Input data:
  - usn
  - version
  - RUDescription - A unique String to label this RU profile
  - RUValue - an RU Value must be entered for every Codec/Packetrate combination that has been created in the CS2k Mgr. An RUValue consists of the following three parameters.
  - Codec - The Codec that this value refers to
  - PacketRate - The packetisation rate this value refers to
  - Value - The VCAC value for a call using this codec/packetrate.
  - Output data:
  - usn (value should be the same as the input)
  - version (value should be the same as the input)
  - ReturnCode
8. **changeRU** - Method that changes provisioned RU information into the CS2k Mgr. This method has the following parameters:
- Input data:
  - usn
  - version

- RUDescription - The RU profile to change
- RUNewDescription (Optional - not allowed with RUValue)- The New name of the RU profile
- RUValue (Optional - not allowed with RUNewDescription) - The full list of RU values for this RU profile, this will overwrite the existing values.
- Codec (Optional - not allowed with RUNewDescription) - The Codec that this value refers to
- PacketRate (Optional - not allowed with RUNewDescription) - The packetisation rate this value refers to
- Value (Optional - not allowed with RUNewDescription) - The VCAC value for a call using this codec/packetrates.
- Output data:
- usn (value should be the same as the input)
- version (value should be the same as the input)
- ReturnCode

**9. queryRU** - Method that queries provisioned RU information from the CS2k Mgr. This method has the following parameters:

- Input data:
- usn
- version
- RUDescription (Optional if omitted all RU profiles are returned)- The RU profile to query
- Output data:
- usn (value should be the same as the input)
- version (value should be the same as the input)
- RUDescription - If RUDescription omitted from query then a list of multiple description fields are returned.
- RUValue returned if a RUDescription query was requested. A value for every Codec/Packetrates combination is returned, this comprises of the following three parameters.
- Codec returned if a RUDescription query was requested.
- PacketRate returned if a RUDescription query was requested.
- Value returned if a RUDescription query was requested.
- ReturnCode

**10. deleteRU** - Method that deletes provisioned RU information from the CS2k Mgr. This method has the following parameters:

- Input data:
    - usn
    - version
    - RUDescription - The RU profile to be deleted
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - ReturnCode
- 11. addLBL** - Method that creates Limited Bandwidth Link information into the CS2k Mgr. This method has the following parameters:
- Input data:
    - usn
    - version
    - LBLname - A unique name for the LBL device
    - CounterGWC (optional) a Counter GWC IP address, if omitted the Counter IPaddress is automatically allocated.
    - RUDescription - The RU profile that this LBL device is using, the RU profile must exist already in the CS2k Mgr.
    - MaxCount - The maximum value that this LBL can handle with respect to the number of calls using the Codec/Packetrate as defined in the RU profile.
    - ParentMB - The parent middlebox name, a link into a middlebox hierarchy. The parent middlebox device must already be in the CS2k Mgr.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - ReturnCode
- 12. changeLBL**- Method that changes provisioned LBL information in the CS2k Mgr. This method has the following parameters:
- Input data:
    - usn
    - version
    - LBLname - The name for the LBL device to change.
    - CounterGWC (optional) a new Counter GWC IP address.



- RUDescription (optional) - The new RU profile, the RU profile must exist already in the CS2k Mgr.
  - MaxCount (Optional)- The new maximum value.
  - ParentMB (Optional)- The new parent middlebox name. The parent middlebox device must already be in the CS2k Mgr.
    - Output data:
  - usn (value should be the same as the input)
  - version (value should be the same as the input)
  - ReturnCode
- 13. queryLBL** - Method that queries provisioned LBL information from the CS2k Mgr. This method has the following parameters:
- Input data:
  - usn
  - version
  - LBLname (Optional, cannot be included as well as GWCname)- A Unique Name of a LBL device, to get full info on a device
  - GWCname (Optional, cannot be included as well as LBLname) - To obtain a list of all LBLs on a GWC (Use GWC-XX format)
    - Output data:
  - usn (value should be the same as the input)
  - version (value should be the same as the input)
  - LBLname - if GWCname option used above, then a list of LBLnames returned without the full info on each device
  - CounterGWC returned if LBLname option used.
  - RUDescription returned if LBLname option used.
  - MaxCount returned if LBLname option used.
  - ParentMB returned if LBLname option used.
  - ReturnCode
- 14. deleteLBL** - Method that deletes provisioned LBL information from the CS2k Mgr. This method has the following parameters:
- Input data:
  - usn
  - version
  - LBLname - The LBL device to be deleted

- Output data:
  - usn (value should be the same as the input)
  - version (value should be the same as the input)
  - ReturnCode



# ISN07 Feature Deltas

***Product = CS2000***

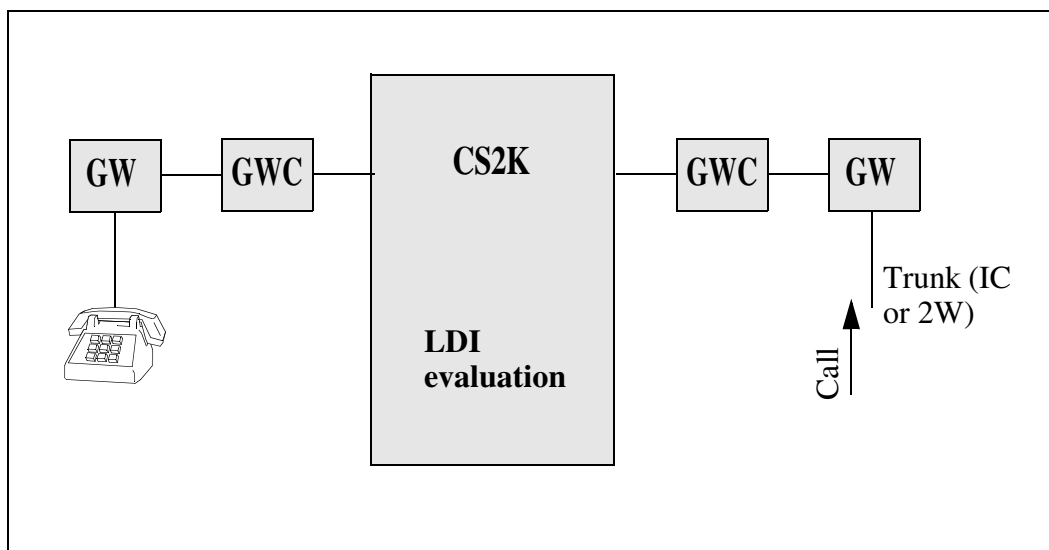
**A00002558 -- LDI display for Class phone (Succession on DMS)**

## ***Functional Description***

### **Overview**

The Long Distance Indicator (LDI) feature identifies long distance calls and provides the LDI indicator information to the subscriber. The feature works with CND, CNAMD, DDN features that use the Multiple Data Message (MDM) format.

### **Functional Behavior Diagram**



The preceding figure shows an example of an ISN07 office which is a terminating exchange. When a long distance call reaches the subscriber set,

LDI evaluates the call. A call is deemed long distance when any of the following condition is satisfied:

- Reverse translation - The dialable DN's first digit is 1 and it has a total of 8 or 11 digits; or
- Table TOLLTRKS - The incoming trunk group CLLI present in table TOLLTRKS.

If a call is deemed long distance, the system delivers the LDI to the line through MGCP. The LDI is delivered as the character L. Following is the message which captured by tool CALLTRAK.

```

OUTGOING 02:07:15.859 NODE TYPE= LCM_NODE
DS512: ENCAP MS_CARD= 6 MS_PORT= 20 NODE= 8216
NN= 0041 TN= 0004 MSGTAG= 00 ROUTE= 2018 ERROR= 00 LENGTH= 30
AGENT= HOST 01 0 00 03 DN 1066020003
80 5F DF 65 00 DE A4 CC 1F 09 39 17 1B 80 19 01 08 30 34 33 30 30 32 30 37 02
0A 31 31 31 31 31 31 31 31 31 31 06 01 4C

00 80 STKI1 5F
02 DF ASSCH2
03 65 STPIDSCAN
04 00 NOOP
05 DE SEND
    DST = TPT_P3
    SRC = CC
    LEN = 1F
    FIAT = FIAT_CCCP
        39 17 1B 80 19 01 08 30 34 33 30 30 32 30 37 02 0A 31 31
        31 31 31 31 31 31 31 31 31 06 01 4C

```

The LDI is displayed as the example below:

“12345656L Name “ or

“12345656  
L Name“

## Datafill

### Reverse translation

The following is an example of how to make a call be deemed as a long distance call through reverse translation:

#### Table DNREGION

TEST 0 9

#### Table DNREVLXA

TEST1 0 9 (TEST 0 N N) \$

#### Table CUSTNTWK

GDNTCUST PUBLIC 1 (PUBLIC TEST1 11) \$ (CLID  
OFFNET) (RNID OFFNET) \$

### Table TOLLTRKS

If the trunk is datafilled in table TOLLTRKS, the call is deemed as a long distance call too. The following shows an example on how to datafill TOLLTRKS. For more information of this table, please refer to the CN section of this document.

#### Table TRKGRP

HKISUP IBNT2 0 NPDGP NCRT GDNTCUS2 0 MIDL 0 N  
ANSDISC 0 Y N N N N N Y 0 0 N 0 0 0 0 N N N N N N  
N N INTL \$

#### Table TOLLTRKS

HKISUP

## Hardware Requirements or Dependencies

Not applicable

## Software Requirements or Dependencies

Not applicable

## Limitations and restrictions

All the limitations and restrictions of feature AG1841CLASS/CMS Long Distance Indicator.

## Interactions

Not applicable.

## Applicable customer facing sections

Fault Management

Logs N/A

Alarms N/A

Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term  | Description                          |
|-------|--------------------------------------|
| CLASS | Custom Local Area Signaling Services |
| CLLI  | Common Language Location Identifiers |
| CNA   | 100 North America                    |
| CNAMD | Calling Name Delivery                |
| CND   | Calling Number Delivery              |
| DDN   | Dialable Number Delivery             |
| LDI   | Long Distance Call Indicator         |
| MDM   | Multiple Data Message format         |

## ***Configuration for A00002558***

### **Hardware and Software Requirements**

None

### **Initial Configuration**

None

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

None

### **Upgrade Impact**

None

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

##### **New or modified tables**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/ OLD/UNCHANGED)</b> |
|-----------------------|---------------------------------|-------------------------------------------|
| TOLLTRKS              | NEW                             | NEW                                       |

#### **Table/MIB/Remote Database Schema information**

**Name:** TOLLTRKS

##### **Functional description**

Table TOLLTRKS stores the common language location identifiers (CLLI) of all trunk groups carrying incoming toll completing traffic, and LDI evaluates the CLLI name to determine the long distance status.

##### **Usage sequence and implications (CM Only)**

Tables must be datafilled in the following sequence:

TRKGRP

TOLLTRKS

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory              |
|------------------------|----------------|----------------|------------------------------------|
| TOLLTRKS               | 0              | 8192           | Memory is automatically allocated. |

**Fields/OIDs**

The following table lists fields/OIDs for TOLLTRKS.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry                             | Explanation and action                                                                                                                                                          |
|-------|----------------|------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLLI  | New            | N/A                    | alphanumeric (1 to 16 characters) | Common language location identifier. This field specifies the trunk over which long distance calls can come into an office. Enter a CLLI from table TRKGRP (1 to 16 characters) |

**Datafill example**

The following example shows sample datafill for table TOLLTRKS:

|          |
|----------|
| CLLI     |
| ANSIISUP |
| ETSIISUP |
| HKISUP   |
| CTUP     |



**Table release history update**

Table TOLLTRKS is created for trunks.

**Supplementary information**

None

**Translation verification other tools**

None

**Service Orders (SO) (CM & SESM)**

None

**Software optionality control (SOC)**

None

**Element Management**

None

**Command interface changes**

None

**Security**

None

**Configuration Walkthrough**

None

***Product = CS2000*****A00002639 -- CEPT PSTN: Analogue Call Waiting Indication (Intl UA-IP)*****Functional Description***

This activity provides the following functionality in addition to the existing CEPT Analogue Call Waiting Indication functionality implemented by the activity A59019288, CEPT Call Waiting:

- “Caller Call Waiting” announcement: The waiting party gets an announcement played that the call is waited. Then normal ringing tone is played. The announcement is optional and controlled by datafill.

- “Called Party Ignores Waiting Call” announcement: After 30sec period (hardcoded), the waiting party hears an announcement followed by a datafillable treatment (please refer to the bullet “Call Waiting Timeout Treatment” below). The announcement is optional and controlled by datafill.
- “Call Waiting Timeout Treatment”. After 30 secs timer expiry (and after the Called Party Ignores Waiting Call announcement, if being applied), a treatment (busy, answer, no\_service\_circuit timeout etc.) is applied to the Call Waiting Line. The treatment is defined by datafill.

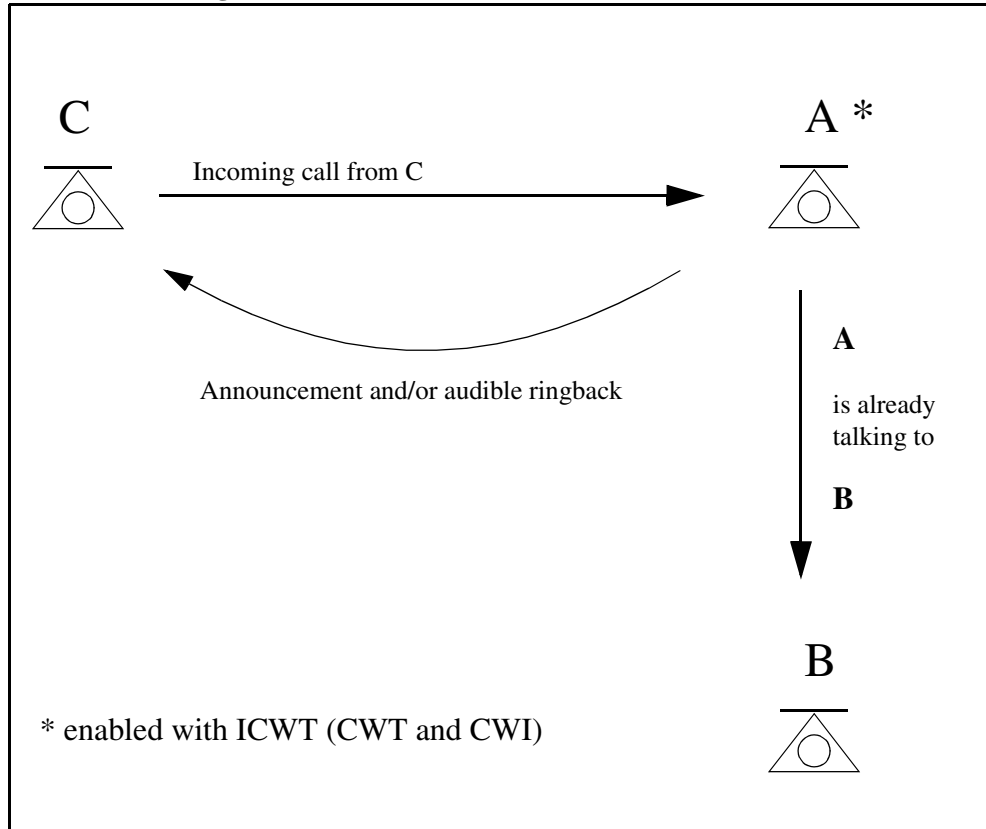
### **Caller Call Waiting Announcement**

The Caller Call Waiting Announcement is applied to the Calling Party if:

- The Called Party has ICWT line option datafilled and activated as covered in section “Datafilling and activating ICWT (CEPT CWT) option” on page 192,  
or
- the Customer Group of the Called Party has ICWT option datafilled in table CUSTSTN and activated by the Called Party as covered in section “Datafilling and activating Customer Group Based ICWT option” on page 193,
- The ICWT announcement datafill covered in section “Datafilling ICWT Announcements” on page 194 is done, and
- The boolean ICWT\_ANN\_ACTIVE of option ICWT is activated (i.e. is set to ‘Y’) as described in section “Activation of boolean ICWT\_ANN\_ACTIVE” on page 195.

The announcement is followed by the standard ring back tone.

If the boolean ICWT\_ANN\_ACTIVE of option ICWT is set to ‘N’ and if the Called Party has ICWT option datafilled, the standard ring back tone is applied to the Calling Party.

**Caller Call Waiting Indication****“Called Party Ignores the Waiting Call” Announcement**

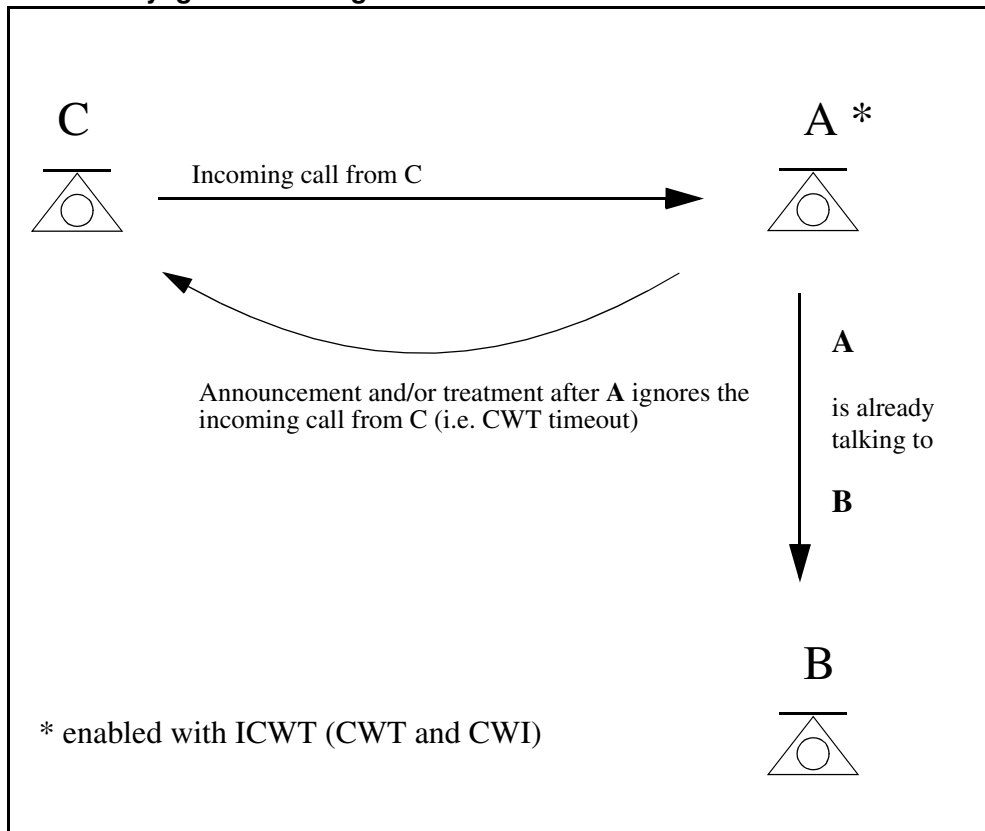
If the Called Party ignores the Waiting Call, the “Called Party Ignores the Waiting Call” announcement is applied to the Calling Party to indicate that the Called Party ignored the call if:

- The Called Party has ICWT line option datafilled and activated as covered in section “Datafilling and activating ICWT (CEPT CWT) option” on page 192,  
or  
the Customer Group of the Called Party has ICWT option datafilled in table CUSTSTN and activated by the Called Party as covered in section “Datafilling and activating Customer Group Based ICWT option” on page 193,
- The ICWT announcement datafill covered in section “Datafilling ICWT Announcements” on page 194 is done, and
- The boolean ICWT\_TMO\_ANN\_ACTIVE of option ICWT is activated (i.e. is set to ‘Y’) as described in section “Activation of boolean ICWT\_TMO\_ANN\_ACTIVE” on page 197.

The announcement is followed by the treatment datafilled in ICWT\_TMO\_ANN\_ACTIVE sub-field of ICWT tuple.

If the boolean ICWT\_TMO\_ANN\_ACTIVE is set to 'N' and if the Called Party ignores the Waiting (Calling) Call, the treatment datafilled in ICWT\_TMO\_ANN\_ACTIVE sub-field of ICWT tuple is applied to the calling party. For datafilling the ICWT timeout treatment, please refer to [“Datafilling of ICWT\\_TIMEOUT\\_TREATMENT” on page 199](#).

#### Called Party Ignores Waiting Call



#### Datafilling and activating ICWT (CEPT CWT) option

The following figure shows the steps for adding and activating the ICWT line option to the Called Party:

**Steps for adding and activating ICWT line option to the Called Party**

```
>servord
SO:
>ado $ 8888587771001
OPTION:
>CEPT
OPTION:
>ICWT
ICWT_ACTIVE:
>y
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 6 7 PM 8888587771001 ( CEPT ) ( ICWT Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
```

**Datafilling and activating Customer Group Based ICWT option**

The following figure shows the steps for adding and activating the Customer Group Based ICWT option to the Customer Group of Called Party:

**Steps for adding and activating Customer Group Based ICWT option**

```
>table custstn
>pos ruaccept cept
>cha
OPTION: CEPT
>
DEFAULT_FEATURE_ON: N
>y
DEFFTR:
>icwt
DEFFTR:
>$
TUPLE TO BE CHANGED:
RUACEPT CEPT CEPT Y (ICWT) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

For activating the ICWT option by the user, please refer to the FN section of activity A59019288, CEPT Call Waiting (sub-section, Feature Activation, Deactivation, Interrogation).

### Datafilling ICWT Announcements

The “Call Waiting” and “Called User Ignores Waiting Call” announcements are datafilled using the existing CS2K announcement capabilities. Please note that the CLLIs used for “Call Waiting” and “Called User Ignores Waiting Call” announcements are **hardcoded** to **ICWTANN** and **ICWTTMOANN**, respectively.

The following figure shows the steps for datafilling the ICWT announcements:

#### Example for datafilling ICWT Announcements

```
table cli
ove; ver off;
add ICWTANN 70 10 ICWT_ANNOUNCEMENT y y
add ICWTTMOANN 71 10 ICWT_ANNOUNCEMENT y y
quit

table anns
ove; ver off;
add ICWTANN NETWK 5 10 1 STND N 5
add ICWTTMOANN NETWK 5 10 1 STND N 5
quit

table annmems
ove; ver off;
add ICWTANN 0 UAS AUD 0 AUD 0
add ICWTTMOANN 0 UAS AUD 0 AUD 0
quit

table annphlst
ove; ver off;
add ICWTANN 0 AUD_546 $
add ICWTTMOANN 0 AUD_547 $
quit
```

The following figure shows the steps for bringing the ICWT announcement trunks inservice:

**Steps for bringing the ICWT announcement trunks Inservice**

```
mapci;mtc;trks;ttp  
  
post g ICWTANN  
bsy; rts  
  
post g ICWTTMOANN  
bsy; rts  
  
quit all
```

**ICWT Tuple in Table ISERVOPT**

In table ISERVOPT, a new option, ICWT, is introduced to indicate whether the Call Waiting Announcements to be applied to the Waiting (Calling) party.

Option ICWT has three sub fields, ICWT\_ANN\_ACTIVE, ICWT\_TMO\_ANN\_ACTIVE and ICWT\_TIMEOUT\_TREATMENT which activate/deactivate “Caller Call Waiting” announcement, “Called Party Ignores Waiting Call” announcement and datafills “Timeout Treatment Value”, respectively.

The Call Waiting Announcements can be activated/deactivated independent from each other.

**Activation of boolean ICWT\_ANN\_ACTIVE**

The standard audible ringback is the default tone for ICWT feature provided to the Calling Party. The new boolean ICWT\_ANN\_ACTIVE of option ICWT needs to be activated (i.e. set to ‘Y’) in table ISERVOPT to allow Caller Call Waiting announcement to the Calling party.

The following figure shows an example of how to add and activate the boolean ICWT\_ANN\_ACTIVE.

**Example for adding and activating ICWT\_ANN\_ACTIVE boolean**

```
>table iservopt
>add icwt
>y
OPTION:
>icwt
ICWT_ANN_ACTIVE:
>y
ICWT_TMO_ANN_ACTIVE:
>y/n
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)
TUPLE TO BE ADDED:
ICWT ICWT Y Y/N BUSY

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

The following figure shows an example of how to activate the boolean ICWT\_ANN\_ACTIVE if it is already deactivated.



**Example for activating ICWT\_ANN\_ACTIVE boolean**

```
>table iservopt
>format pack
>pos icwt
      ICWT ICWT N Y/N BUSY
>cha
>y
OPTION: ICWT
>
ICWT_ANN_ACTIVE:
>y
ICWT_TMO_ANN_ACTIVE:
>y/n
ICWT_TIMEOUT_TREATMENT:
> BUSY_LINE (one of the EXTENDED_TREATMENT)
TUPLE TO BE CHANGED:
      ICWT ICWT Y Y/N BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
```

**Activation of boolean ICWT\_TMO\_ANN\_ACTIVE**

The standard busy tone is the default tone for ICWT feature provided to the Calling Party if the Called Party ignores the Waiting Party. The new boolean ICWT\_TMO\_ANN\_ACTIVE of option ICWT needs to be activated (i.e. set to 'Y') in table ISERVOPT to allow announcement to the Calling party indicating that the Called Party ignores the Waiting Party.

The following figure shows an example of how to add and activate the boolean ICWT\_TMO\_ANN\_ACTIVE.

**Example for adding and activating ICWT\_TMO\_ANN\_ACTIVE boolean**

```
>table iservopt
>add icwt
>y
OPTION:
>icwt
ICWT_ANN_ACTIVE:
>y/n
ICWT_TMO_ANN_ACTIVE:
>y
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)
TUPLE TO BE ADDED:
ICWT ICWT Y/N Y BUSY

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

The following figure shows an example of how to activate the boolean ICWT\_TMO\_ANN\_ACTIVE if it is already deactivated.

**Example for activating ICWT\_TMO\_ANN\_ACTIVE boolean**

```
>table iservopt
>format pack
>pos icwt
      ICWT ICWT  Y/N N BUSY
>cha
>y
OPTION: ICWT
>
ICWT_ANN_ACTIVE:
>y/n
>ICWT_TMO_ANN_ACTIVE:
>y
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)

TUPLE TO BE CHANGED:
      ICWT  ICWT  Y/N  Y BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
```

**Datafilling of ICWT\_TIMEOUT\_TREATMENT**

The third sub field of ICWT tuple in ISERVOPT is ICWT\_TIMEOUT\_TREATMENT which is used to select timeout treatment value. The type of the treatment is EXTENDED\_TREATMENT (please refer to following table).

UNDT (Undefined\_Treatment) is not supported as an ICWT Timeout Treatment and datafilling is prevented by the table control.

If the ICWT tuple is removed from the ISERVOPT table the default value of ICWT\_TIMEOUT\_TREATMENT is NOSC (no\_service\_circuit) treatment.

**Example for ICWT\_TIMEOUT\_TREATMENT datafill**

```

>table iservopt
>format pack
>pos icwt
      ICWT ICWT  Y/N N BUSY
>cha
>y
OPTION: ICWT
>
ICWT_ANN_ACTIVE:
>y/n
>ICWT_TMO_ANN_ACTIVE:
>y
ICWT_TIMEOUT_TREATMENT:
>ss
*** ERROR ***
SS
|
TYPE OF ICWT_TIMEOUT_TREATMENT IS EXTENDED_TREATMENT
ICWT_TIMEOUT_TREATMENT:
>ss
*** ERROR ***
SS
|
TYPE OF ICWT_TIMEOUT_TREATMENT IS EXTENDED_TREATMENT
TYPE IS EXTENDED_TREATMENT
{UNDT,NOSC,PDIL,PSIG,INAC,CNDT,VACT,MSCA,MSLC,
  NBLH,NBLN,EMR1,EMR2,UNCA,SYFL,CQOV,HNPI,UNDN,
  BLDN,BUSY,UNOW,TDND,UNIN,SSTO,NCRT,RODR,MANL,
  ORSS,TESS,OPRT,TRBL,ANCT,PNOH,DNTR,NECG,FECG,
  .....
  CCRG,CCRP,CCRM,CCRH,CCRT,MSOA,RTEE,CRTC,CBFC,
  CMGA,CMGD,RMIA,RMID,PODN,RL00,RL01,RL02,RL03,
  RL04,RL05,RL06,RL07,RL08,RL09,RL10,RL11,RL12,
  RL13,RL14,RL15,RL16,RL17,RAGC,UNMC,FACJ,ICCB,
  RDIR}
ICWT_TIMEOUT_TREATMENT:
>BUSY

TUPLE TO BE CHANGED:
      ICWT ICWT  Y/N Y BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED

```

## Deactivation of Caller Call Waiting Announcement

There are four ways of deactivation of applying Caller Call Waiting announcement to the Calling Party:

### By deactivating or deleting ICWT option

The following figure shows the steps for deleting the ICWT line option from the Called Party:

#### Steps for removing ICWT line option from the Called Party

```
>servord
SO:
>deo $ 8888587771001
OPTION:
>ICWT
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 3 6 13 PM 8888587771001 ( ICWT ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT
ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

### By deactivating or deleting Customer Group Based ICWT option

For deactivation of the ICWT option, please refer to the FN section of activity A59019288, CEPT Call Waiting (sub-section, Feature Activation, Deactivation, Interrogation).

The following figure shows the steps for deleting the Customer Group Based ICWT option from the Customer Group of Called Party:

**Steps for removing ICWT line option from the Called Party**

```
>table sutstn
>pos ruaccept cept
RUACEPT CEPT CEPT Y (CFU) (ICWT) $
>cha
OPTION: CEPT
>
DEFAULT_FEATURE_ON: Y
>
DEFFTR: CFU
>
DEFFTR: ICWT
>$
TUPLE TO BE CHANGED:
RUACEPT CEPT CEPT Y (CFU) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

**By deleting the ICWT announcement datafill**

The Call Wait announcement is disabled if whole or one part of the announcement datafill for ICWTANN covered in section “Datafilling ICWT Announcements” on page 194, is deleted.

Then, only the standard ringing tone is applied to the Waiting Party.

**By changing the value of ICWT\_ANN\_ACTIVE to ‘N’**

The Caller Call Waiting announcement is disabled if the value of the boolean ICWT\_ANN\_ACTIVE of option ICWT is set to ‘N’ in table ISERVOPT.

The following figure shows an example of how to deactivate the boolean ICWT\_ANN\_ACTIVE.

**Example for deactivating boolean ICWT\_ANN\_ACTIVE**

```
>table iservopt
>format pack
>pos icwt
      ICWT  ICWT  Y  Y/N BUSY
>cha
>y
OPTION: ICWT
>
ICWT_ANN_ACTIVE:
>n
ICWT_TMO_ANN_ACTIVE:
>y/n
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)
TUPLE TO BE ADDED:

TUPLE TO BE CHANGED:
      ICWT  ICWT  N  Y/N BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
```

**By removing the option ICWT:**

The ICWT announcements are disabled if the option ICWT is deleted from table ISERVOPT. The following figure shows an example of how to delete the option ICWT.

**Deletion of Option ICWT**

```
>table iservopt
>pos icwt
      ICWT ICWT Y  Y/N BUSY
>del
>y
TUPLE TO BE DELETED:
      ICWT ICWT Y  Y/N BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

## Deactivation of ICWT Announcement for “Called Party Ignores Waiting Call”

There are four ways of deactivation of applying ICWT “Called Party Ignores the Waiting Call” announcement to the Calling Party:

### By deactivating or deleting ICWT option

The following figure shows the steps for deleting the ICWT line option from the Called Party:

#### Steps for removing ICWT line option from the Called Party

```
>servord
SO:
>deo $ 8888587771001
OPTION:
>ICWT
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 3 6 13 PM 8888587771001 ( ICWT ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT
ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

### By deactivating or deleting Customer Group Based ICWT option

For deactivation of the ICWT option, please refer to the FN section of activity A59019288, CEPT Call Waiting (sub-section, Feature Activation, Deactivation, Interrogation).

The following figure shows the steps for deleting the Customer Group Based ICWT option from the Customer Group of Called Party:



**Steps for removing ICWT line option from the Called Party**

```
>table sutstn
>pos ruaccept cept
RUACEPT CEPT CEPT Y (CFU) (ICWT) $
>cha
OPTION: CEPT
>
DEFAULT_FEATURE_ON: Y
>
DEFFTR: CFU
>
DEFFTR: ICWT
>$
TUPLE TO BE CHANGED:
RUACEPT CEPT CEPT Y (CFU) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

**By deleting the ICWT announcement datafill**

The Call Wait announcement is disabled if whole or one part of the announcement datafill for ICWTANN covered in section “Datafilling ICWT Announcements” on page 194 is deleted.

Then, only the standard no service circuit is applied to the Waiting Party.

**By changing value of ICWT\_TMO\_ANN\_ACTIVE to ‘N’**

The ICWT “Called Party Ignores the Waiting Call” announcement is disabled if the value of the boolean ICWT\_TMO\_ANN\_ACTIVE of option ICWT is set to ‘N’ in table ISERVOPT.

The following figure shows an example of how to deactivate the boolean ICWT\_TMO\_ANN\_ACTIVE.

**Example for deactivating boolean ICWT\_TMO\_ANN\_ACTIVE**

```
>table iservopt
>format pack
>pos icwt
      ICWT  ICWT  Y/N  Y BUSY
>cha
>y
OPTION: ICWT
>
ICWT_ANN_ACTIVE
>y/n
ICWT_TMO_ANN_ACTIVE:
>n
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)

TUPLE TO BE CHANGED:
      ICWT  ICWT  Y/N  N BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

**By removing the option ICWT:**

The ICWT announcements are disabled if the option ICWT is deleted from table ISERVOPT. The following figure shows an example of how to delete the option ICWT.

**Deletion of Option ICWT**

```
>table iservopt
>pos icwt
      ICWT ICWT Y/N  Y BUSY
>del
>y
TUPLE TO BE DELETED:
      ICWT ICWT Y/N  Y BUSY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

**Hardware Requirements or Dependencies**

Standard CS2K hardware.

## Software Requirements or Dependencies

Intl Succession Core and GWC loads.

## Limitations and restrictions

- The duration of ICWT Timeout is hardcoded to 30 seconds.
- The CLLIs of the ICWT announcement trunks are hardcoded to ICWTANN and ICWTTMOANN.
- If UNDT (undefined\_treatment) is tried to be datafilled for ICWT\_TIMEOUT\_TREATMENT sub field, it is prevented by the table control since it is not supported as ICWT Timeout Treatment.

## Interactions

- The interactions supported by the activity A59019288, CEPT Call Waiting, (FMDOC) also supported by this activity.
- When the Called User ignores the Waiting Call and if the Calling User has CCBS option, CCBS procedures take precedence over “Called Party Ignores the Waiting Call” announcement procedures.
- The limitations for ICWT interactions with IN also applies for this activity.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|                    |     |
|--------------------|-----|
| Data Schema        | Y   |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

|                                   |     |
|-----------------------------------|-----|
| Accounting (includes AMA billing) | N/A |
|-----------------------------------|-----|

|                                                 |     |
|-------------------------------------------------|-----|
| Performance (includes operational measurements) | N/A |
|-------------------------------------------------|-----|

## Glossary

| Term | Description                         |
|------|-------------------------------------|
| CLLI | Common Language Location Identifier |
| CWT  | Call Waiting Terminating            |

### *Configuration for A00002639*

#### Hardware and Software Requirements

Standard CS2K Configuration.

#### Initial Configuration

Not applicable.

#### Office/Subnet parameters (OP/SP) (CM & SESM)

Not applicable.

#### Upgrade Impact

Not applicable.

#### Data schema (DS) (CM, MIBS, RDB)

##### New/modified tables, MIBs, or Database Schema

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                          |

##### Table/MIB/Remote Database Schema information

###### Name: ISERVOPT

International Service Option

###### Functional description

A new tuple ICWT is introduced by this activity in table ISERVOPT. This tuple specifies whether CWT announcements to be applied to the Call Waiting Party. If the booleans ICWT\_ANN\_ACTIVE and ICWT\_TMO\_ANN\_ACTIVE are set to 'Y', the "Caller Call Waiting" and "Called Party Ignores Waiting Call" announcements are applied to the Call Waiting Party. ICWT\_TIMEOUT\_TREATMENT subfield controls after 30 secs timer expiry (and after the Called Party Ignores Waiting Call

announcement, if being applied), a treatment (busy, answer, no\_service\_circuit timeout etc.) is applied to the Call Waiting Line. The treatment is defined by datafill

For the functional details, please refer to the FN section of this activity.

### Usage sequence and implications (CM Only)

Not applicable.

### Size

Unchanged.

### Fields/OIDs

The following table lists fields/OIDs for ISERVOPT.

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry                                | Explanation and action                                                                                                                            |
|----------|----------------|------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| SOPTSKEY | Changed        | -                      | ICWT                                 | New entry ICWT defined.                                                                                                                           |
| SOPTSVAR | Changed        | option                 | ICWT                                 | New entry ICWT defined.                                                                                                                           |
| SOPTSVAR | New            | icwt_ann_active        | {Y, N}                               | icwt_ann_active: Whether "Caller Call Waiting" announcement should be applied ore not.                                                            |
| SOPTSVAR | New            | icwt_tmo_ann_active    | {Y, N}                               | icwt_tmo_ann_active: Whether "Called Party Ignores Waiting Call" announcement should be applied ore not.                                          |
| SOPTSVAR | New            | icwt_timeout_treatment | one of the <i>extended_treatment</i> | icwt_timeout_treatment:After 30 secs timer expiry a treatment (busy, answer, no_service_circuit timeout etc.) is applied to the Call Waiting Line |

### Datafill example

The following examples shows sample datafill for table ISERVOPT.

- If CWT announcements to the Waiting Party should be turned ON:  
*ICWT ICWT Y Y UNDT*
- If CWT announcements to the Waiting Party should be turned OFF:  
*ICWT ICWT N N UNDT*
- To set a timeout treatment to BUSY ICWT\_TIMEOUT\_TREATMENT field should be changed:

*ICWT ICWT N N BUSY***Table release history update**

The following information was added:

Entry ICWT added to field SOPTSKEY and SOPTSVAR/OPTION.

New fields ICWT\_ANN\_ACTIVE, ICWT\_TMO\_ANN\_ACTIVE and ICWT\_TIMEOUT\_TREATMENT are added to entry ICWT in field SOPTSKEY and SOPTSVAR/OPTION.

**Supplementary information**

None.

**Translation verification other tools**

ISERVOPT does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

Not applicable.

**Software optionality control (SOC)**

Not applicable.

**Element Management**

Not applicable.

**Command interface changes**

Not applicable.

**Security**

Not applicable.

**Configuration Walkthrough**

In order to have CWT announcements to be applied to the Waiting Party, the following configuration is required:

- The Called Party has ICWT line option datafilled and activated,
- The CWT announcements datafilled and brought in service, and
- The ISERVOPT option ICWT is datafilled and its booleans ICWT\_ANN\_ACTIVE and ICWT\_TMO\_ANN\_ACTIVE are activated.
- In order to change timeout treatment, the initial value should be selected via ICWT\_TIMEOUT\_TREATMENT field in ICWT tuple.

## Datafilling ICWT Line Option

The following figure shows the steps for adding the ICWT line option to the Called Party:

### Steps for adding ICWT line option to the Called Party

```
>servord
SO:
>ado $ 8888587771001
OPTION:
>CEPT
OPTION:
>ICWT
ICWT_ACTIVE:
>y
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 6 7 PM 8888587771001 ( CEPT ) ( ICWT Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
```

## Datafilling CWT Announcements

The “Call Waiting” and “Called User Ignores Waiting Call” announcements are datafilled using the existing CS2K announcement capabilities. Note that the CLLIs used for “Call Waiting” and “Called User Ignores Waiting Call” announcements are **hardcoded** to **ICWTANN** and **ICWTTMOANN**, respectively.

The following figure shows the steps for datafilling the CWT announcements:

**Example for datafilling CWT Announcements**

```
table cli
ove; ver off;
add ICWTANN 70 10 ICWT_ANNOUNCEMENT y y
add ICWTTMOANN 71 10 ICWT_ANNOUNCEMENT y y
quit

table anns
ove; ver off;
add ICWTANN NETWK 5 10 1 STND N 5
add ICWTTMOANN NETWK 5 10 1 STND N 5
quit

table annmems
ove; ver off;
add ICWTANN 0 UAS AUD 0 AUD 0
add ICWTTMOANN 0 UAS AUD 0 AUD 0
quit

table annphlst
ove; ver off;
add ICWTANN 0 AUD_546 $
add ICWTTMOANN 0 AUD_547 $
quit
```

The following figure shows the steps for bringing the CWT announcement trunks inservice:

**Steps for bringing the CWT announcement trunks Inservice**

```
mapci;mtc;trks;ttp

post g ICWTANN
bsy; rts

post g ICWTTMOANN
bsy; rts

quit all
```



## Datafilling ISERVOPT Options

The following figure shows the steps for adding the ISERVOPT option ICWT and activating its booleans ICWT\_ANN\_ACTIVE and ICWT\_TMO\_ANN\_ACTIVE:

### Example for adding ICWT and activating its booleans

```
>table iservopt
>add icwt
>y
OPTION:
>icwt
ICWT_ANN_ACTIVE:
>y
ICWT_TMO_ANN_ACTIVE:
>y
ICWT_TIMEOUT_TREATMENT:
> BUSY (one of the EXTENDED_TREATMENT)
TUPLE TO BE ADDED:
ICWT ICWT Y Y BUSY

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
```

## ***Product = CS 2000***

### **A00002642 -- CEPT PSTN: Analogue Query and 3PTY (Intl UA-IP)**

#### ***Functional Description***

Activity A00002642 provides support for “Analogue Query and 3PTY” according to the Telefonica Specification ER.D4.062-6 “SUPPLEMENTARY TELEPHONE SERVICE CONSULT AND THREE PARTY CALL”

Additionally this activity covers a interworking issue between international call transfer and international warm line as documented in Telefonica Specification GT.ER.D4.462-16 “SUPPLEMENTARY TELEPHONE SERVICE CONSULTS AND CALLS TRANSFERENCE “.

As a last item this activity adds the option to turn off playing a hold tone to the held party via table ISERVOPT.

The supplementary services 3wc and call transfer covered in this activity had been implemented in MMP14 activity 59019281 “CEPT 3WC and ICT”

### **Warning Tone During 3WC Conferences**

This activity introduces a new field to the ICONF tuple in table ISERVOPT. If this field is set the CS2k conference circuit of the conference controller is supervised with the H.248 signal “cg/wt”. This field is initialized to “No” to retain existing behavior

The following tone definition is suggested:

- Frequency: 1400Hz
- Level: -25dB
- On: 400ms, Off: 18000ms, repeated endless

This field can only be set to “Yes” if an audio controller is datafilled in table SERVSINV. This warning tone is not played, if the conference uses a TDM conference circuit.

### **Warmline Interaction with Enquiry Mode**

This activity introduces a new field to the ICONF tuple in table ISERVOPT. If this field is set, the CS2k prevents WML during enquiry mode. This field is initialized to “No” to retain existing behavior.

### **Hold Tone during Enquiry Mode**

This activity introduces a new field to the ICONF tuple in table ISERVOPT. If this field is set, the CS2k does not play the hold tone to the held party.

### **Example**

Below an example of the ICONF tuple after this activity

**ICONF tuple in ISERVOPT**

```
>add iconf
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
OPTION:
>iconf
ALLOW_ICT_IN_I3WC:
>y
CLF_FLASH_IGNORE:
>y
WARNING_TONE:
>Y
PREVENT_WML_DURING_ENQUIRY
>Y
PREVENT_HELD_TONE
>Y
TUPLE TO BE ADDED:
                                ICONF
                                ICONF Y Y Y Y Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```

**Hardware Requirements or Dependencies**

The option to play the warning tone to the conference is only available to CS2k. All other functionality described in this document is applicable both to the DMS and the CS2k.

**Software Requirements or Dependencies**

None

**Limitations and restrictions**

- Warning Tone does not apply to other conference types than I3WC. I6WC or Meet Me conferences do not use the warning tone.
- I3WC does not support chaining of conferences on the same office.<sup>1</sup>

---

1. existing limitation, which is not changed by this activity

- In case I3WC conferences are chained via trunks, multiple warning tones might be encountered, if the other office also supports the warning tone.
- If PREVENT\_WML\_DURING\_ENQUIRY bool is set to “Y” it impacts the Bellcore versions of CT and 3WC in a manner, that WML is still possible on CT and 3WC. But it will use the initial digit time out instead of the WML time out.
- When the option PREVENT\_WML\_DURING\_ENQUIRY is set to Y, the first digit timeout is set to the value in LN\_PERM\_SIG\_TIME.
- When the enquiry/consult call leg triggers IN queries- InfoCollected TDP or Info Analyzed TDP, the enquiry/consult call is not permitted.
- The AudioCodes Media Server (AMS) does not support the warning tone. Please set WARNING\_TONE to “N” while using the AMS. (Q00937489)
- The SAM16 UAS does not support the H.248 Empty Event Parameter without curly brackets used by the GWC. This takes down the conference, when the conference leader tries to toggle between the other parties (Q00726512)

## Interactions

This activity does not change feature interactions unless documented above.

## Applicable customer facing sections

### Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

### Configuration

Data Schema \_\_\_\_\_X\_\_\_\_\_

User Interface \_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_

## Glossary

| Term | Description                                                                                                  |
|------|--------------------------------------------------------------------------------------------------------------|
| 3wc  | Servord line option to allow 3 party conferences                                                             |
| CEPT | Conference of European Posts and Telecommunications Administration                                           |
| CS2K | Call Server 2000 a super class soft switch                                                                   |
| GWC  | Gateway controller. One component in the CS2K which handles the messaging between the CSK2 and the gateways. |
| I3wc | Servord line option to allow international 3 party conferences according to former CEPT specification        |
| UAS  | Universal Audio Server - A media gateway being capable of providing announcements, conferences and tones     |
| WML  | Warm Line. After a short time out a pre configured DN is called.                                             |

## Configuration for A00002642

### Hardware and Software Requirements

All software upgraded to the SN07 line up.

### Initial Configuration

All components of the CS2k initialized

### Upgrade Impact

No impact

### Data schema (DS) (CM, MIBS, RDB)

#### New/modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                          |

#### Table information

**Name: ISERVOPT**

International Service Option

**Functional description**

unchanged.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Unchanged

**Fields**

The following table lists fields for ISERVOPT.

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement     | Entry | Explanation and action                                              |
|----------|----------------|----------------------------|-------|---------------------------------------------------------------------|
| SOPTSVAR | Changed        | ICONF<br>WARNING_TONE      | {Y,N} | Set to 'Y' to apply warning tone during I3WC conferences            |
|          |                | PREVENT_WML_DURING_ENQUIRY | {Y,N} | Set to 'Y' to prevent WML to be active during enquiry mode          |
|          |                | PREVENT_HELD_TONE          | {Y,N} | Set to 'Y' to prevent held tone to be applied for the party on hold |

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**ICONF tuple in ISERVOPT**

```
>add iconf
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
OPTION:
>iconf
ALLOW_ICT_IN_I3WC:
>Y
CLF_FLASH_IGNORE:
>Y
WARNING_TONE:
>Y
PREVENT_WML_DURING_ENQUIRY
>Y
PREVENT_HELD_TONE
>Y
TUPLE TO BE ADDED:
                                ICONF                                ICONF Y Y Y Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
```

**Table release history update**

ISN07: refined ICONF to include WARNING\_TONE, PREVENT\_WML\_DURING\_ENQUIRY and PREVENT\_HELD\_TONE

**Supplementary information**

None

**Translation verification other tools**

Not applicable

**Software optionality control (SOC)**

Not applicable

***Product = CS 2000*****A00002644 -- Common Topology Elements for Inter CS2K Internet Transparency solution (Intl IAW, Intl IAC)*****Functional Description***

The Internet Transparency feature, which allows Voice-Over-IP calls to take place in the presence of Network Address Translation (NAT)/IP VPNs, was

introduced into Succession in release 6.1. This feature optimizes network resource utilization by determining whether the call path crosses NAT/VPNs and inserting Media Proxies if necessary.

However, calls spanning multiple Call Agents (CS2ks) may result in the insertion of one or more Media Proxies into the call path, even if the call is contained within a single VPN. To avoid this, the inter-Call Agent trunks can be configured to be ‘intra-domain’ SIP-T trunks, thus causing the NAT/VPN information for both ends of the call to be compared. However, for this comparison to operate correctly, the following requirements must be met by the NAT’s numerical identifier within the Call Agents (CS2ks), i.e. by the NAT’s ‘Middlebox ID’:

- the middlebox ID for each NAT must be unique across all Call Agents
- each NAT must have the same Middlebox ID in all Call Agents

An example of this is shown in Figure , on page 222 .

This requirement on middlebox IDs is provided by the feature described in this note, hence allowing the configuration and use of intra-domain SIP-T trunks in SN07.

Each CS2k within the VoIP network must be allocated a unique Call Agent Identifier between 1 and 255. The user is responsible for administration of this number and its allocation among the CS2ks. Once a CS2k has been allocated a Call Agent ID, it should be provisioned into the CS2k Mgr using the capabilities provided by this feature. Ideally this should be co-ordinated with the CS2k upgrade to SN07, as described in section “ Upgrade to SN07” on page 238.

When a NAT is provisioned, a middlebox ID is automatically generated by the CS2k Mgr. From SN07 onwards, the CS2k Mgr incorporates the Call Agent into this automatically generated number, using the provisioned Call Agent ID for that CS2k. This helps to ensure uniqueness of middlebox IDs across multiple CS2ks.

For the special case in which the same NAT is provisioned into multiple CS2ks, it is necessary to ensure that the middlebox ID used for this NAT is the same in all CS2ks. Hence the middlebox ID allocated when the NAT is first provisioned into a CS2k must be used when the NAT is provisioned in subsequent CS2ks. In order to enable this, this feature provides the capability to

- read the middlebox ID of a provisioned NAT



- specify the middlebox ID as part of the data when provisioning a NAT.

Alternatively, the user may manually allocate any valid unique middlebox ID to a NAT and provision this value into all CS2ks, by-passing the CS2k Mgr middlebox-ID-auto-generation step. The middlebox ID must be an integer between 2 and 16777215 (ID = 1 is reserved by the system for internal use).

An example of ID allocations for a VoIP network with 2 CS2ks is shown in Figure , on page 222 .

If a NAT is provisioned into a CS2k Mgr and the automatically generated middlebox ID is then provisioned into other CS2k Mgrs, care must be taken when deleting this NAT. The NAT must be deleted last from the CS2kMgr that generated the middlebox ID - i.e. only after it has been deleted from all other CS2k Mgrs.

## VoIP network with multiple Call Agents (CS2ks)

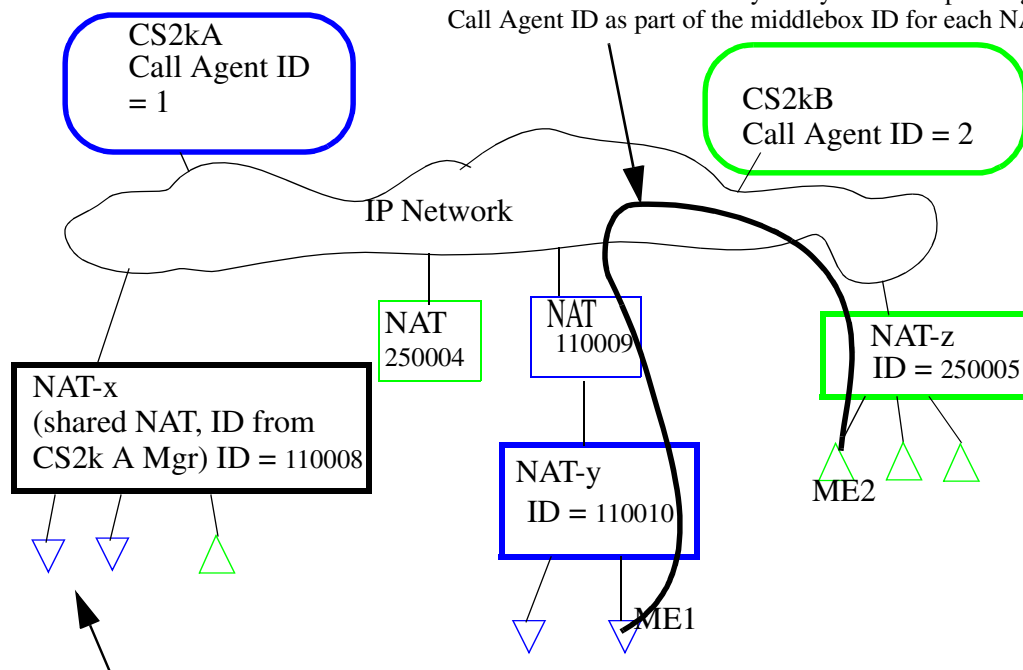
▽ ME belonging to CS2kA

△ ME belonging to CS2kB

NAT-y is provisioned into CS2kA only.

NAT-z is provisioned into CS2kB only.

A call from ME1 to ME2 will reference both NATs, hence NAT-y and NAT-z must have different identifiers. This is ensured by the system incorporating the Call Agent ID as part of the middlebox ID for each NAT.



Some MEs behind NAT-x belong to CS2kA & others belong to CS2kB, hence NAT-x is provisioned into both Call Agents. NAT-x must have the same ID in both these Call Agents. Therefore NAT-x's identifier as allocated by CS2kA's Mgr (ID = 110008) must be specified when NAT-x is provisioned into CS2kB.

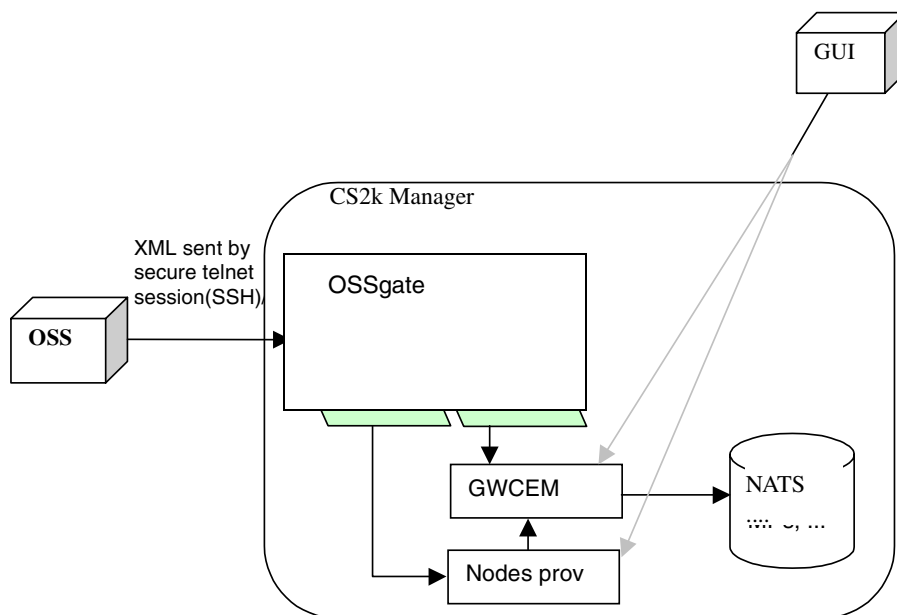
The user operations provided by this feature, which available via the GUI client and via the XML OSS interface, (" GUI Client and OSSGate interfaces" on page 223) are:

- Provision/set the Call Agent ID
- Display/list the Call Agent ID
- Specify the NAT middlebox ID during NAT provisioning
- Display/list the NAT Middlebox ID for a selected NAT
- Warning message on deletion of NAT middlebox.

In addition, the following internal functionality changes have been made as part of this feature:

- Automatic update of middlebox ids when Call Agent set for the first time
- Auto-generation of NAT and Pep Server middlebox id based on provisioned Call Agent ID

#### GUI Client and OSSGate interfaces



### Hardware Requirements or Dependencies

No new hardware is required or introduced by this feature. The application components provided by this feature execute as part of the SESM.

### Software Requirements or Dependencies

Dependencies:

- CR.Q00768898: Extend range in middlebox id in Guitar Controller

### Limitations and restrictions

Upgrade to SN07 should be carried out as described in section “Upgrade to SN07” on page 238

## Interactions

The following existing GUIs have been modified:

- Maintenance Settings Panel (see Figure , on page 227 ).
- Change Maintenance Settings Dialog (see Figure , on page 228 ).
- Network Devices Panel, NATs tab (see Figure , on page 231 ).
- Add NAT middlebox Dialog (see Figure , on page 232 , Figure , on page 232 )
- Delete NAT confirmation Dialog (see Figure , on page 238 )

The following existing XML commands have been modified:

- queryNAT (see Figure , on page 234 , Figure , on page 235 , Figure , on page 236 ).
- addNAT (see Figure , on page 237 ).

The following GUIs have been added:

- NAT middlebox ID display dialog (see Figure , on page 231 ).

The following XML commands have been added:

- queryCallAgentId (see Figure , on page 229 )
- setCallAgentId (see Figure , on page 230 )

The on-line help facility will be updated with information on the use, syntax and valid values for all the above modifications/additions.

## Applicable customer facing sections

### Fault Management

|        |       |
|--------|-------|
| Logs   | _N/A_ |
| Alarms | _N/A_ |

### Configuration

|                    |       |
|--------------------|-------|
| Data Schema        | _X_   |
| User Interface     | _X_   |
| Element Management | _N/A_ |
| Security           | _N/A_ |
| Service Order      | _N/A_ |
| Office Parameters  | _N/A_ |

|                                   |       |
|-----------------------------------|-------|
| Accounting (includes AMA billing) | _N/A_ |
|-----------------------------------|-------|

|                                                 |       |
|-------------------------------------------------|-------|
| Performance (includes operational measurements) | _N/A_ |
| Realtime                                        | _N/A_ |
| Engineering Information                         | _X_   |

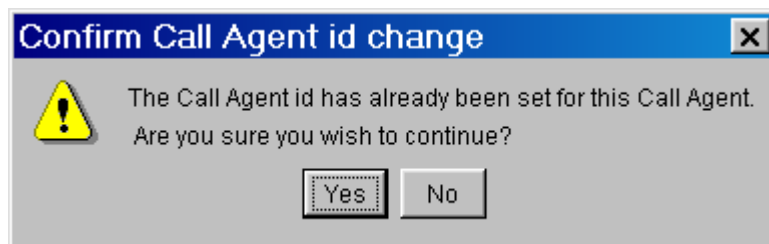
## Call Agent Identifier

The Call Agent ID has an initial value of <not configured> in newly installed SN07 SESM systems. The Call Agent ID value should be set to a integer value between 1 and 255 by the user for normal operation. The Call Agent ID value must be set before the user can specify Middlebox IDs for NATs during NAT provisioning.

Note that in order to ensure optimum system operation is maintained during an upgrade, the Call Agent Id should be set just prior to upgrade of GWCs to SN07. Details of this are described in section “Upgrade to SN07” on page 238.

The first time the Call Agent ID is set by the user, the system performs any necessary internal changes for NAT middleboxes which have already been provisioned, to incorporate the newly provisioned Call Agent ID into the NAT middlebox IDs. GWC units which need to be synchronized to this new data will be identified by having data synchronization alarms raised against them.

Ideally, the Call Agent ID should only be set once and then not changed. However, setting the Call Agent Id more than once is not prohibited by the CS2k mgr. Note that, for subsequent changes, the new Call Agent ID will only be used in the middlebox ID for NATs provisioned after the change has been made. The middlebox IDs of previously provisioned NATs are not modified. This ensures consistency, in case NATs have been provisioned into multiple Call Agents. If the user does attempt change the Call Agent ID, a warning confirmation message is displayed.



## **GUI Client**

### **Display Call Agent ID**

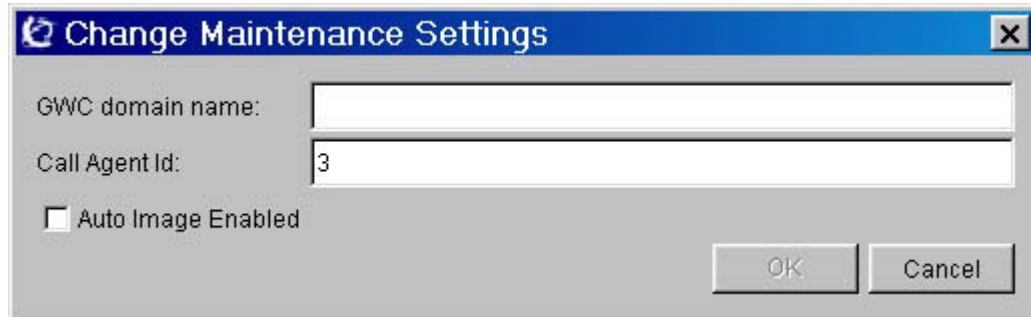
The Call Agent ID is displayed in the Gateway Controller Main Panel, in the 'Maintenance Settings' area. This is shown in Figure , on page 227 and Figure , on page 227 .



### Provision Call Agent ID

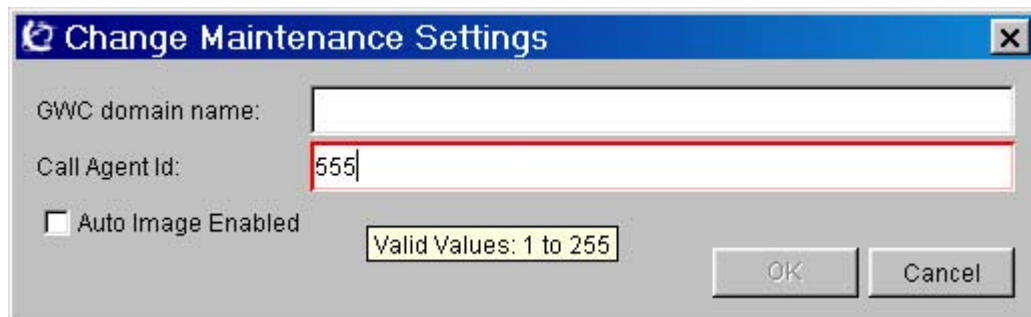
The Call Agent ID can be provisioned/set using the 'Change' button in the Maintenance Setting area display (Figure , on page 227 ). This displays the Maintenance Settings change dialog (Figure ), which allows the user to set the Call Agent ID to an integer value between 1 and 255. Other maintenance settings may optionally be changed at the same time.

#### Change Maintenance Settings Dialog

A screenshot of the 'Change Maintenance Settings' dialog box. It has a blue title bar with a close button. The dialog contains three fields: 'GWC domain name:' with an empty text box, 'Call Agent Id:' with a text box containing the number '3', and a checkbox labeled 'Auto Image Enabled' which is currently unchecked. At the bottom right are 'OK' and 'Cancel' buttons.

Tool tips for the Call Agent ID are displayed when the cursor is placed within the text field. If the entered value is invalid, the text field is outlined in red and the OK button is disabled (Figure ).

#### Invalid Call Agent Id value

A screenshot of the 'Change Maintenance Settings' dialog box showing an invalid value. The 'Call Agent Id' text box now contains '555' and is outlined with a thick red border. A tooltip box is visible below the text box, displaying 'Valid Values: 1 to 255'. The 'OK' button is now disabled (grayed out), while the 'Cancel' button remains active. The other fields and the 'Auto Image Enabled' checkbox are unchanged.

## XML Interface

### List Call Agent ID

The Call Agent ID may be retrieved via the XML interface using the following command (Figure , on page 229 ). If the request is unsuccessful, an error message is returned as described in Appendix B.



### XML command queryCallAgentId

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryCallAgentId usn="1" version="1.0" />
    </Methods>
  </Command>
</CommandList>
```

### XML Response for queryCallAgentId

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryCallAgentId usn="1" version="1.0">
        <ReturnData>
          <CallAgentId>3</CallAgentId>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryCallAgentId>
    </Methods>
  </Response>
</CommandList>
```

### Provision Call Agent ID

The Call Agent ID can be specified via the XML interface using the setCallAgentId command (Figure , on page 230 ). If the Call Agent Id cannot be set, an error message is returned as described in Appendix B:

**XML Command: setCallAgentId**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <setCallAgentId usn="1" version="1.0">
        <Parameters>
          <CallAgentId>3</CallAgentId>
        </Parameters>
      </setCallAgentId>
    </Methods>
  </Command>
</CommandList>
```

**XML Response for setCallAgentId**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <setCallAgentId usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </setCallAgentId>
    </Methods>
  </Response>
</CommandList>
```

**NAT middlebox Identifier**

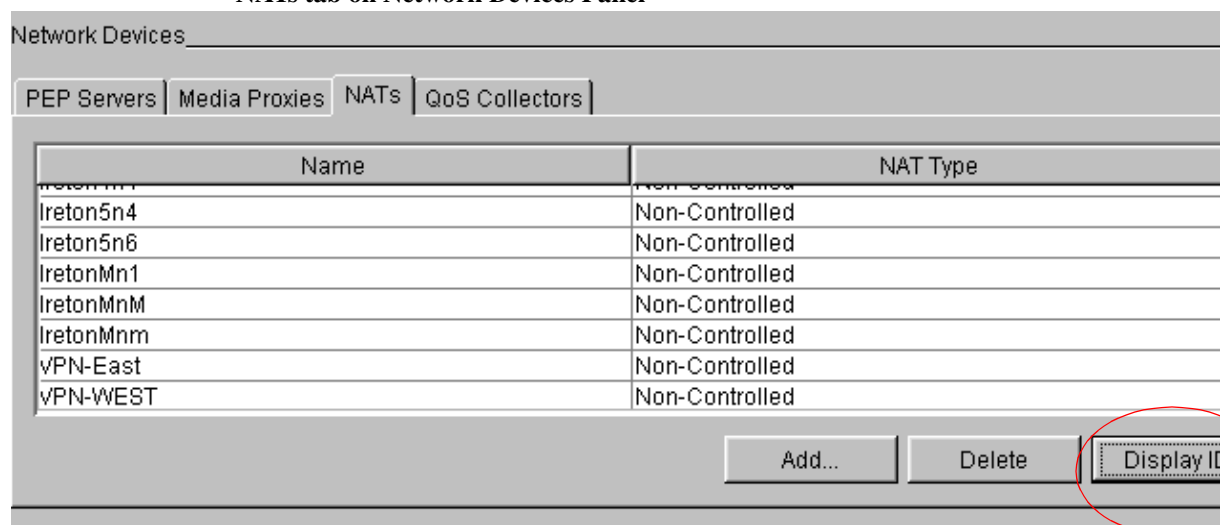
When the user provisions a NAT, the system will automatically allocate a NAT middlebox ID. However, some NATs are provisioned into multiple CS2k Mgrs. For these NATs, it is necessary for the user to override the automatic middlebox ID allocation when the NAT is provisioned into the second and subsequent CS2ks. This is done by specifying the NAT middlebox ID during provisioning of the NAT. The middlebox ID must be a unique integer between 2 and 16777215

## GUI Client

### Display NAT middlebox ID

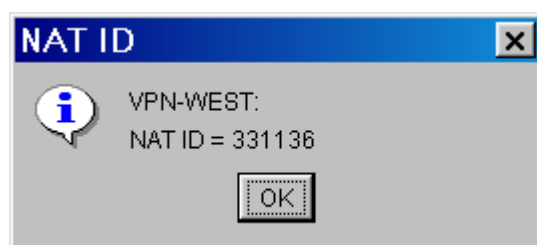
The middlebox ID for a NAT can be displayed via the 'Display ID' button on the NAT browser, which is available on the GWC Network Devices tabbed Panel

#### NATs tab on Network Devices Panel



This brings up an information box displaying the NAT middlebox ID (section ).

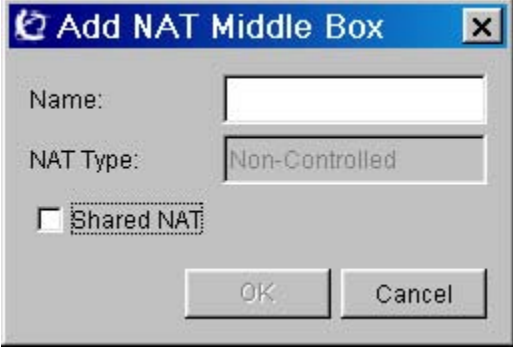
#### NAT middlebox ID display dialog



### Specify NAT middlebox ID during NAT provisioning

The middlebox ID for a NAT may be specified during NAT provisioning as follows:

- Use the 'Add' button on the NAT browser (see Figure ) to open the NAT provisioning dialog box (Figure ).

**Add NAT Middle Box dialog**A screenshot of the 'Add NAT Middle Box' dialog box. The title bar is blue with a white icon and the text 'Add NAT Middle Box' and a close button. The dialog has a light gray background. It contains three labels: 'Name:' followed by a text input field, 'NAT Type:' followed by a dropdown menu showing 'Non-Controlled', and a checkbox labeled 'Shared NAT' which is currently unchecked. At the bottom are 'OK' and 'Cancel' buttons.

**Add NAT Middle Box**

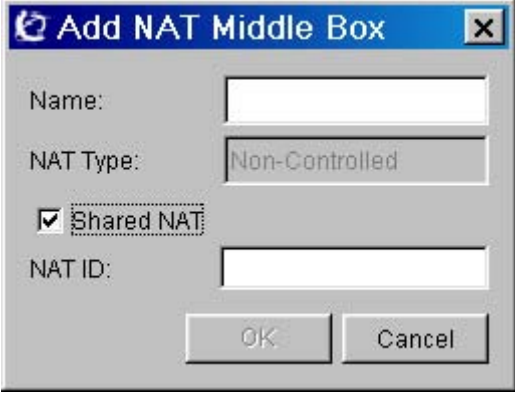
Name:

NAT Type:

☐ Shared NAT

OK Cancel

- Check the box marked 'Shared NAT'. This extends the dialog box to include the middlebox ID provisioning fields (Figure ).
- Enter valid values for NAT name and NAT ID and press OK (Figure , on page 233 ).

**Add NAT Middle Box dialog with Shared NAT checked**A screenshot of the 'Add NAT Middle Box' dialog box with the 'Shared NAT' checkbox checked. The layout is identical to the previous image, but the 'Shared NAT' checkbox is now checked, and a new 'NAT ID:' label with a text input field has appeared below it.

**Add NAT Middle Box**

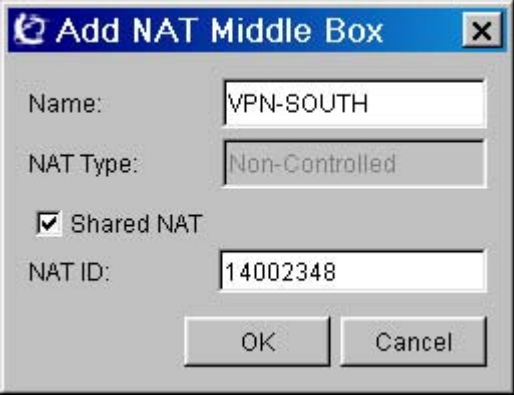
Name:

NAT Type:

☒ Shared NAT

NAT ID:

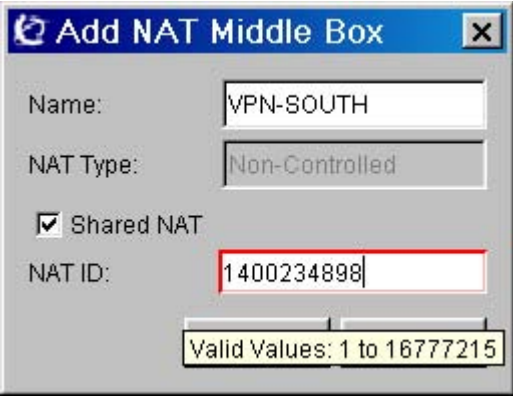
OK Cancel

**Add NAT Middle Box with valid entries & OK enabled**

The dialog box titled "Add NAT Middle Box" contains the following fields and controls:

- Name: VPN-SOUTH
- NAT Type: Non-Controlled
- ☒ Shared NAT
- NAT ID: 14002348
- OK button
- Cancel button

Tool tips are displayed when the cursor is placed over each text field. If invalid values are entered, the text field with invalid data is outlined in red and the OK button is disabled (Figure ).

**Add NAT Middle Box dialog with invalid entry for NAT ID**

The dialog box titled "Add NAT Middle Box" contains the following fields and controls:

- Name: VPN-SOUTH
- NAT Type: Non-Controlled
- ☒ Shared NAT
- NAT ID: 1400234898 (The field is outlined in red, indicating an invalid entry.)
- Valid Values: 1 to 16777215 (A tooltip or message box is displayed below the NAT ID field.)
- OK button (disabled)
- Cancel button

**XML Interface command****List NAT middlebox ID**

The NAT middlebox ID can be listed as part of the information returned in the queryNAT request. This is done by including the <ListNATid> tag, set to 'true', in the XML command. If the tag is set to 'false', the NAT middlebox information is listed without the middlebox ID. If this tag is omitted, the NAT middlebox information again is listed without the middlebox ID, for backwards compatibility with previous releases. The XML for this command is shown in Figure , on page 234 , Figure , on page 235 , Figure , on page 236 . Error messages returned are described in Appendix B.

**XML command to query specified NAT, including middlebox ID**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <Parameters>
          <NATname>NAT-A</NATname>
          <ListNATid>true</ListNATid>
        </Parameters>
      </queryNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML response to query specified NAT, including middlebox ID**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <ReturnData>
          <NATname>NAT-A</NATname>
          <NATType>1</NATType>
          <NATid>131080</NATid>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryNAT>
    </Methods>
  </Response>
</CommandList>
```

**XML command to query all NATs on a given GWC, with middlebox ID**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <Parameters>
          <GWCname>GWC-0</GWCname>
          <ListNATid>true</ListNATid>
        </Parameters>
      </queryNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML response for query all NATs on a given GWC, with middlebox ID**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITranslf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <ReturnData>
          <NATname>NAT-B</NATname>
          <NATid>131081</NATid>
          <NATname>NAT-D</NATname>
          <NATid>131083</NATid>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryNAT>
    </Methods>
  </Response>
</CommandList>
```

**XML Command: query all NATs, with middlebox id**

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <Parameters>
          <ListNATid>true</ListNATid>
        </Parameters>
      </queryNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML Response: query all NATs, with middlebox id**

```
<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <queryNAT usn="1" version="1.0">
        <ReturnData>
          <NATname>NAT-A</NATname>
          <NATid>131080</NATid>
          <NATname>NAT-B</NATname>
          <NATid>131081</NATid>
          <NATname>NAT-C</NATname>
          <NATid>131082</NATid>
          <NATname>NAT-D</NATname>
          <NATid>131083</NATid>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </queryNAT>
    </Methods>
  </Response>
</CommandList>
```

**Specify NAT middlebox ID during NAT provisioning**

The middlebox ID can be specified during NAT provisioning over the XML interface by including the <NATid> tag in the addNAT command, as shown in Figure , on page 237 . Valid values must be provided for all fields. Error codes are given in Appendix B.



**XML Command: addNAT, including middlebox id:**

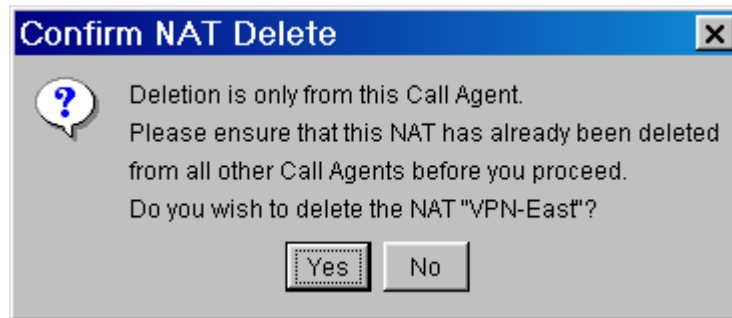
```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <addNAT usn="1" version="1.0">
        <Parameters>
          <NATname>nat1</NATname>
          <NATid>13378928</NATid>
        </Parameters>
      </addNAT>
    </Methods>
  </Command>
</CommandList>
```

**XML Response: addNAT, including middlebox id:**

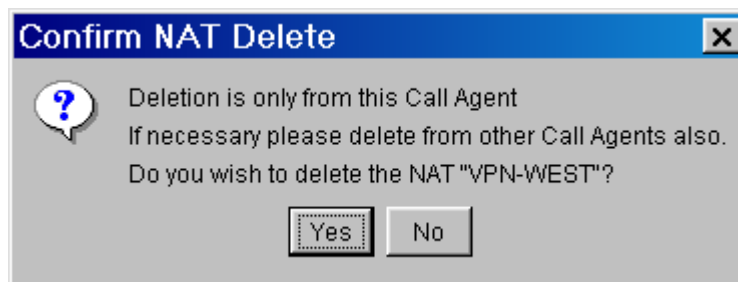
```
X<?xml version='1.0'?>
<CommandList>
  <Response>
    <Interface>ITransIf</Interface>
    <Methods>
      <addNAT usn="1" version="1.0">
        <ReturnData>
          <ReturnCode value="0" text="Successful result" />
        </ReturnData>
      </addNAT>
    </Methods>
  </Response>
</CommandList>
```

**NAT deletion**

If the user has provisioned a NAT into multiple CS2ks, care should be taken when deleting the NAT. If the NAT middlebox ID used for the shared NAT has been automatically generated by one CS2k Mgr, the NAT should not be deleted from that CS2k Mgr while it is still provisioned in other CS2ks. It must be deleted from all other CS2k Mgrs first. The GUI client displays a warning when deletion of a NAT whose middlebox id has been generated by this CS2k Mgr is requested, as shown in Figure , on page 238 .

**Confirm NAT Delete dialog**

For other NATs, a general reminder is given that the delete operation results in deletion of the NAT middlebox from this CS2k only.

**Confirm NAT Delete dialog**

## Upgrade to SN07

During an upgrade to SN07, the need to upgrade the middlebox IDs of already provisioned NATs means that there is a possibility of temporary increase in usage of Media Proxies, depending on the exact network configuration. Hence if Media Proxy resources have been engineered so that this may cause problems, the period of time during which there are GWCs at different software versions should be minimized. It is suggested that one of the following sequences of operation, A or B, is used for upgrade. In steps A & B, 'Upgrade the CS2k Mgr' refers in particular to upgrade of the Node Provisioning and GWC EM applications.

### A. Upgrade without soak test

1. Upgrade CS2k Mgr to SN07
2. Set a unique Call Agent ID. This causes the SN07 CS2k Mgr to generate new middlebox IDs for already provisioned NATs (and Pep Servers).
3. Upgrade all GWCs that will support internet transparency Media Endpoints to SN07. As part of this upgrade (in particular because of the

busy/RTS/SWACT), the new middlebox IDs for already provisioned NATs will be downloaded to each GWC. During this step, GWCs with different versions of software may have different middlebox IDs for the same NAT and hence some additional Media Proxy usage may take place (depending on the exact network configuration and order in which GWCs are upgraded). Hence, if a temporary increase in Media Proxy usage is undesirable (e.g. for network engineering reasons), this step should be done within as short as possible a time window and during a low traffic period.

4. Repeat steps 1-3 for all other CS2ks in the network.

5. Intra-domain SIP-T trunks may now be configured.

### **B Upgrade with soak test**

1. Upgrade CS2k Mgr to SN07

2. Upgrade a small number of GWCs that support internet transparency Media Endpoints to SN07 for soak test

3. Once soak test is complete, set a unique Call Agent ID. This causes the SN07 CS2k Mgr to generate new middlebox IDs for already provisioned NATs (and Pep Servers).

4. Carry out a busy/RTS/SWACT for the (SN07) GWCs that have been soak tested. This will cause the new middlebox IDs to be downloaded to both sides of these GWCs.

5. Upgrade all other GWCs that will support internet transparency Media Endpoints to SN07. As part of this upgrade (in particular because of the busy/RTS/SWACT), the new middlebox IDs for already provisioned NATs will be downloaded to each GWC. During steps 4 & 5, GWCs with different versions of software may have different middlebox IDs for the same NAT and hence some additional Media Proxy usage may take place (depending on the exact network configuration and order in which GWCs are upgraded). Hence, if a temporary increase in Media Proxy usage is undesirable (e.g. for network engineering reasons), steps 4 & 5 should be done within as short as possible a time window and during a low traffic period.

6. Repeat steps 1-5 for all other CS2ks in the network.

7. Intra-domain SIP-T trunks may now be configured.

## Authorization for Commands

The security for the GUI Client and OSSgate interface includes support for permission or 'Authorization' levels for commands. Each command is associated with one or more user groups. In order to execute a command, a user must belong to at least one of the associated user groups. The user groups associated with the new /modified commands associated with this feature are specified in the table below.

### Internet Transparency Commands Authorization

| Command                                  | User Group |       |        |          |       |
|------------------------------------------|------------|-------|--------|----------|-------|
|                                          | mgcadm     | mgcrw | mgcmte | mgcsprov | mgcro |
| Display Call Agent ID (queryCallAgentId) | X          | X     | X      | X        | X     |
| Change Call Agent ID (setCallAgentId)    | X          | X     |        |          |       |
| Display NAT ID (queryNAT)                | X          | X     | X      | X        | X     |
| Provision NAT (addNAT)                   | X          | X     |        |          |       |

## Glossary

| Term  | Description                        |
|-------|------------------------------------|
| GUI   | Graphical User Interface           |
| GWC   | Gateway Controller                 |
| GWCEM | Gateway Controller Element Manager |
| ID    | Identifier                         |
| ME    | Media Endpoint                     |
| NAT   | Network Address Translation        |
| VPN   | Virtual Private Network            |

## Appendix A for A00002644: XML validation schemas

```

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    version="1.0"
    xml:lang="en" >

<!-- *****-->
<!-- * Define addNAT Method Parameters -->
<!-- *****-->

<xsd:complexType name="addNATmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="addNATparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="addNATparamsType">
    <xsd:sequence>
        <xsd:element name="NATname" type="NoSpaceNameType" />
        <xsd:sequence minOccurs="0">
            <xsd:element name="NATid" type="xsd:integer" />
        </xsd:sequence>
    </xsd:sequence>
</xsd:complexType>
</xsd:schema>

<!-- *****-->
<!-- * Define queryNAT Method Parameters -->
<!-- *****-->

<xsd:complexType name="queryNATmethodType">
    <xsd:all>
        <xsd:element name="Parameters" type="queryNATparamsType" />
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="queryNATparamsType">
    <xsd:sequence>
        <xsd:choice minOccurs="0">
            <xsd:element name="NATname" type="NoSpaceNameType" />
            <xsd:element name="GWCname" type="GWCNameType" />
        </xsd:choice>
        <xsd:choice minOccurs="0">
            <xsd:element name="ListNATid" type="NoSpaceNameType" />
        </xsd:choice>
    </xsd:sequence>

```

```

    </xsd:complexType>
</xsd:schema>

<!-- *****-->
<!-- * Define setCallAgentId Method Parameters -->
<!-- *****-->

<xsd:complexType name="setCallAgentIdmethodType">
  <xsd:all>
    <xsd:element name="Parameters" type="setCallAgentIdparamsType" />
  </xsd:all>
  <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="setCallAgentIdparamsType">
  <xsd:sequence>
    <xsd:element name="CallAgentId" type="xsd:integer" />
  </xsd:sequence>
</xsd:complexType>
</xsd:schema>

<!-- *****-->
<!-- * Define queryCallAgentId Method Parameters -->
<!-- *****-->

<xsd:complexType name="setCallAgentIdmethodType">
  <xsd:all>
    </xsd:all>
    <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
  </xsd:complexType>
</xsd:schema>

<!-- *****-->
<!-- ** Global Attribute Groups Used by all schemas -->
<!-- *****-->

<!-- *****-->
<!-- * Define Common Usn_Version Attribute Group-->
<!-- *****-->

<xsd:attributeGroup name="Usn_VersionAttrbGroup" >
  <xsd:attribute name="usn" type="xsd:integer" use="required" />
  <xsd:attribute name="version" type="xsd:decimal" default="1.0" use="optional"/>
</xsd:attributeGroup>

<!-- *****-->
<!-- * Global Simple Types Used or Useable by all schemas follows: -->
<!-- *****-->

```

```

<!-- *****-->
<!-- * Define No Space Name Type -->
<!-- *****-->

<xsd:simpleType name="NoSpaceNameType">
  <xsd:restriction base="xsd:token">
    <xsd:minLength value="1" />
    <xsd:pattern value="\S{1,32}" />
  </xsd:restriction>
</xsd:simpleType>

<!-- *****-->
<!-- * Define GWCNameType-->
<!-- *****-->

<xsd:simpleType name="GWCNameType">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="GWC-\d\d?\d?" />
  </xsd:restriction>
</xsd:simpleType>

```

## Appendix B for A00002644: Error codes and messages

### Return codes when command is unsuccessful

| Cause of error                                                                                                 | Return code | Example return messages                                  |
|----------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------|
| Platform applications internal error: OSS Interface applications cannot connect to required server application | 302         | Interfacing error                                        |
| Unable to provision requested NAT because a database error occurred                                            | 303         | Database error occurred during setting of Call Agent Id. |
| Unable to provision requested NAT/Call Agent Id of problem with the GWCEM component of the CS2k Mgr.           | 304         | Element Manager Initialization in progress               |
| No NAT data for this query. e.g. no NAT meets selection criteria or the NAT/GWC specified does not exist       | 305         | NAT not found<br>No NAT found for GWC                    |
| User is not a member of any of the user groups allowed to perform this action                                  | 501         | Insufficient permissions to perform this operation       |

## Example Error Message

```
<?xml version='1.0'?>
  <CommandList>
    <Response>
      <Interface>ITranslf</Interface>
      <Methods>
        <queryNAT usn="1.0" version="1.0">
          <ReturnData>
            <NATname>nat1111</NATname>
            <ReturnCode value= "305" text="NAT not found"/>
          </ReturnData>
        </queryNAT usn="1.0">
      </Methods>
    </Response>
  </CommandList>
```

## Appendix C for A00002644: XML Commands: description of method parameters

### Parameter definitions

- **encoding??**
- **version** - The version refers to the version of the method or operation - e.g., the addNAT operation may have version 1.0 and 2.0, where version 1.0 takes parameters X and Y and version 2.0 takes parms X, Y, and Z. TYPE *decimal*.
- **usn** - Unique Sequence Number. This parameter is introduced to facilitate sending multiple XML commands in one file. This parameter value will be used to match the responses with the requests. TYPE *integer*.
- **ReturnCode value**- A numeric value indicating the result of the attempted operation (see Table 3, for range and definitions of each possible value). TYPE *string*.
- **Return code text**- Appropriate text that describes the result of the operation. TYPE *string*.
- **CallAgentId** - The unique integer that has been assigned by the user to this Call Agent (e.g. this CS2k). This must be a value between 1 and 255. TYPE *integer*.
- **ListNATid** - Indication of whether the NAT id should be included in the response to this command. Set to 'true' if the NATid is required and 'false' if not. TYPE *NoSpaceNameType*.
- **NATname** - The name of the NAT that this command applies to. TYPE *NoSpaceNameType*. (32 character token without spaces, see xsd definitions in



Appendix A, section “ Appendix A for A00002644: XML validation schemas” on page 241)

- **NATid** - The unique middlebox id for this NAT. This must be an integer between 2 and 16777215. TYPE *integer*.
- **NATType** - Indicates the type of NAT, in particular, NATType = 1 indicates an uncontrolled NAT. No other values are used in this release. TYPE *string*.
- **GWCname** - The name of the GWC that this command applies to. TYPE *GWCNameType* (string of form GWC-xxxx, see xsd definitions in Appendix A, section “ Appendix A for A00002644: XML validation schemas” on page 241)

### Method Parameters

Method parameters are defined below. Input data is mandatory except where indicated otherwise.

1. **queryCallAgentId** - Method that gets the current value of the Call Agent Id for this Call Agent (CS2k). This method has the following parameters:
  - Input data:
    - usn
    - version
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - CallAgentId - The value of the Call Agent Id for this Call Agent (CS2k).
    - ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.
2. **setCallAgentId** - Method that sets to Call Agent Id for this Call Agent (CS2k) to the specified value. This method has the following parameters:
  - Input data:
    - usn
    - version
    - CallAgentId - The desired value for the Call Agent Id for this Call Agent (CS2k).
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)

- ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.
- 3. **queryNAT** - Method that gets the information regarding a NAT or set of NATs, depending on the parameters specified. If neither a NATname nor a GWCname is included, then information is returned for ALL NATs provisioned in this CS2k Mgr. This method has the following parameters:
  - Input data:
    - usn
    - version
    - NATname (optional, cannot be included as well as GWCname) - indicates the NAT for which information should be returned
    - GWCname (optional, cannot be included as well as NATname) - returns information for all NATs associated with this GWC
    - ListNATid (optional) - if set to true, this returns the NAT id as part information for each NAT, if set to false or if the parameter is omitted the NAT id is not returned.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)
    - NATname
    - NATType (returned only when the NATname is specified)
    - NATid (returned only when ListNATid is set to 'true' in the input data)
- 4. **addNAT** - Method that provision a NAT into the CS2k Mgr. This method has the following parameters: If the NAT id is not specified then the CS2k Mgr generates a NAT middlebox id for the NAT.
  - Input data:
    - usn
    - version
    - NATname - unique name for the NAT to be provisioned
    - NATid (optional) - indicates the middlebox id that should be allocated to this NAT.
  - Output data:
    - usn (value should be the same as the input)
    - version (value should be the same as the input)

– ReturnCode

## ***Product = CS2000***

### **A00002654 -- CEPT AR (CLASS Call Back for Telefonica) (Int'l UA-IP)**

#### ***Functional Description***

The CEPT telephony service Call Back to Last Received Call enables a subscriber to inquire into the number of network origin of the last received call that was not answered, as well as the date and time in which the call took place, and to allow the subscriber to call back that number by pressing a single digit without the need to go on-hook.

This CEPT service is closely allied to the existing Automatic Recall (AR) service currently implemented in the MMP with the only major differences being that the CEPT service has a slightly different user interface and billing requirements. Thus, the CEPT Call Back to Last Received Call service will be assignable to subscribers as the current AR feature with modifications becoming active when the CEPT option is also provisioned on the line.

The first application of this feature will be for the Spanish market (Telefonica).

A summary of the modifications to the existing AR feature are as follows:

- Call processing - Current AR design only consists of invoking the feature using an access code. This activity will add the CEPT-defined capabilities of activation, deactivation, interrogation, and erasure to the AR feature. These capabilities will only apply to IBN lines with the CEPT line option.
- CEPT AR User Interface - Current AR design uses a telco-defined access code to enable the subscriber to invoke the feature. This activity will enable the subscriber to perform the following CEPT-defined capabilities for AR by using CEPT-defined dialing sequences: activation, deactivation, interrogation, invocation, erasure, and security key change.
- Security Key - Current AR design does not use a security key (i.e. PIN). This activity will add security key capabilities to the AR feature including the ability for both the subscriber and the telco to change the security key. These capabilities will only apply to IBN lines with the CEPT line option.
- Billing - Current AR design has an option to produce AMA billing records for feature use. However, the design uses the North American-defined Bellcore format. This activity will implement the ability for all

CEPT services to produce NAOC-defined billing records and NAOC meter counts for the following CEPT-defined capabilities: activation, deactivation, interrogation, invocation, erasure, and security key change.

### CEPT AR Feature Controls

This activity introduces 4 new feature controls in addition to the existing ability to invoke the feature. They are activation, deactivation, interrogation, and erasure. This activity also introduces a new dialing sequence for invoking the feature following the CEPT specification. NOTE: This new method not replace the existing method for invoking the feature, but will be used when the subscriber is a CEPT line.

With this activity, AR will no longer be activated once provisioned for CEPT lines. The subscriber will need to dial the CEPT-defined activation sequence to make the feature active. Once active, the subscriber may then invoke the feature. To prevent others from invoking the feature and thus incurring charges, the AR feature can be deactivated by dialing the CEPT-defined deactivation sequence. Activation and deactivation require the use of a PIN (Personal Identification Number) in order for the state of the feature to change.

For describing the dialing sequences of these feature controls, the following symbols will be used:

- LH - lift handset
- DT - receive dialtone
- PIN - Personal Identification Number (i.e. password, security key)
- ACK - a positive acknowledgement announcement or tone
- NACK - a negative acknowledgement announcement or tone
- RH - replace handset

The ACK/NACK tone is used only if announcement resources are not available. Incomplete activation sequences will result in NACK treatment. (However, an implied octothorpe will be assumed upon digit time-out.).

### Activation

The subscriber will have the ability to activate CEPT AR by using a special dialling sequence. To activate the CEPT AR feature, the subscriber must execute the sequence depicted in the following figure:

#### CEPT AR Subscriber Activation

|                             |                   |
|-----------------------------|-------------------|
| LH DT * 921 * PIN # ACK RH  | - if successful   |
| LH DT * 921 * PIN # NACK RH | - if unsuccessful |

The CEPT AR becomes active immediately after execution of this sequence.

### Deactivation

The subscriber will have the ability to deactivate CEPT AR by using a special dialling sequence. To deactivate the AR feature, the subscriber must execute the sequence depicted in the following figure:

#### CEPT AR Subscriber Deactivation

|                             |                   |
|-----------------------------|-------------------|
| LH DT # 921 * PIN # ACK RH  | - if successful   |
| LH DT # 921 * PIN # NACK RH | - if unsuccessful |

The CEPT AR is deactivated immediately after the execution of this sequence.

### Interrogation

The subscriber will have the ability to interrogate (i.e. check) the status of the AR feature by using a special dialling sequence. To interrogate the status of the AR feature, the subscriber must execute the sequence depicted in the following figure:

#### CEPT AR Subscriber Status Interrogation

|                        |                              |
|------------------------|------------------------------|
| LH DT *# 921 # ACK RH  | - if CEPT AR is active       |
| LH DT *# 921 # NACK RH | - if CEPT AR is not inactive |

### Erasure

The AR feature stores information about the last incoming call into a register called the Incoming Call Memory Block (ICMB). The subscriber will have the ability to erase the information in the ICMB of the AR feature by using a special dialling sequence. To erase the information in the ICMB, the subscriber must execute the sequence depicted in the following figure:

#### CEPT AR Erasure

|                      |                              |
|----------------------|------------------------------|
| LH DT # 92 # ACK RH  | - if erasure is successful   |
| LH DT # 92 # NACK RH | - if erasure is unsuccessful |

### Invocation

The subscriber will have the ability to invoke the CEPT AR feature by using a special dialing sequence. To invoke the CEPT AR feature, the subscriber must execute the sequence depicted in the following figure:

#### CEPT AR Invocation

|                                  |                                 |
|----------------------------------|---------------------------------|
| LH DT *92 # Feature Announcement | - if invocation is successful   |
| LH DT *92 # NACK RH              | - if invocation is unsuccessful |

### Error situations when using AR Feature controls

The subscriber will receive re-order tone and a FTR138 log showing FNAL treatment when dialing an AR feature control sequence in the following situations:

- CEPT and AR options are not assigned on the line.
- Improper feature control is datafilled in table xxCODE for CEPT AR.

### CEPT AR Translations

The CEPT AR feature controls must be datafilled using a feature translator in Universal Translations in any XLA xxCODE table, such as, ACCODE or PXC CODE. There are five tuples which translations will need datafilled, they are (example Travers are provided in “Appendix A for A00002654 - Translation Examples”):

- Activation & PIN change

These will be handled by the existing xxCODE feature selector using the option feature AR (new FTR) and existing option function ACT. An example tuple in a xxCODE table would look like:

```
AMBISTAR 921 921 FEAT ( FTR AR) ( PF 4) ( MM 3 15) (FUNC ACT)$
```

- Deactivation

This will be handled by the existing xxCODE feature selector using the option feature AR (new FTR) and existing option function DEACT. An example tuple in a xxCODE table would look like:

```
AMBIOCT 921 921 FEAT ( FTR AR) ( PF 4) ( MM 3 15) (FUNC DEACT)$
```

- Interrogation

This will be handled by the existing xxCODE feature selector using the option feature AR (new FTR) and existing option function INTER. An example tuple in a xxCODE table would look like:

```
STARCEPT C921 C921 FEAT ( FTR AR) ( PF 5) ( MM 4 15) (FUNC INTER)$
```

- Erasure

This will be handled by the existing xxCODE feature selector using the option feature AR (new FTR) and existing option function DELETE. An example tuple in a xxCODE table would look like:

```
OCT92XL 2 EQ FEAT ( FTR AR) ( PF 3) ( MM 2 15) (FUNC DELETE)$
```

- Invocation

This will be handled by the existing xxCODE feature selector using the option feature AR (new FTR) and existing option function USAGE. An example tuple in a xxCODE table would look like:

```
STAR92XL 2 EQ FEAT ( FTR AR) ( PF 3) ( MM 2 15) (FUNC USAGE)$
```

## Security Code (PIN) Assignment for Feature Act/Deactivation

The SEC (Security Code) option allows a common PIN to be assigned to specified services on that line. If a feature on a line is added to the SEC feature list, it becomes PIN protected. If a feature on a line is not in the SEC feature list, then it is not PIN-protected. Thus, there can be multiple features on a line, some PIN-protected and some not PIN-protected. Thus, a feature like CEPT AR which requires a PIN can co-exist on a line with a feature like CEPT ACRJ for which the PIN is optional (i.e. AR would be in the SEC feature list and ACRJ would not be.).

If none of the features on a line need PIN-protection, then, of course, the SEC option would not be added at all to the line. Thus if CEPT ACRJ is on a line with no other options and does not need to be PIN-protected, the SEC option need not be provisioned on that line.

### CEPT AR PIN Assignment

As mentioned previously, PIN protection is required for the CEPT AR service. To associate PIN protection to the AR service, the craftsperson must use SERVORD to add the SEC option to the line provisioned with CEPT AR.

For example, if LEN 0 1 10 5 already has the CEPT AR option, then the following SERVORD sequence shown in “Example of adding a PIN to CEPT AR using the SEC option” should be used to add the SEC option. “Sample QLEN of CEPT AR and SEC” and Figure , respectively, show the resulting QLEN and IBNFEAT tuple.

**Example of adding a PIN to CEPT AR using the SEC option**

```

SO:
>ado
SONUMBER:      NOW    3    6 16 PM
>
DN_OR_LEN:
>0 1 10 5
OPTION:
>sec
FEATURES:
>ar <----- The feature to which the SEC PIN applies
FEATURES:
>$
SEC_CODE:
>0000 <----- The default PIN set by the TELCO (1 to 7 digits)
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 6 16 PM HOST 00 1 10 05 ( SEC ( AR) $ 0000 ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y

```

**Sample QLEN of CEPT AR and SEC**

```

>qlen 0 1 10 5
-----
LEN:      HOST    00 1 10 05
TYPE: SINGLE PARTY LINE
SNPA: 613
DIRECTORY NUMBER:      6212064
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      IBNTST      SUBGRP: 0  NCOS: 0
SIGNALLING TYPE:  DIGITONE
CARDCODE:  6X17AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      204
PM TERMINAL NUMBER :      326
OPTIONS:
CEPT AR NOAMA DGT SEC AR 0000
OFFICE OPTIONS:
AIN TIID
-----

```

**Sample IBNFEAT tuple with SEC**

```

TABLE: IBNFEAT
>format pack
>pos 0 1 10 5 0 sec
HOST 00 1 10 05 0 SEC SEC (AR) $ 0000

```



The reader should note the following regarding the PIN:

- The PIN specified with the SEC option applies to all features in the SEC feature list that are on that line. Thus, for example, if CEPT AR and CEPT ACRJ were both on the above LEN 0 1 10 5 and both features were included in the SEC feature list, both would share the same PIN of 0000.
- The PIN will be visible in Table IBNFEAT and also in the QLEN.
- The PIN length can range from 1 to 7 digits.

### **Security Code (PIN) Modification for Feature Act/Deactivation**

To modify the shared PIN, the service subscriber should dial their designated PIN activation sequence. For example, the CEPT AR subscriber would change their CEPT AR PIN by dialling the following sequence:

\* 921 \* Current PIN \* New PIN #

The CEPT ACRJ subscriber would change their CEPT ACRJ PIN by dialling the following sequence:

\* 934 \* Current PIN \* New PIN #

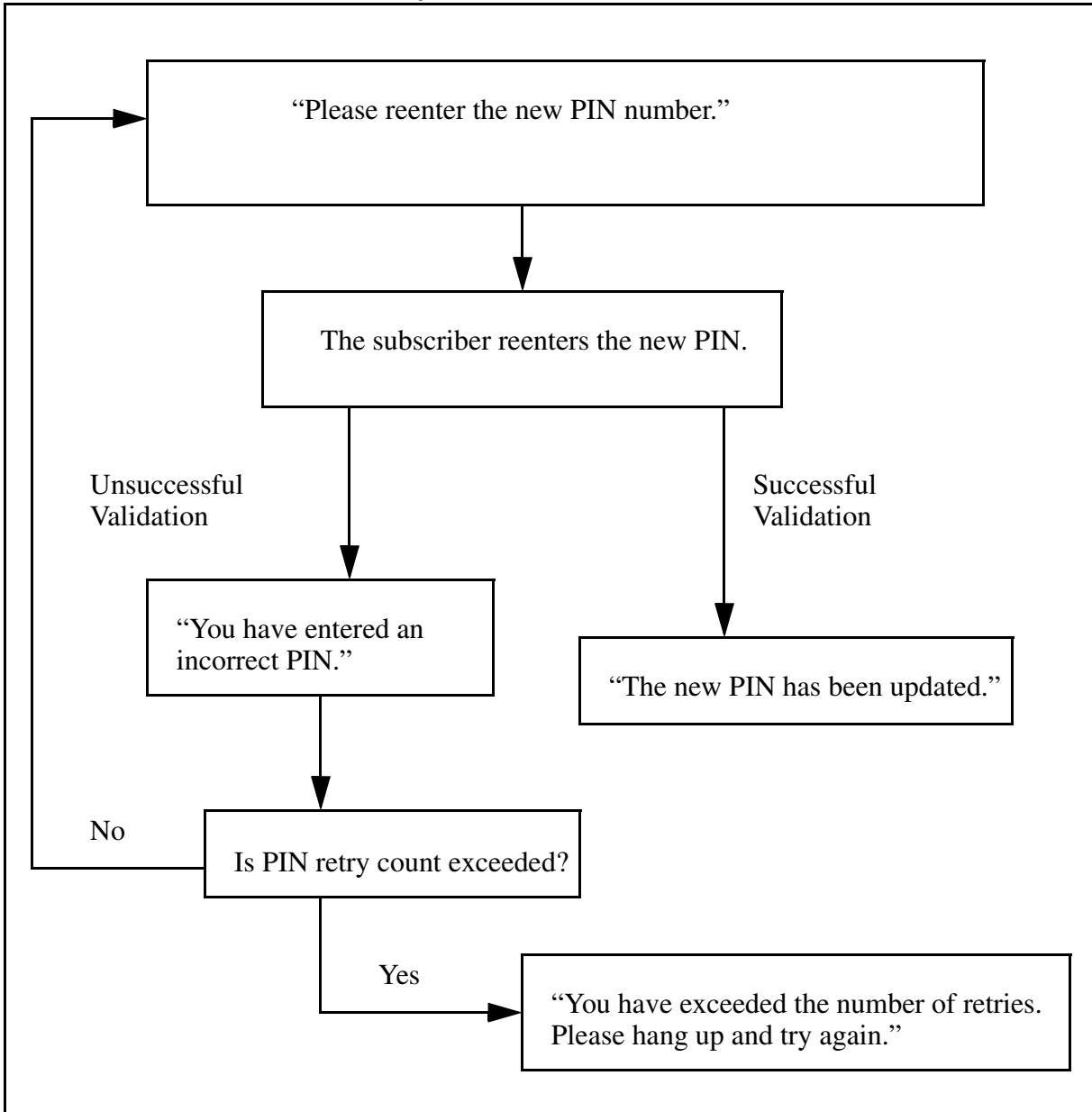
After the service subscriber dials the '#' (octothorpe) terminating their particular PIN modification sequence (or if the user indicates digit termination by allowing the interdigit timer to expire after the last digit entered), (s)he will be guided by pre-recorded announcements to reenter the new PIN. Figure illustrates the possible announcement sequences that could occur during a PIN change operation. The announcements will only start after the '#' has been entered and if there was successful validation of the *current* PIN.

Successful validation of the *current* PIN implies that the entered current PIN matches the stored PIN.

Successful validation of the *new* PIN implies that the entered new PIN was the correct length (1 to 7 digits) and that it was different than the stored PIN.

Upon successful validation of the new PIN, note that the new PIN will be shared by ALL features on the line which are in the SEC feature list.

Note that the PIN can only be changed from the subscriber's phone. Also note that the subscriber will NOT be required to change their PIN from the default PIN upon first usage of the AR or ACRJ feature.

**PIN Modification Announcement Sequence**

To enable the PIN change capability, the customer group SPP (Station Programmable PIN) option must be datafilled in Table CUSTSTN. It is in this CUSTSTN tuple that the PIN retry count is set as well. The range for the PIN retry count is 1 to 3. Refer to the following figure for an example of an SPP CUSTSTN tuple.

**Sample SPP Datafill**

|                                    |
|------------------------------------|
| TABLE: CUSTSTN<br>IBNTST SPP SPP 3 |
|------------------------------------|

SPP announcements also need to be configured. Refer to NTP 297-8001-350 “Call Forwarding Remote Activation” (CFRA) for more information about SPP as SPP was created as part of the CFRA feature. However, the reader should note that the SPP feature will be invoked automatically in the case of CEPT AR and ACRJ, and not explicitly by the subscriber as stated for CFRA.

**NAOC Billing and Metering for CEPT Services**

Currently, CEPT services only peg meter counts and produce billing records if World Metering is used. This activity in coordination with feature A00002638: PCA SW Metering Support for Billing [1] enhances CEPT services to peg meter counts and produce billing records based on a new table called NAOCFEAT and PCA Software Metering.

This activity introduces a new table, table NAOCFEAT, to be used to determine which feature controls for each CEPT feature will be metered and billed on a per Carrier/Carrier Reseller basis. The table also enables the telco to define what the charges will be for each feature control entered and to define a feature code to be used in the billing record for each feature on a per Carrier/Carrier Reseller basis. Refer to the CN section of this document for a complete description of this new table.

Please refer to the FN and CN sections of feature A00002638 [1] for examples and more details on the NAOC meter counts and billing records for CEPT Basic Call.

The NAOC feature billing will be recorded in an AMA record using the new module 612 extension as defined in A00002638 [1]. The information contained in the new AMA module is shown in Table , “Module 612 extension used for NAOC feature billing,” on page 256.

**Module 612 extension used for NAOC feature billing**

| BCD Char | Length | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 - 3    | 3      | <p><b>Rating Class at the beginning of the Call</b></p> <p>If the billing record is generated by basic call this field will contain the tariff index used for this call from Table TARFDATA, bound by an upper limit of 511 for the Spanish market.</p> <p>If the billing record is generated by a feature action this field will always be set to the value of "511".</p>                                                         |
| 4 - 11   | 8      | <p><b>Used Meter</b></p> <p>The total number of meter pulses <b>used</b> for this call or feature action.</p>                                                                                                                                                                                                                                                                                                                      |
| 12 - 15  | 4      | <p><b>Initial meter value MS</b></p> <p>The 4 most significant digits of the initial meter pulse value.</p>                                                                                                                                                                                                                                                                                                                        |
| 16 - 19  | 4      | <p><b>Initial meter value LS</b></p> <p>The 4 least significant digits of the initial meter pulse value.</p>                                                                                                                                                                                                                                                                                                                       |
| 20 - 27  | 8      | <p><b>Final Meter value</b></p> <p>The final meter pulse value, i.e., initial value + used value.</p>                                                                                                                                                                                                                                                                                                                              |
| 28 - 29  | 2      | <p><b>Call Type</b></p> <p>This field describes if this is a <b>basic call</b> or a <b>feature action</b>.</p> <p>If the billing record is generated by basic call this field will be equal to "00".</p> <p>If the billing record is generated by a feature action this field will be equal to a value based on the particular feature, i.e., the featcode, as it is provisioned in table NAOCFEAT (per the carrier/reseller).</p> |
| 30       | 1      | <p><b>Feature Action</b></p> <p>This field describes the type of feature action</p> <p>If the billing record is generated by basic call this field will be equal to "2".</p> <p>If the billing record is generated by a feature action this field will be equal to one of 10 values based on the type of action as shown in Table , "Feature Actions," on page 258.</p>                                                            |

An example (using calldump full) of the AMA billing record is shown in the following figure:

#### AMA Record with Module 612 extension

|                                  |                 |                                     |
|----------------------------------|-----------------|-------------------------------------|
| HEX ID:                          | AA              |                                     |
| STRUCTURE CODE:                  | 40511C          |                                     |
| CALL CODE:                       | 006C            | STATION PAID                        |
| SENSOR TYPE:                     | 036C            | DMS 100F                            |
| SENSOR ID:                       | 0250250C        |                                     |
| REC OFFICE TYPE:                 | 036C            | DMS 100F                            |
| REC OFFICE ID:                   | 0250250C        |                                     |
| DATE:                            | 30909C          | SEPTEMBER 09, 2003                  |
| TIMING IND:                      |                 |                                     |
| TIMING GUARD FLAG                | 0               | UNUSED                              |
| SHORT CLD PARTY OFF-HOOK IND     | 0               | UNUSED                              |
| LONG DUR/SERV PTY CAPABILITY IND | 0               | UNUSED                              |
| UNUSED                           | 0               |                                     |
| UNUSED                           | 0C              |                                     |
| STUDY IND:                       |                 |                                     |
| STUDY TYPE A                     | 0               | UNUSED                              |
| STUDY TYPE B                     | 2               | NETWORK COMPLETION                  |
| STUDY TYPE C                     | 0               | UNUSED                              |
| TEST CALL IND                    | 0               | UNUSED                              |
| UNUSED                           | 0               |                                     |
| ORIG/TERM NANP NUM IND           | 0               | UNUSED                              |
| OPERATOR SERV IND                | 0C              | UNUSED                              |
| CLD PTY OFF-HK:                  | 0C              | CLD OFF-HOOK DETECTED               |
| SERVICE OBSERVED:                | 0C              | NONE                                |
| OPER ACTION:                     | 0C              | ANI, CUSTOMER DIALED CALL           |
| SERVICE FEATURE:                 | 000C            | OTHER                               |
| SIG DIGITS NEXT FIELD:           | 010C            |                                     |
| ORIG OPEN DIGITS 1:              | 01418406301C    |                                     |
| ORIG OPEN DIGITS 2:              | FFFFFFFF        |                                     |
| ORIGINATING CHARGE INFO:         | FFFF            |                                     |
| DOMESTIC/INTL INDICATOR:         | 9C              | UNKNOWN                             |
| SIG DIGITS NEXT FIELD:           | 000C            |                                     |
| TERM OPEN DIGITS 1:              | 00000000000C    |                                     |
| TERM OPEN DIGITS 2:              | FFFFFFFF        |                                     |
| CONNECT TIME:                    | 1707136C        | 17:07:13.6                          |
| ELAPSED TIME:                    | 000000000C      | 000000:00.0                         |
| COMPLETION INDICATOR:            | 001C            | COMPLETED: ANSWERED                 |
| <b>MODULE CODE:</b>              | <b>612C</b>     | <b>GENERIC MOD: TWO DGT STR FMT</b> |
| <b>GENERIC CONTEXT ID:</b>       |                 |                                     |
| <b>PARSE RULES</b>               | <b>80070</b>    | <b>NAOC PCA CHARGING INFO</b>       |
| <b>SIGNIFICANT DIGITS</b>        | <b>00C</b>      | <b>NIL</b>                          |
| <b>GENERIC DIGIT STRING ONE:</b> |                 |                                     |
| <b>RATING CLASS</b>              | <b>511</b>      |                                     |
| <b>USED METER</b>                | <b>00000015</b> |                                     |
| <b>INITIAL_METER_MS</b>          | <b>0082</b>     |                                     |
| <b>GENERIC DIGIT STRING TWO:</b> |                 |                                     |
| <b>INITIAL_METER_LS</b>          | <b>0000</b>     |                                     |
| <b>FINAL METER</b>               | <b>00820015</b> |                                     |
| <b>CALL_TYPE</b>                 | <b>27</b>       |                                     |
| <b>FEATURE ACTION</b>            | <b>8</b>        |                                     |
| <b>MODULE CODE:</b>              | <b>000C</b>     | <b>FINAL MODULE</b>                 |

Software feature metering relies on the datafill of Table NAOCFEAT. This table defines the charging per carrier/reseller, per feature, per action.

The carrier/reseller name **must** be defined in either Table CARNAME or Table RESNAME/DNSCRN (for resellers) prior to use in Table NAOCFEAT.

The CEPT features can be associated with software metering with any of the following actions defined in the following table:

#### Feature Actions

| Action   | Description                 | Value In Billing Record |
|----------|-----------------------------|-------------------------|
| assign   | assignment                  | 0                       |
| deassign | deassignment                | 1                       |
| admact   | administrative activation   | 2                       |
| admdeact | administrative deactivation | 3                       |
| admprog  | administrative programming  | 4                       |
| subact   | subscriber activation       | 5                       |
| subdeact | subscriber deactivation     | 6                       |
| subprog  | subscriber programming      | 7                       |
| usage    | usage                       | 8                       |
| interrog | interrogation               | 9                       |

If there is no entry for a particular carrier/feature/action combination, then no software metered billing will be created or used for that particular combination.

The following figure contains an example of datafill in Table NAOCFEAT for carrier CAR100<sup>2</sup>, feature AR.

#### Example entry in Table NAOCFEAT

| CARRSNAM | FEATNAME | FEATCODE | ACTIONS                                |
|----------|----------|----------|----------------------------------------|
| CAR100   | AR       | 55       | (USAGE 7) (ASSIGN 10) (DEASSIGN 10) \$ |

To determine what the **used meter** value will be in module 612 for a particular feature action you will need to consider the following: **The provisioned unit value for each action in Table NAOCFEAT is 1/10 of a monetary unit, i.e.,**

2. As datafilled in Table CARNAME prior to being used in Table NAOCFEAT.

**0.10.** Therefore, if 1 metering pulse is equal to 0.06 monetary units per pulse then (based on the example in Figure ):

- **usage** in meter pulses =  $((0.1 * 7) / 0.06) = 11.67$

To determine what **call type** will appear in the module 612 (for AR usage), it's simply the feature code as provisioned in table NAOCFEAT, i.e., 55. The **feature action** field will be equal to the value 8 (see Table , "Feature Actions," on page 258 for details). Thus the module 612 would look like the example shown in Figure , "Module 612, for AR usage".

#### Module 612, for AR usage

|                           |          |                               |
|---------------------------|----------|-------------------------------|
| MODULE CODE:              | 612C     | GENERIC MOD: TWO DGT STR FMT  |
| GENERIC CONTEXT ID:       |          |                               |
| PARSE RULES               | 80070    | NAOC PCA CHARGING INFO        |
| SIGNIFICANT DIGITS        | 00C      | NIL                           |
| GENERIC DIGIT STRING ONE: |          |                               |
| RATING CLASS              | 511      |                               |
| USED METER                | 00000012 | ← meter pulses based on usage |
| INITIAL_METER_MS          | 0082     |                               |
| GENERIC DIGIT STRING TWO: |          |                               |
| INITIAL_METER_LS          | 0000     | feature code                  |
| FINAL METER               | 00820012 |                               |
| CALL_TYPE                 | 55       | ←                             |
| FEATURE ACTION            | 8        | ← usage feature action        |
| MODULE CODE:              | 000C     | FINAL MODULE                  |

NAOCFEAT billing is not supported for every feature/feature action combination, please refer to the matrix in the following table, to see which features support NAOCFEAT billing for which actions.

**Feature/Action Billing Matrix<sup>a</sup>**

|          |      | Actions |          |        |          |         |        |          |         |       |          |
|----------|------|---------|----------|--------|----------|---------|--------|----------|---------|-------|----------|
|          |      | Assign  | Deassign | Admact | Admdeact | Admprog | Subact | Subdeact | Subprog | Usage | Interrog |
| Features | ACRJ | X       | X        | X      | X        |         | X      | X        | X       |       | X        |
|          | AR   | X       | X        | X      | X        |         | X      | X        | X       | X     | X        |
|          | AUL  | X       | X        |        |          | X       |        |          |         |       |          |
|          | CCBS | X       | X        |        | X        |         | X      | X        |         | X     | X        |
|          | CDND | X       | X        | X      | X        |         | X      | X        |         |       | X        |
|          | CDTA | X       | X        | X      | X        |         | X      | X        | X       | X     | X        |
|          | CDTO | X       | X        | X      | X        |         | X      | X        | X       |       | X        |
|          | CFB  | X       | X        |        | X        |         | X      | X        | X       | X     | X        |
|          | CFD  | X       | X        |        | X        |         | X      | X        | X       | X     | X        |
|          | CFF  | X       | X        |        | X        |         | X      | X        |         | X     | X        |
|          | CFRA | X       | X        |        | X        |         |        |          |         |       |          |
|          | CFU  | X       | X        |        | X        |         | X      | X        | X       | X     | X        |
|          | CLF  | X       | X        |        |          |         |        |          |         | X     |          |
|          | CND  | X       | X        | X      | X        |         | X      | X        | X       | X     | X        |
|          | CNDB | X       | X        |        |          |         |        |          | X       |       |          |



Feature/Action Billing Matrix<sup>a</sup>

|          |                  | Actions |          |        |          |         |        |          |         |       |          |
|----------|------------------|---------|----------|--------|----------|---------|--------|----------|---------|-------|----------|
|          |                  | Assign  | Deassign | Admact | Admdeact | Admprog | Subact | Subdeact | Subprog | Usage | Interrog |
| Features | CNDBO            | X       | X        |        |          |         |        |          |         | X     |          |
|          | ENQ              | X       | X        |        |          |         |        |          |         |       |          |
|          | I3WC             | X       | X        |        |          |         |        |          |         | X     |          |
|          | I6WC             | X       | X        |        |          |         |        |          |         | X     |          |
|          | ICT              | X       | X        |        |          |         |        |          |         | X     |          |
|          | ICWT             | X       | X        | X      | X        |         | X      | X        |         |       | X        |
|          | ILR              | X       | X        | X      | X        |         | X      | X        |         |       | X        |
|          | IWUC             | X       | X        |        | X        |         | X      | X        | X       | X     | X        |
|          | LNR              | X       | X        |        | X        |         |        |          |         |       |          |
|          | RR               |         |          |        |          |         |        |          |         | X     |          |
|          | SCL <sup>b</sup> | X       | X        |        | X        | X       |        | X        | X       | X     | X        |
|          | SCS              | X       | X        |        |          |         |        | X        | X       | X     | X        |
|          | SUPPRESS         | X       | X        | X      | X        |         | X      | X        |         | X     | X        |
|          | WML              | X       | X        | X      | X        | X       | X      | X        | X       | X     | X        |

a. "X" denotes a supported action. An empty block denotes an unsupported action.

b. Billing of 'admprog' for SCL pertains to the ability to change the size of the speed call list, not the contents of the list.

## Hardware Requirements or Dependencies

None

## Software Requirements or Dependencies

SN07 or ISN06 Activatable Patch for Telefonica

The NAOC feature billing portion of this feature requires the following feature to be activated by SOC:

- NSUP0023 - PCA SW Metering Support for Billing

This requires the following SOC features:

— NETK0019 - Network AOC

- NETK0024 - Network AOC Tariff
- NETK0028 - CGP Network AOC
- NSUP0017 - Payment Ceiling
- NSUP0020 - NAO/PCA Supp Svcs

### Limitations and restrictions

None

### Interactions

None

### Applicable customer facing sections

#### Fault Management

Logs \_\_n/a\_\_

Alarms \_\_n/a\_\_

#### Configuration

Data Schema \_\_x\_\_

User Interface \_\_x\_\_

Element Management \_\_n/a\_\_

Security \_\_n/a\_\_

Service Order \_\_n/a\_\_

Office Parameters \_\_n/a\_\_

Accounting (includes AMA billing) \_\_x\_\_

Performance (includes operational measurements) \_\_n/a\_\_

### Glossary

| Term | Description                                          |
|------|------------------------------------------------------|
| ACK  | positive ACKnowledgement announcement or tone        |
| ACRJ | Automatic Call Rejection                             |
| AOC  | Advice of Charge                                     |
| AR   | Automatic Recall                                     |
| CEPT | European Conference Of Postal and Telecommunications |
| CS2K | Communication Server 2000                            |

|      |                                               |
|------|-----------------------------------------------|
| DT   | receive Dial Tone                             |
| ETSI | European Telecommunication Standard Institute |
| IBN  | Integrated Business Network                   |
| ICMB | Incoming Call Memory Block                    |
| LH   | Lift Handset                                  |
| MMP  | Multi Market Platform                         |
| NACK | Negative ACKnowledgement announcement or tone |
| NAOC | Network Advice of Charge                      |
| PCA  | Payment Ceiling Advice                        |
| PIN  | Personal Identification Number                |
| PVG  | Passport Voice Gateway                        |
| RH   | Replace Handset                               |
| SEC  | Security Code                                 |
| XLA  | Translations                                  |

## References

| REF # | Description of Reference                                                                                        |
|-------|-----------------------------------------------------------------------------------------------------------------|
| [1]   | Feature 00002638, <i>PCA SW Metering Support for Billing</i> , Issue AA14, PLS FMDOC module: <i>a00002638</i> . |

## Appendix A for A00002654 - Translation Examples

Ambiguous translations tables AMHEAD & AMCODE are needed to handle the AR access codes in addition to table ACCODE. The following figures contain example feature code translations for AR including the ambiguous translations.

**Translation Example - AR Activation (no PIN)**

```

>traver 1 8116666661 b921 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
  (I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
  (PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
  . GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME STARCEPT
STARCEPT 9 NET N N 0 N NDGT N N DOD N 700 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
700 IBN NONE NT 0 0 NILSFC 0 PX STARCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
STARCEPT DFLT CONT ( XLT OFC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921

```

**Translation Example - AR Activation (no PIN)**

```

TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          921
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
STARCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          921
TABLE ACCODE
STARCEPT 92 92 CONT ( XLT AM STAR92XL)$
TABLE AMHEAD
STAR92XL SDFLT
THE TOTAL NUMBER OF DIGITS IS 3.
TABLE AMCODE
STAR92XL 3 GE CONT ( XLT AC AMBISTAR)$
TABLE ACHEAD
AMBISTAR SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          921
TABLE ACCODE
AMBISTAR 921 921 FEAT ( FTR AR) ( PF 4) ( MM 3 15) (FUNC ACT)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

**Translation Example - AR Activation (with PIN)**

```

>traver 1 8116666661 b921b1111 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
(I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
(PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.

```

**Translation Example - AR Activation (with PIN)**

```

TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME STARCEPT
STARCEPT 9 NET N N 0 N NDGT N N DOD N 700 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
700 IBN NONE NT 0 0 NILSFC 0 PX STARCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
STARCEPT DFLT CONT ( XLT OFC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                      921B1111
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                      921B1111
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
STARCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                      921B1111
TABLE ACCODE
STARCEPT 92 92 CONT ( XLT AM STAR92XL)$
TABLE AMHEAD
STAR92XL SDFLT
THE TOTAL NUMBER OF DIGITS IS 8.
TABLE AMCODE
STAR92XL 3 GE CONT ( XLT AC AMBISTAR)$
TABLE ACHEAD
AMBISTAR SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                      921B1111
TABLE ACCODE
AMBISTAR 921 921 FEAT ( FTR AR) ( PF 4) ( MM 3 15) (FUNC ACT)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

**Translation Example - AR Deactivation**

```

>traver 1 8116666661 c921 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
(I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
(PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFPEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME OCTCEPT
OCTCEPT 9 NET N N 0 N NDGT N N DOD N 701 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
701 IBN NONE NT 0 0 NILSFC 0 PX OCTCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
OCTCEPT DFLT CONT ( XLT OFC OCTCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
OCTCEPT DFLT CONT ( XLT AC OCTCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
OCTCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE ACCODE

```

**Translation Example - AR Deactivation**

```
OCTCEPT 92 92 CONT ( XLT AM OCT92XL)$  
TABLE AMHEAD  
OCT92XL SDFLT  
THE TOTAL NUMBER OF DIGITS IS 3.  
TABLE AMCODE  
OCT92XL 3 GE CONT ( XLT AC AMBIOCT)$  
TABLE ACHEAD  
AMBIOCT SDFLT NODFOP NOCON C  
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921  
TABLE ACCODE  
AMBIOCT 921 921 FEAT ( FTR AR) ( PF 4) ( MM 3 15) (FUNC DEACT)$  
  
+++ TRAVER: SUCCESSFUL CALL TRACE +++  
  
CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT  
  
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```



**Translation Example - AR Interrogation**

```

>traver 1 8116666661 bc921 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
(I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
(PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME STARCEPT
STARCEPT C NET N N 0 N NDGT N N DOD N 700 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
700 IBN NONE NT 0 0 NILSFC 0 PX STARCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
STARCEPT DFLT CONT ( XLT OFC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: C921
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: C921
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
STARCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: C921
TABLE ACCODE
STARCEPT C921 C921 FEAT ( FTR AR) ( PF 5) ( MM 4 15) (FUNC INTER)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

**Translation Example - AR Erasure**

```

>traver 1 8116666661 c92 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
(I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
(PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME OCTCEPT
OCTCEPT 9 NET N N 0 N NDGT N N DOD N 701 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
701 IBN NONE NT 0 0 NILSFC 0 PX OCTCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
OCTCEPT DFLT CONT ( XLT OFC OCTCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 92
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
OCTCEPT DFLT CONT ( XLT AC OCTCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 92
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
OCTCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 92
TABLE ACCODE
OCTCEPT 92 92 CONT ( XLT AM OCT92XL)$
TABLE AMHEAD
OCT92XL SDFLT
THE TOTAL NUMBER OF DIGITS IS 2.

```

**Translation Example - AR Erasure**

```
TABLE AMCODE
OCT92XL 2 EQ FEAT ( FTR AR) ( PF 3) ( MM 2 15) (FUNC DELETE)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

**Translation Example - AR Invocation**

```
>traver 1 8116666661 b92 b
TABLE IBNLINES
LG 00 3 00 18 0 DT STN IBN 16666661 RUACEPT 0 21 81 (CWT) (CWI) (LNR) (CEPT)
(I3WC) (CNDB) (CNAB) $
TABLE DNATTRS
81 $ 16666661
(PUBLIC ( NAME RUA1_2_AAL2) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE NCOS
RUACEPT 21 0 0 ODP1 ( XLAS ODPXLA1 STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
RUACEPT NXLA RUAXLA4 RUAFEAT 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME STARCEPT
STARCEPT 9 NET N N 0 N NDGT N N DOD N 700 NPRT_2 NLCA_NILLA_1 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
700 IBN NONE NT 0 0 NILSFC 0 PX STARCEPT NIL 00 NPRT_2 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
STARCEPT DFLT CONT ( XLT OFC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
```

**Translation Example - AR Invocation**

```

TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          92
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
STARCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          92
TABLE ACCODE
STARCEPT 92 92 CONT ( XLT AM STAR92XL)$
TABLE AMHEAD
STAR92XL SDFLT
THE TOTAL NUMBER OF DIGITS IS 2.
TABLE AMCODE
STAR92XL 2 EQ FEAT ( FTR AR) ( PF 3) ( MM 2 15) (FUNC USAGE)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

***Configuration for A00002654*****Hardware and Software Requirements**

n/a

**Initial Configuration**

n/a

**Office/Subnet parameters (OP/SP) (CM & SESM)**

n/a

**Upgrade Impact****Dump and Restore**

NAOCFEAT is a new table.

**Element Management Upgrade**

n/a

## Data schema (DS)

### New/modified tables, MIBs, or Database Schema

#### New or modified tables

| Table/MIB name      | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|---------------------|--------------------------|-----------------------------------|
| NAOCFEAT            | NEW                      | NEW                               |
| IBNFEAT             | CHANGED                  | UNCHANGED                         |
| CUSTSTN             | CHANGED                  | UNCHANGED                         |
| xxCODE <sup>a</sup> | CHANGED                  | UNCHANGED                         |

a. This change applies to any XLA CODE table.

### Table/MIB/Remote Database Schema information

#### Name: NAOCFEAT

Network Advice of Charge Feature Charging Table

#### Functional description

Table NAOCFEAT contains Network Advice of Charge charging information for features when one or more of the following feature actions occur:

| Feature Action              | Description                                                                        |
|-----------------------------|------------------------------------------------------------------------------------|
| Administration Assignment   | Operating company personnel add a feature to a line.                               |
| Administration Deassignment | Operating company personnel remove a feature from a line.                          |
| Administration Activation   | Operating company personnel change the state of a feature from inactive to active. |
| Administration Deactivation | Operating company personnel change the state of a feature from active to inactive. |
| Administration Programming  | Operating company personnel change feature data.                                   |
| Subscriber Activation       | A subscriber causes the state of a feature to change from inactive to active.      |
| Subscriber Deactivation     | A subscriber causes the state of a feature to change from active to inactive.      |
| Subscriber Programming      | A subscriber causes a change to feature data.                                      |
| Subscriber Usage            | A subscriber uses a feature.                                                       |

| Feature Action           | Description                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Subscriber Interrogation | A subscriber queries a feature, to determine whether it is active, and/or to display the data programmed for the feature. |

Table NAOCFEAT has a two-part key, containing

- a Carrier or Reseller Name (from tables CARNAME or RESNAME)
- an MMP line option name or an enquiry action

Current enquiry actions are:

- Register Recall (RR) - a subscriber flashes and switches between the parties involved in the call
- Register recall Target Number (RTN) - a subscriber flashes and dials a number for another subscriber

Associated with each key are an assigned feature code and a list of chargeable feature actions and their assigned charge.

**Note:** The presence of datafill in table NAOCFEAT for line options and/or enquiry actions does not necessarily mean that these features are being charged or should be charged. Table NAOCFEAT, like table MTRFEAT for World Metering, provides the flexibility for the telco to supply datafill for each subscriber feature with one or more chargeable activities, even though Network Advice of Charge is not currently active for the feature. The user must refer to the individual service documents to verify whether a particular feature is chargeable.

#### Usage sequence and implications (CM Only)

Tables must be datafilled in the following sequence:

- CARNAME
- RESNAME
- NAOCFEAT

#### Size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                           |
|------------------------|----------------|----------------|-----------------------------------------------------------------|
| NAOCFEAT               | 0              | 32766          | Memory is automatically allocated as the tuples are datafilled. |

#### Fields/OIDs

The following table lists the new fields for table NAOCFEAT

Table field descriptions

| Field    | New or Changed | Subfield or refinement | Entry                  | Explanation and action                                                                                                                                                                                        |
|----------|----------------|------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key      | New            |                        | see subfields          | This field contains two subfields: CARRSNAM and FEATNAME                                                                                                                                                      |
|          | New            | CARRSNAM               | 8 character vector     | Carrier or Reseller name.<br><br>Enter a carrier or carrier reseller name as it was entered in either table CARNAME or table RESNAME.                                                                         |
|          | New            | FEATNAME               | <line option>, RR, RTN | Feature Name.<br><br>Enter a line option (as listed in the SERVORD Reference Manual) or an enquiry action.<br><br>Enquiry actions are:<br><br>RR - Register Recall<br><br>RTN - Register recall Target Number |
| FEATCODE | New            |                        | 00-99                  | Feature Code.<br><br>Enter a two-digit number to be used to identify the feature in a charge record.                                                                                                          |
| ACTIONS  | New            |                        | see subfields          | This field is a vector of up to 10 entries where each entry consists of two subfields, FEATACTN and CHARGE.                                                                                                   |

Table field descriptions

| Field | New or Changed | Subfield or refinement | Entry                                                                                                                      | Explanation and action                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------|----------------|------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | New            | FEATACTN               | ASSIGN,<br>DEASSIGN,<br>ADMACT,<br>ADMDEACT,<br>ADMPROG,,<br>SUBACT,<br>SUBDEACT,<br>SUBPROG,<br>USAGE,<br>INTERROG,<br>\$ | Feature Action.<br>ASSIGN -<br>Administration<br>Assignment<br>DEASSIGN -<br>Administration<br>Deassignment<br>ADMACT -<br>Administration<br>Activation<br>ADMDEACT -<br>Administration<br>Deactivation<br>ADMPROG -<br>Administration<br>Programming<br>SUBACT -<br>Subscriber<br>Activation<br>SUBDEACT -<br>Subscriber<br>Deactivation<br>SUBPROG<br>Subscriber<br>Programming<br>USAGE -<br>Subscriber<br>Usage<br>INTERROG -<br>Subscriber<br>Interrogation |
|       | New            | CHARGE                 | 0-255                                                                                                                      | Feature Action<br>Charge.<br><br>Enter the charge<br>value to be charged<br>for the action.                                                                                                                                                                                                                                                                                                                                                                      |

**Datafill example**

The following example shows sample datafill for table NAOCFEAT:

KEY    FEATCODE

ACTIONS



-----  
CAR01    ACRJ    01

( ASSIGN 4) (DEASSIGN 3) ( USAGE 5)\$

**Table release history update**

Added to WT20 by feature A00002654.

**Supplementary information**

None.

**Translation verification other tools**

NAOCFEAT does not use translation verification tools.

**Name: IBNFEAT**

IBN Features Table

**Functional description**

IBNFEAT displays data associated with various IBN features.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

The size of the table is not changed.

**Fields/OIDs**

This activity allows AR and ACRJ to appear in the FEATURES list of the SEC (Security Code option) as shown below:

| TYPE FEATURES_LIST_TYPE | STRING RANGE |
|-------------------------|--------------|
| 'DCPK'                  | 0            |
| 'AR'                    | 1            |
| 'ACRJ'                  | 2            |
| END STRING RANGE        |              |

(0, 4, 0, 4)

**Table field descriptions**

| Field | New or Changed | Subfield | Entry          | Explanation and action                                                               |
|-------|----------------|----------|----------------|--------------------------------------------------------------------------------------|
| DATA  | changed        | FEATURES | DCPK, AR, ACRJ | Enter DCPK, AR, and/or ACRJ. These are the line options associated with feature SEC. |

**Datafill example**

The following example shows sample datafill for table IBNFEAT.

HOST 00 1 10 05 0 SEC SEC (AR) \$ 0000

**Table release history update**

The SEC feature option is modified to include the AR and ACRJ options in its Features List.

**Supplementary information**

None

**Translation verification other tools**

None

**Name: ACCODE**

Access Code Table

**Functional description**

Access Code Table, and other code tables, work in conjunction with the universal translations head tables (for example, table ACHEAD) to provide the digit path through universal translations.

The access code table translates the access code digit segment of the incoming digit string. The access code is used for access to another networks, an attendant, or a feature.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

The size of the table is not changed.

### Fields/OIDs

The feature option selector (i.e. FTR) of the XLA feature selector (i.e. FEAT) of the XLA CODE table will be modified to add the additional features AR and ACRJ.

### Table field descriptions

| Field<br>XLASEL | New or<br>Changed | Subfield<br>OSEL | Entry                                                                                                                                                                                                                                                                                                       | Explanation<br>and action                                                                                                                                                          |
|-----------------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FEAT            | changed           | FTR              | <XLA_FEATURE_NAME><br>{ILR, ICWT, SC, SCR,<br>CCBS, WML, CFU, CFF,<br>CFBF, CFBP, CFDF,<br>CFDP, CDND, CDTA,<br>CDTO, IWUC, VMWI,<br>CNDB, SUPP, CND,<br>VALIDATE,<br>PATH_REPLACEMENT,<br>CALLCHAR, TLC,<br>CLCTDIGS, CALLBACK,<br>REV, FRB, FOC, FDT,<br>NTC, <a href="#">AR</a> , <a href="#">ACRJ</a> } | Feature name.<br>If the entry in<br>subfield OSEL<br>is FTR, enter<br>an international<br>line feature<br>name.<br><br>New feature<br>names for AR<br>and ACRJ have<br>been added. |

### Datafill example

The following example shows sample datafill for table ACCODE.

```
starcept 921 921 FEAT (FTR AR) (PF 3) (MM 3 15) (FUNC ACT) $
starcept 934 934 FEAT (FTR ACRJ) (PF 3) (MM 3 15) (FUNC ACT) $
```

### Table release history update

The feature option selector (i.e., FTR) of the XLA feature selector (i.e., FEAT) of the XLA CODE table will be modified to add the additional features AR and ACRJ.

### Supplementary information

None.

**Translation verification other tools**

The example in the following figure shows the output from **traver** when it is used to verify Table ACCODE.

**Example Traver for AR activation**

```
>traver 1 8406101 b921 b
TABLE IBNLINES
LG 00 0 00 00 0 DT STN IBN 8406101 IPGRP1 0 0 141 (CEPT) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP: no subscribed trigger.
INAP Info Collected TDP: no subscribed trigger.
TABLE NCOS
IPGRP1 0 0 0 0 ( XLAS IPGRP1XL STARCEPT IPGRP1DG)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IPGRP1 NXLA IPGRP1XL POT SXLA 0 IPGRP1DG
TABLE DIGCOL
TUPLE NOT FOUND
Default is RPT
TABLE IBNXLA: XLANAME STARCEPT
STARCEPT C NET N N 0 N NDGT N N GEN (LATTR 2 IPGRP1XP IPGRP1RA)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
2 IBN NONE NT 0 0 NILSFC 0 PX STARCEPT NIL 00 IPGRP1XP IPGRP1RA $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
IPGRP1XP NSCR 141 NPRT NONE N $ $
TABLE RATEAREA
IPGRP1RA NLCA NIL NILLATA $
TABLE PXHEAD
STARCEPT DFLT CONT ( XLT OFC STARCEPT)$ NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE OFCHEAD
STARCEPT DFLT CONT ( XLT AC STARCEPT)$ NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
TABLE OFCCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE ACHEAD
STARCEPT SDFLT NODFOP NOCON C
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 921
```

**Example Traver for AR activation**

```
TABLE ACCODE
STARCEPT 921 921 FEAT ( FTR AR) ( PF 3) ( MM 3 15) (FUNC ACT)$

+++ TRAVER: SUCCESSFUL CALL TRACE +++

CALL ROUTES TO FEATURE PROCESSING ENVIRONMENT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

**Service Orders (SO) (CM & SESM)****Service order change details**

This feature will expand the existing SEC (Security Code) option to accept two more additional values (AR and ACRJ) when it is prompted for its feature list. The feature list contains a list of features for which the Security Code PIN applies.

**LCC and options**

The LCC compatibility of SEC is not being changed by this activity.

**Meridian digital centrex feature assignment requirements**

| Feature | 500<br>2500 | MDC<br>SET | ISDN<br>SET | MDC Set ISDN Set Relationship |                            |             |        |                            |                  |                  |                                 |
|---------|-------------|------------|-------------|-------------------------------|----------------------------|-------------|--------|----------------------------|------------------|------------------|---------------------------------|
|         |             |            |             | S<br>E<br>T                   | S<br>U<br>B<br>S<br>E<br>T | K<br>E<br>Y | D<br>N | D<br>E<br>D<br>K<br>E<br>Y | L<br>A<br>M<br>P | C<br>O<br>D<br>E | D<br>I<br>S<br>P<br>L<br>A<br>Y |
|         |             |            |             |                               |                            |             |        |                            |                  |                  |                                 |

**New commands**

NA- No new Servord commands are being introduced by this activity.

**How service order options are presented****Description**

With this activity, the FEATURES prompt of the SEC option will allow two new values, AR and ACRJ. Previously, only DCPK was a valid option.

## Example

### Example of Servord sequence in prompt mode

```

SO:
>ado
SONUMBER:      NOW    3    6 16 PM
>
DN_OR_LEN:
>0 1 10 5
OPTION:
>sec
FEATURES:
>ar (or acrj)<----- The new features to which the SEC PIN applies
FEATURES:
>$
SEC_CODE:
>0000
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 6 16 PM HOST 00 1 10 05 ( SEC ( AR) $ 0000 ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y

```

### Example of Servord sequence in no-prompt mode

```

SO:
ado $ 0 0 18 5 sec acrj $ 0000 $ y y

```

### Option prompts

The new SEC FEATURES values are shown in **bold** below.

#### Change to SEC FEATURES sub-option prompt

| Prompt   | Valid input                   | Description                                                      |
|----------|-------------------------------|------------------------------------------------------------------|
| FEATURES | DCPK, <b>AR</b> , <b>ACRJ</b> | The FEATURES field indicate the line features using the SEC PIN. |

### Line class code compatibility

The LCC compatibility of SEC is not being changed by this activity.

### Assignability

The SEC option is assignable to a line.

**Option prerequisites**

For the SEC PIN to apply to AR and ACRJ, the CEPT option needs to be present on the line. The SEC PIN will not apply to non-CEPT AR and ACRJ.

**Notes**

None.

**Feature identification**

Feature number: A00002654 (CEPT AR), A00002655 (CEPT ACRJ)

**SERVORD+ Exceptions**

None.

**Software optionality control (SOC)**

n/a

**Element Management**

n/a

**Command interface changes**

n/a

**Security**

n/a

**Configuration Walkthrough**

n/a

***Product = CS2000*****A00002655 -- CEPT ACRJ for Telefonica (Int'l IAW, Int'l UA-IP)*****Functional Description***

ACRJ is an administration assigned feature, but the subscriber as well as administration has the ability of activating, deactivating, and interrogating the status of the feature. When activated, this service causes the switch to reject incoming calls to the line when the call is anonymous, i.e. when the calling name or number is not presented/presentable to the user. The calling party receives an announcement that the call is being rejected because it is anonymous.

## CEPT ACRJ Feature Provisioning

CEPT ACRJ is essentially MMP ACRJ with the CEPT interface, PIN protection optionality, and CEPT billing. Accordingly, the feature is provisioned the same as MMP ACRJ except that the CEPT option is added to the line to give the service its CEPT character. In order to add CEPT to the line, CEPT must first be added to the applicable customer group in table CUSTSTN. CEPT ACRJ is available only for IBN lines.

Provisioning changes on the subscriber option can only be done via SO. For CEPT ACRJ both CEPT and ACRJ options should be assigned to the subscriber. There is no limitation or restriction to use together CEPT and ACRJ line options. Whenever CEPT line option is removed from the line ACRJ feature behaves as basic MMP feature instead of CEPT variant and so no CEPT subscriber interface and no CEPT billing will be available. Please refer to FN section of 59019274 CEPT Subscriber Control Functions Framework for CEPT line option.

### Sample Feature Provisioning for CEPT ACRJ

```
>servord
SO:
>ado
SONUMBER:      NOW    3    6 19 PM
>
DN_OR_LEN:
>8406101
OPTION:
>acrj
STATUS:
>inact
OPTION:
>cept
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 6 19 PM 8406101 ( ACRJ INACT ) ( CEPT ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
```

## CEPT Feature Control - Activation//Deactivation/Interrogation

For describing activation, deactivation, and interrogation (also known as status verification) sequences, it is useful to define several symbols:

- LH - lift handset
- DT - receive dialtone
- FC - the CEPT feature action code for ACRJ, specified as 934 by the CEPT specification.
- ACK - a positive acknowledgement announcement or tone



- NACK - a negative acknowledgement announcement or tone
- RH - replace handset

The ACK/NACK tone is always used for interrogation. For activation/deactivation, an ACRJ specific announcement exists and the tone is used only if announcement resources are not available. Incomplete activation sequences will result in NACK treatment. (However, an implied octothorpe will be assumed upon digit time-out.)

### Activation

To activate the CEPT ACRJ feature, the subscriber must execute the sequence depicted in the following figure.

#### CEPT ACRJ Subscriber Activation

|                      |                   |
|----------------------|-------------------|
| LH DT * FC # ACK RH  | - if successful   |
| LH DT * FC # NACK RH | - if unsuccessful |

The CEPT ACRJ becomes active immediately after execution of this sequence. The entry of a valid activation sequence when the feature is already active is treated as a success.

### Deactivation

Subscriber has the ability to deactivate CEPT ACRJ by using special dialling sequence. To deactivate the ACRJ feature, the subscriber must execute the sequence depicted in the following figure.

#### CEPT ACRJ Subscriber Deactivation

|                      |                   |
|----------------------|-------------------|
| LH DT # FC # ACK RH  | - if successful   |
| LH DT # FC # NACK RH | - if unsuccessful |

The CEPT ACRJ is deactivated immediately after the execution of this sequence. The entry of a valid deactivation sequence when the feature is already deactivated is treated as a success.

### Interrogation

Subscriber has the capability of interrogating the status of ACRJ by using special dialing sequence. To interrogate the status of ACRJ feature, subscriber must execute the sequence depicted in the following figure.

**CEPT ACRJ Subscriber Status Interrogation**

|                       |                            |
|-----------------------|----------------------------|
| LH DT *# FC # ACK RH  | - if CEPT ACRJ is active   |
| LH DT *# FC # NACK RH | - if CEPT ACRJ is inactive |

Subscriber gets re-order tone and a FTR138 log with FNAL is generated for the following cases

- CEPT and ACRJ options are not assigned on the line.
- Improper feature action is datafilled in table ACCODE for CEPT ACRJ.

**CEPT ACRJ Translations**

The CEPT ACRJ feature must be invoked by a feature translator in Universal Translations in any XLA xxCODE table, such as, ACCODE or PXC CODE. There are three tuples which translations will need datafilled, they are:

- Activation

These will be handled by the existing xxCODE feature selector using the option feature ACRJ (new FTR) and existing option function ACT. An example tuple in a xxCODE table would look like:

```
starcept 934 934 FEAT (FTR ACRJ) (PF 4) (MM 3 15) (FUNC ACT) $
```

- Deactivation

This will be handled by the existing xxCODE feature selector using the option feature ACRJ (new FTR) and existing option function DEACT. An example tuple in a xxCODE table would look like:

```
octcept 934 934 FEAT (FTR ACRJ) (PF 4) (MM 3 15) (FUNC DEACT) $
```

- Interrogation

This will be handled by the existing xxCODE feature selector using the option feature ACRJ (new FTR) and existing option function INTER. An example tuple in a xxCODE table would look like:

```
starcept C934 C934 FEAT (FTR ACRJ) (PF 5) (MM 4 15) (FUNC INTER) $
```

**PIN Protection Optionality**

PIN protection is optionally available to users of CEPT ACRJ. PIN protection is enabled via provisioning the SEC feature on the line -see AR FN for more information. If PIN protection is enabled for a line with ACRJ assigned, the activation and deactivation sequences are changed as follows ("PIN" represents the 4 digit PIN number).

**CEPT ACRJ sequences with PIN Protection****Activation**

```
LH DT * FC * PIN # ACK RH      - if successful
LH DT * FC * PIN # NACK RH     - if unsuccessful
```

**Deactivation**

```
LH DT # FC * PIN # ACK RH      - if successful
LH DT # FC * PIN # NACK RH     - if unsuccessful
```

**PIN Modification**

```
LH DT * FC * PIN * PIN # <voice prompting> RH
```

Details of the PIN protection option including its provisioning, impact on QLEN and QDN displays, and behavior during PIN modification are given in the PIN Protection Optionality section of the AR DSUM (A00002654). The material for AR applies in a straight-forward manner to the ACRJ feature as well.

**Accounting/Billing**

Billing records/meter pulses are generated for activation, deactivation, and interrogation. The FN for A00002654 documents the behavior of billing for both CEPT AR and CEPT ACRJ.

**Hardware Requirements or Dependencies**

N/A

**Software Requirements or Dependencies**

N/A

**Limitations and restrictions**

- This feature is only applicable on IBN lines with the CEPT option.
- If calling line information is unavailable (e.g. a trunk involved in the call does not propagate this information) then the call to the terminator will not be blocked due to action of this feature. An alternative mode of behavior - blocking all calls lacking calling line information (and called “Mode A” by CEPT specifications for rejection of unidentified calls) - is not supported.

**Interactions**

Same as MMP ACRJ

## Applicable customer facing sections

**Note:** The Configuration and Accounting sections of A00002654 include information applicable to both the CEPT AR feature and this feature.

### Fault Management

Logs \_\_N/A\_\_

Alarms \_\_N/A\_\_

### Configuration

Data Schema \_\_N/A\_\_

User Interface \_\_N/A\_\_

Element Management \_\_N/A\_\_

Security \_\_N/A\_\_

Service Order \_\_N/A\_\_

Office Parameters \_\_N/A\_\_

Accounting (includes AMA billing) \_\_N/A\_\_

Performance (includes operational measurements) \_\_N/A\_\_

## References

A00002654 CEPT AR (Call Back to Last Received Call) Service, FMDOC

AF2879 CLASS: Anonymous Caller Rejection, OLDOC3

A59019274 CEPT Subscriber Control Functions Framework, FMDOC

## ***Product = CS2000***

### **A00002678 -- Telefonica IN Enhancements (Int'l UA-IP)**

#### ***Functional Description***

This activity enhances the IN platform to meet Telefonica requirements. Some of the components are only relevant to Telefonica, others are more generic and would be available for use in other CS1-R networks. The following enhancements are provided:

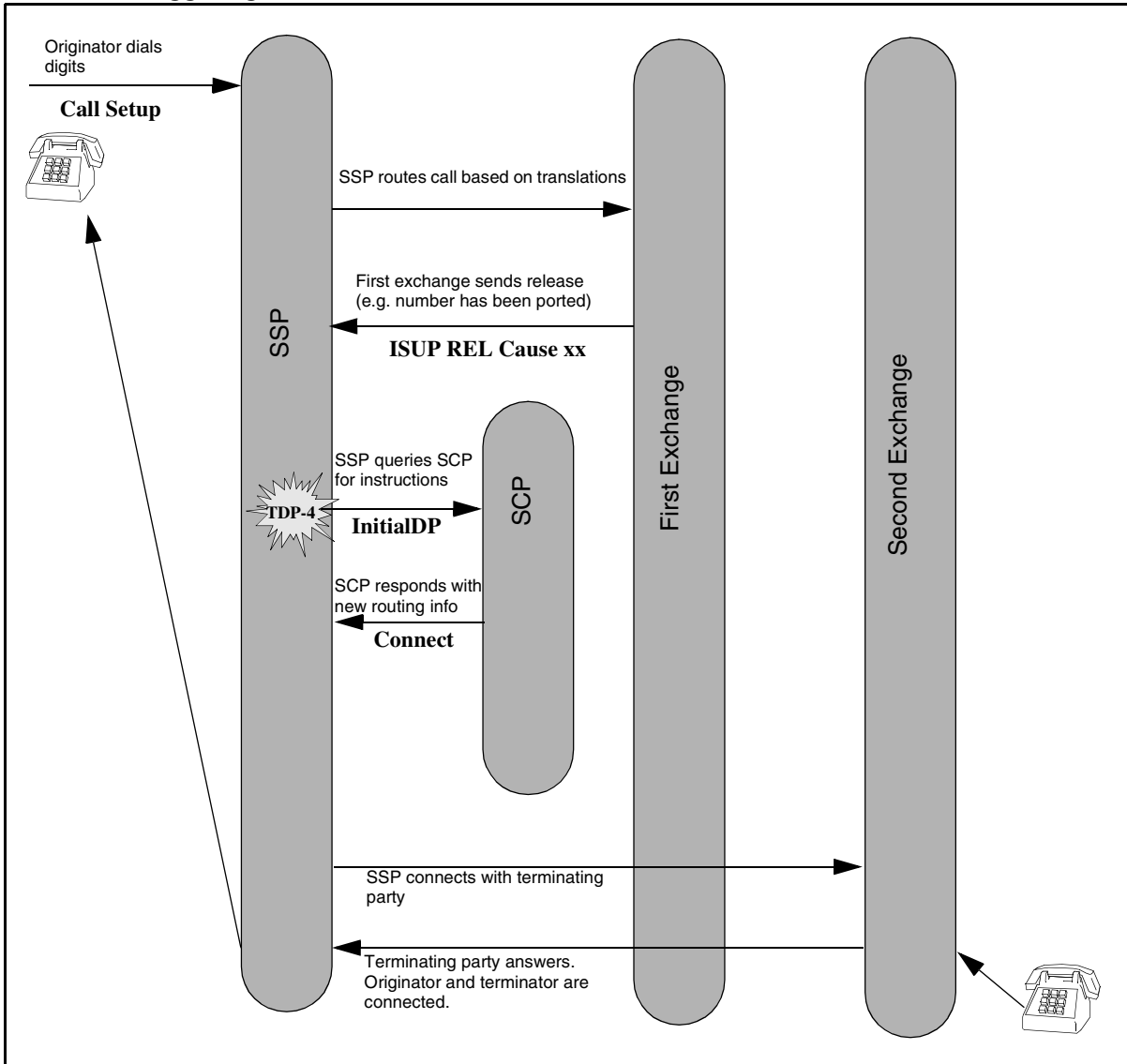
- TDP4 QoR triggering
- CPC Criteria triggering

- FCI handling
- ASF Enhancements
- Overdecadic digits in the CLI parm of the Connect message

For an overview of other IN functionality please refer to 1.

### **TDP4 Query on Release (QoR) Triggering**

TDP4 occurs when a release indication is received from the network or internally within the switch. The feature partially implements TDP4, it only allows IN to be trigger on receipt of an ISUP REL message (from ETSI ISUP and national variants). It does not support releases from other trunk type, nor internal failures to route.

**TDP-4 QoR triggering****Configuration**

The criteria for triggering TDP-4 is based on the cause value received in the ISUP message. The release cause value required to trigger TDP-4 is specified in a new criteria type CAUSE in table TRIGGRP. The CAUSE criteria can only be datafilled against NETBUSY triggers. Criteria matching will not be performed on digits at TDP-4, therefore an INFONAME must be datafilled in table TRIGINF before using the CAUSE criteria.

**Example datafill TRIGGRP**

| KEY                                             | TRIGDATA |
|-------------------------------------------------|----------|
| -----                                           |          |
| ETSIGRP NETBUSY                                 |          |
| (GENTRIG ( <b>CAUSE CSE_126</b> ) \$ MDCKEY1)\$ |          |

The following CAUSE value are supported (Note unsupported values may still be datafilled however they may not trigger.)

Supported Values : 1-5, 8,9, 17-22, 27-29, 34, 38, 41-44,  
46,47,50,53,55,57,58,62,63,65,69,70,79,87,88,90,91,95,97,99,102,103,110,111,126

Up to 16 CAUSE values may be specified for a particular trigger group using either the same or different infonames.

**Example datafill TRIGGRP**

| KEY                                     | TRIGDATA |
|-----------------------------------------|----------|
| -----                                   |          |
| TDP4 NETBUSY                            |          |
| (GENTRIG ( CAUSE CSE_126) \$ MDCKEY1)   |          |
| (GENTRIG ( CAUSE CSE_125) \$ MDCKEY2)   |          |
| (GENTRIG ( CAUSE CSE_124) \$ MDCKEY2)\$ |          |

The criteria ASSIGNED is also valid at TDP4, in this case all calls in which the originating trunk/line is subscribed to the TDP4 group, will trigger at TDP4 when released.

In addition to the criteria matching, TDP-4 triggering can be controlled on a per switch basis via a new office parm WTIN\_TDP4\_ACTIVE in table OFCENG. The default value for this parm is FALSE.

A new option CAUSE<sup>3</sup> has been added to the INITDP\_PARMS options in table SERVINFO. If this option is present the cause value used to trigger at TDP-4, will be sent to the SCP in the InitDP.

**Example datafill SERVINFO**

| SERVIDX | OPTION                                                                                                                                                                          |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -----   |                                                                                                                                                                                 |
| 4441    | (INITDP_PARMS ( SERVKEY) (CDPA) (CPC) (EVENT_TYPE) ( <b>CAUSE</b> ) \$)<br>(DIGIT_COLLECTION_INFO ( FULL_CDPA ) \$)<br>(EDPS_INFO ( EXPLICIT ) \$) (CS1R (CONTINUE) (CWA) \$)\$ |

---

3. The CAUSE option is available from SN07 onwards

**TRAVER support**

The TRAVER tool can be used to verify TDP-4 functionality. If a TDP4 trigger is detected the user is prompted to input a cause value, this is then checked against the datafilled criteria.



**Example TRAVER using CAUSE triggering at TDP-4**

```

>traver 1 8226034 743012345 b
TABLE IBNLINES
LG 01 2 00 34 0 DT STN IBN 8226034 CSLINES 0 0 141 (LNR) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
LG 01 2 00 34 0 AIN AIN TDP4GRP
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP ETSIGRP
INAP Origination Attempt TDP: no subscribed trigger.
INAP Info Collected TDP: no subscribed trigger.
TABLE NCOS
CSLINES 0 0 0 DFLT ( XLAS K1TYPE NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CSLINES NXLA K1PSTN CSFETXLA 0 CSACCDIG
TABLE DIGCOL
TUPLE NOT FOUND
Default is RPT
TABLE IBNXLA: XLANAME K1TYPE
K1TYPE 7 NET N N 0 N CSDIG N Y DOD N K1TYPE CS_NPRT CS_NIL NONE $
TABLE DIGCOL
CSDIG 7 COL L 7
TABLE LINEATTR
K1TYPE IBN NONE NT 0 0 NILSFC 0 PX TYPEPX NIL 00 CS_NPRT CS_NIL $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
CS_NPRT NSCR 141 NPRT NONE N $ $
TABLE RATEAREA
CS_NIL NLCA NIL NILLATA $
TABLE PXHEAD
TYPEPX DFLT CONT(XLT PX PUBAPSTN)$ DFOP(CLASS NATL)$NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 743012345
TABLE PXCODE
TYPEPX 7 7 CONT ( PF 1) ( MM 6 18) ( XLT PX ATMEPX)$
TABLE PXHEAD
ATMEPX SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 43012345
TABLE PXCODE
ATMEPX 430 430 RTE ( PF 3) ( DEST 430)$
TABLE: PXRTE
KEY: ATMEPX 430
. S K1197EISWBE
EXIT TABLE PXRTE
TABLE AMAXLAID
MANTEST DFLT (FLEXCTYP GENERIC 910 OVRDALL )$
TABLE TRIGGRP
ETSIGRP INFOANAL
. GENTRIG ( CDPN K1197)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
. GENTRIG ( CDPN SIMTOOL)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.

```

```

TABLE TRIGGRP
TDP4GRP NETBUSY
. GENTRIG ( CAUSE CSE_126)$ MDCKEY1
Trigger INAPV8 GENTRIG is applicable to individual line.
PLEASE ENTER VALUE FOR RELEASE CAUSE (0..127)
>126
. . TABLE TRIGINFO
. . MDCKEY1 EVENT TCAP INAPV8 SS7 EIN_NATL_GTT DFLT (SERVKEY 1111)
. . (SERVINFO_INDEX 1111) $
. . . TABLE SERVINFO
. . . 1111
. . . (INITDP_PARS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) $)
. . . (BILL_INFO (FCI_OPT FREEFORM ) $)
. . . (EDPS_INFO ( EXPLICIT ) $) (CS1R (CONTINUE) (CWA) $)$
. . . TABLE C7GTTYPE
. . . EIN_NATL_GTT CCITT7 0 NATL E164 $
. . . TABLE C7GTT
. . . EIN_NATL_GTT 1111 1111 PCSSN (K1197RS1 EIN 50) $ SSN
INAP Route Select Failure TDP: trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

INAP Route Select Failure TDP: trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

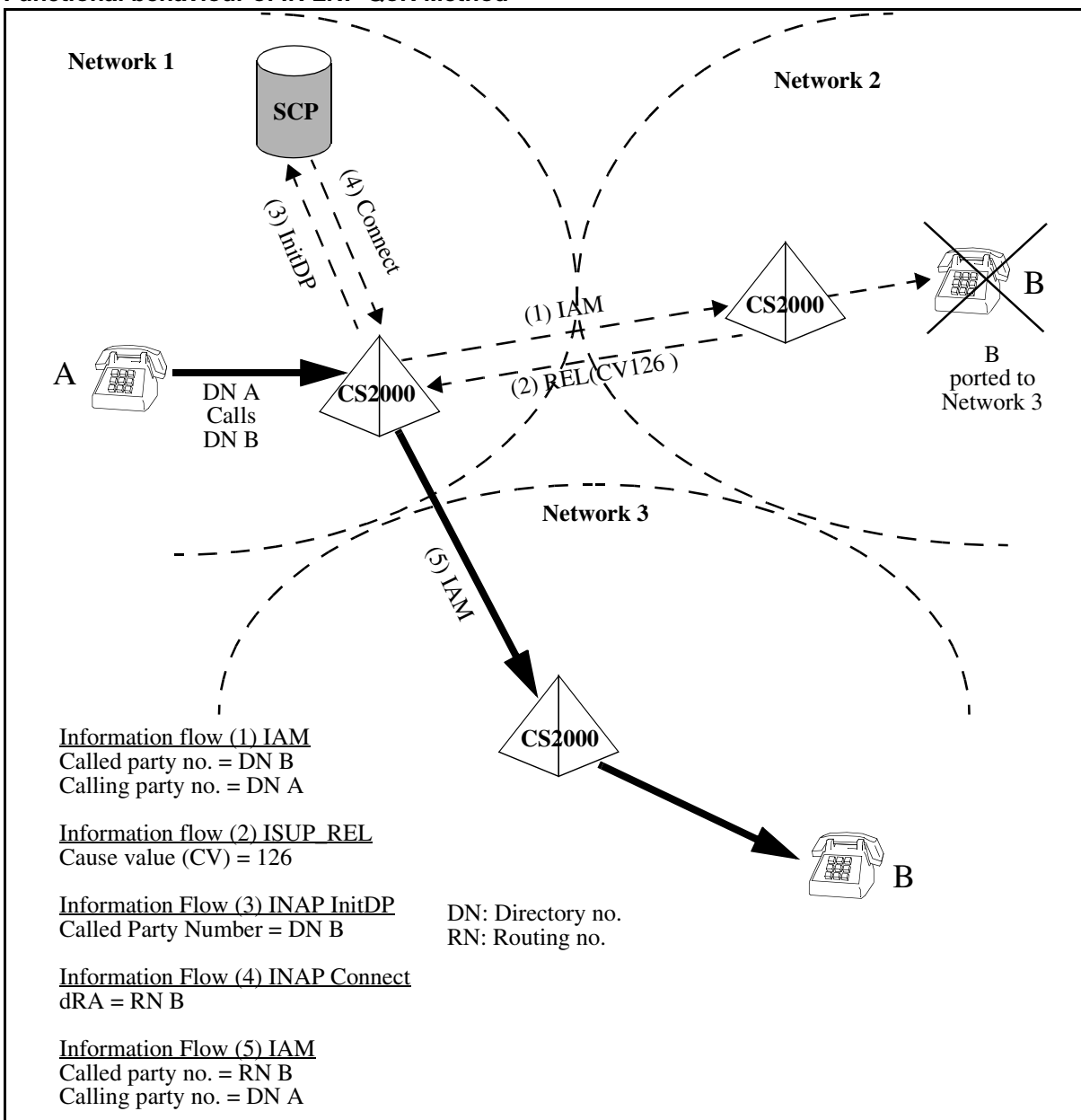
### TDP-4 Usage example: Local Number Portability

TDP-4 QoR functionality can be used for a variety of services, this example demonstrates an LNP service using TDP-4 triggering.

Local Number Portability (LNP) enables customers to switch from one service provider to another service provider in the same geographical location, without having to change their telephone number.

This feature supports the IN based Local Number Portability by the Query on Release (QoR) method. QoR allows a call to be routed over Spanish ISUP trunks to the donor exchange. If the called directory number is ported, the donor exchange will release the call by sending REL 126 (QoR: NUMBER PORTED) to the QoR serving exchange. The QoR serving exchange (the originating, or in some case an intermediate exchange) upon receiving REL 126 will trigger the IN service and a query will be sent to the SCP. The SCP will reply with the new routing number and the QoR serving exchange will route the call to the recipient exchange based on the new routing number provided by the SCP.

For more information on non-IN LNP please refer to 4.

**Functional behaviour of IN LNP QoR Method****Configuring the CS2K for IN based QoR LNP**

The following steps are required to configure the CS2K for IN based QoR LNP

**1 Configure trunks to support QoR:**

QoR Release sending and receiving is controlled by the LNP option in table ISUP SVC. For more information about the LNP option in table ISUP SVC see 4. All outgoing trunks that need to support triggering at

TDP-4 need to have either the FULL or RX options specified. If the release should be propagated back to a previous exchange the originating trunk needs to have either the FULL or SEND options specified. If either of these options are datafilled on the originating trunk the call will not trigger at TDP-4 if a QoR specific cause value is used (e.g. 14 or 126), regardless of IN datafill.

To use the Spanish specific ported number release cause (126) rather than the default (14), the SPAIN NATL\_LNP\_QOR option must be specified in table ISUP SVC. For more information on the SPAIN ISUP SVC options please see 5.

#### Example datafill ISUP SVC

| KEY     | SERVICE                                          |
|---------|--------------------------------------------------|
| -----   |                                                  |
| LNPSEND | (LNP QOR (SEND) \$) (SPAIN (NATL_LNP_QOR) \$) \$ |
| LNPRX   | (LNP QOR (RX) \$) \$                             |

#### Example datafill TRKOPTS

| OPTKEY      | OPTINFO                   |
|-------------|---------------------------|
| -----       |                           |
| K1S5040SP2A | ISUP SVC ISUP SVC LNPSEND |
| K1S5040SP2B | ISUP SVC ISUP SVC LNPRX   |

## 2 Configure TDP-4 trigger criteria:

For trunk originations the TDP-4 trigger criteria needs to be specified in table TRIGGRP and the originating trunk(s) subscribed to the trigger group, either on a per trunk basis in table TRKAIN or on an office wide basis with the AIN\_OFFICE\_TRIGGRP office parameter in table OFCVAR. For line originations the AIN line option needs to be added via SERVORD

#### Example datafill TRIGGRP

| KEY             | TRIGDATA                                 |
|-----------------|------------------------------------------|
| -----           |                                          |
| TDP4GRP NETBUSY | (GENTRIG ( CAUSE CSE_126) \$ MDCKEY1) \$ |

#### Example datafill TRKAIN

| GRPKEY      | AINGRP  | AININFO |
|-------------|---------|---------|
| -----       |         |         |
| K1S5020EI2B | TDP4GRP |         |

**Example datafill OFCVAR**

| PARMNAME           | PARMVAL |
|--------------------|---------|
| AIN_OFFICE_TRIGGRP | ETSIGRP |

**Example Line datafill**

```

>qdn 8226035
-----
DN: 8226035
TYPE: SINGLE PARTY LINE
SNPA: 141 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER: LG 01 2 00 35
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP: CSLINES SUBGRP: 0 NCOS: 0
CARDCODE: GWLPOT GND: N PADGRP: PKNIL BNV: NL MNO: N
PM NODE NUMBER : 72
PM TERMINAL NUMBER : 36
OPTIONS:
LNR DGT AIN TDP4GRP
-----

```

**3 Configure translations to modify the NOA post TDP-4:**

If a specific NOA is required for Ported Calls (for Spain an NOA of 126 is required), translations needs to be set up to modify the NOA based on the new value specified by the SCP using the CDNRTE and SETCDN options. Example datafill for table CDNCHAR is shown in the following figure, and an example translations setup can be seen in figure . See reference 3 for more info on the CDNRTE and SETCDN options

**Example datafill CDNCHAR**

| CDNKEY  | PROTLIST                                                   |
|---------|------------------------------------------------------------|
| NOA_126 | (INAP (ALL 126) \$ N N)<br>(ETSIISUP (ALL 126) \$ N 126)\$ |

**Example TRAVER for IN based LNP service using QoR**

```

>traver tr K1S5020EI2B 5040508226034 ainres icsx connect 50208226034 in_cdnchar
1 126 b
TABLE TRKGRP
K1S5020EI2B IBNT2 0 NPDGP NCRT CSLINES 0 MIDL 0 N ANSDISC 0 N N N N N N N 0 0 N
  0 1 0 1 N N N N N N N N NATL $
  . . TABLE TRKAIN
  . . K1S5020EI2B TDP4GRP
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP ETSIGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE NCOS
CSLINES 0 0 0 DFLT ( XLAS K1TYPE NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CSLINES NXLA K1PSTN CSFETXLA 0 CSACCDIG
TABLE DIGCOL
TUPLE NOT FOUND
Default is RPT
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME K1TYPE
K1TYPE 5 NET N N 0 N CSDIG N Y DOD N K1TYPE CS_NPRT CS_NIL NONE $
TABLE DIGCOL
CSDIG 5 COL L 7
TABLE LINEATTR
K1TYPE IBN NONE NT 0 0 NILSFC 0 PX TYPEPX NIL 00 CS_NPRT CS_NIL $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
CS_NPRT NSCR 141 NPRT NONE N $ $
TABLE RATEAREA
CS_NIL NLCA NIL NILLATA $
TABLE PXHEAD
TYPEPX DFLT CONT ( XLT PX PUBAPSTN)$ DFOP ( CLASS NATL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 5040508226034
TABLE PXCODE
TYPEPX 5040 5040 RTE ( PF 4) ( MM 5 24) ( DEST 40) ( CLASS NATL)$
TABLE: PXRTE
KEY: TYPEPX 40
  . S K1S5040SP2A
EXIT TABLE PXRTE
TABLE TRIGGRP
ETSIGRP INFOANAL
  . GENTRIG ( CDPN K1197)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
  . GENTRIG ( CDPN SIMTOOL)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.
TABLE TRIGGRP
TDP4GRP NETBUSY
  . GENTRIG ( CAUSE CSE_126)$ MDCKEY1
Trigger INAPV8 GENTRIG is applicable to individual trunk.
PLEASE ENTER VALUE FOR RELEASE CAUSE (0..127)
>126
  . . TABLE TRIGINFO
  . . MDCKEY1 EVENT TCAP INAPV8 SS7 EIN_NATL_GTT DFLT (SERVKEY 1111)
  . . (SERVINFORM_INDEX 1111) $
  . . . TABLE SERVINFORM
  . . . 1111
  . . . (INITDP_PARM ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) (CAUSE) $)
  . . . (BILL_INFORM (FCI_OPT FREEFORM ) $)
  . . . (EDPS_INFORM ( EXPLICIT ) $) (CS1R (CONTINUE) (CWA) $)$
  . . . TABLE C7GTTTYPE

```

```

. . . EIN_NATL_GTT CCITT7 0 NATL E164 $
. . . TABLE C7GTT
. . . EIN_NATL_GTT 1111 1111 PCSSN (K1197RS1 EIN 50) $ SSN
INAP Route Select Failure TDP: trigger criteria met, querying the database.
INAP Info Analyzed TDP: AINRES CONNECT option specified
INAP Route Select Failure TDP: CONNECT NPI = 1 NOA = 126
TABLE CDNCHAR
. Matched on NOA_126
TABLE IBNXL: XLANAME K1TYPE
K1TYPE 5 NET N N 0 N CSDIG N Y DOD N K1TYPE CS_NPRT CS_NIL NONE $
TABLE DIGCOL
CSDIG 5 COL L 7
TABLE LINEATTR
K1TYPE IBN NONE NT 0 0 NILSFC 0 PX TYPEPX NIL 00 CS_NPRT CS_NIL $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
CS_NPRT NSCR 141 NPRT NONE N $ $
TABLE RATEAREA
CS_NIL NLCA NIL NILLATA $
TABLE PXHEAD
TYPEPX DFLT CONT ( XLT PX PUBAPSTN)$ DFOP ( CLASS NATL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 50208226034
TABLE PXCODE
TYPEPX 5020 5020 RTE ( PF 4) ( MM 5 24) ( DEST 20) ( CLASS NATL) ( CDNRTE )$
TABLE CDNUXLA
. NOA_126 PX TYPEPX XLA FT FANO126
TABLE FTHEAD
FANO126 DFLT RTE ( MM 1 24) ( DEST 20) ( SETCDN NOA_126)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 8226034
TABLE FTCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE: FTRTE
KEY: FANO126 20
. S K1S5020EI2A
EXIT TABLE FTRTE

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 K1S5020EI2A 8226034 ST
The called number characteristics set are NPI: Unchanged NOA: 126

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

### CPC Triggering (only available from SN07 onwards)

This activity allows calls to be triggered based on the Calling Party Category (CPC) for incoming calls from supported protocol.

The CPC is mapped to a generic, protocol independent Calling Party Category Name (CPCNAME) in table CPCCHAR. A new criteria type, CPC, in table TRIGGRP, is then used to trigger calls based on the CPCNAME. The CPC option can be datafilled against the INFOCOL (TDP-2) and INFOANAL (TDP-3) TDPs.

**Table CPCCHAR**

Table CPCCHAR is used to convert the protocol's CPC value, into a generic, protocol independent CPCNAME. This CPCNAME is then used for routing the call.

Each tuple in table CPCCHAR comprises of a CPCNAME, followed by between one and eight protocols, of which four protocols are currently valid. Each protocol has a list of between one and sixteen CPC values to match. The CPC value is specified in decimal.

For more information on table CPCCHAR and CPC routing please refer to 2.

**Example datafill for table CPCCHAR**

| TABLE: CPCCHAR |    | CPCKEY |         | PROTLIST |  |
|----------------|----|--------|---------|----------|--|
|                |    |        |         | -----    |  |
| PUBLPAYP       |    |        |         |          |  |
| (BTUP          | 3  | 8      | \$ )    |          |  |
| (ETSIISUP      | 15 | \$     | )       |          |  |
| (FTUP          | 14 | \$     | )       |          |  |
| (REDBKTUP      | 15 | \$     | ) \$    |          |  |
| OTHRPAYP       |    |        |         |          |  |
| (BTUP          | 9  | 10     | \$ ) \$ |          |  |
| UNKNOWN        |    |        |         |          |  |
| (BTUP          | 0  | \$     | )       |          |  |

**Example datafill TRIGGRP**

| KEY              |                         | TRIGDATA |            |
|------------------|-------------------------|----------|------------|
|                  |                         | -----    |            |
| ETSIGRP INFOCOL  |                         |          |            |
| (GENTRIG         | ( <b>CPC UNKNOWN</b> )  | \$       | MDCKEY1)\$ |
| ETSIGRP INFOANAL |                         |          |            |
| (GENTRIG         | ( <b>CPC PUBLPAYP</b> ) | \$       | MDCKEY1)\$ |



**TRAVER support**

The TRAVER tool can be used to verify CPC based triggering.

**Example TRAVER using CPC triggering at TDP-2**

```

>traver tr pubm411eiswbe 01628430000 b
TABLE TRKGRP
PUBM411EISWBE IBNT2 0 NPDGP NCRT PUBLIC162MEL 0 MIDL 0 N ANSDISC 0 Y N N N N N
  0 0 N 0 1 0 1 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP ETSIGRP
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
PUBLIC162MEL 0 0 0 DFLT ( CPCRTE )$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
PUBLIC162MEL NXLA PUBMXLA PUBMFET 0 PUBMDIG
TABLE DIGCOL
TUPLE NOT FOUND
Default is RPT
TABLE TRIGGRP
ETSIGRP INFOCOL
. GENTRIG (CPC UNKNOWN)$ MDCKEY1
Please enter a CPCCHAR protocol name or N
to specify CPC Routing not required
Protocol Name:
>etsiisup
ENTER CPC VALUE FOR ETSIISUP
CPC VALUE:
>0
TABLE CPCCHAR
. Matched on UNKNOWN
Trigger INAPV8 GENTRIG is applicable to office.
. . TABLE TRIGINFO
. . MDCKEY1 EVENT TCAP INAPV8 SS7 EINJAZZ DFLT (SERVKEY 4441) (SERVINFO_INDEX4441)
. . $
. . . TABLE SERVINFO
. . . 4441
. . . (INITDP_PARM ( SERVKEY) (CDPA) (CPC) (EVENT_TYPE) $)
. . . (BILL_INFO (FCI_OPT FREEFORM ) $)
. . . (DIGIT_COLLECTION_INFO ( FULL_CDPA ) $)
. . . (EDPS_INFO ( EXPLICIT ) $) (CS1R (CONTINUE) (CWA) $)$
. . . TABLE C7GTTYPE
. . . EINJAZZ CCITT7 0 NATL E164 $
. . . TABLE C7GTT
. . . EINJAZZ 4441 4441 PCSSN (K1197RS1 EIN 50) $ SSN
INAP Info Collected TDP:  trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

INAP Info Collected TDP:  trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

## Telefonica FCI

The FCI option in table SERVINFO has been expanded to include a new FCI format of TELEFONICA. If the TELEFONICA FCI option is present, the SSP will accept the FCI in an OCTET STRING with boundaries of 0 to 200 bytes of billing data. For more information on Multivendor FCI please refer to 6.

### Example datafill SERVINFO

| SERVIDX | OPTION                                                                                                                                                                                                             |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4441    | (INITDP_PARMS ( SERVKEY) (CDPA) (CPC) (EVENT_TYPE) \$)<br>(BILL_INFO (FCI_OPT <b>TELEFONICA 127</b> ) \$)<br>(DIGIT_COLLECTION_INFO ( FULL_CDPA ) \$)<br>(EDPS_INFO ( EXPLICIT ) \$) (CS1R (CONTINUE) (CWA) \$) \$ |

**ASN.1 encoding for Telefonica FCI**

```

Integer2 ::= INTEGER (0..32767)

Register ::= IA5 STRING (SIZE(1..20))

Item ::=
    SEQUENCE {
        key          [0] Integer2,
        value        [1] Register
    }

SupplementaryService ::= SEQUENCE {
    serviceType          [0] Integer2,
    value                [1] Integer2
}

Feature ::=
    SEQUENCE {
        key          [0] Integer2,
        value        [1] Integer4
    }

TESATariff ::= OCTET STRING (SIZE (5))

CorrelationID ::= OCTET STRING (SIZE (7))

FCIPartyToCharge ::= CHOICE {
    single    [0] ENUMERATED {
        CallingParty(1),
        Subscriber(2),
        Account(3),
        VPN-GN(4),
        VPN-SGN(5),
        ServiceProvider(6)
    },
    legID     [1] LegID
}

fCIBillingChargingCharacteristics ::= SEQUENCE{
    fCIRegisterClass          [0] ENUMERATED {
        first(0),
        intermediate(1),
    },
    OPTIONAL,
    fCIPartyToCharge          [17] FCIPartyToCharge
    OPTIONAL,
    fCIServiceKey             [2] ServiceKey
    fCIChargeNumber           [7] Register
    OPTIONAL,
    correlationID             [1] CorrelationID
    OPTIONAL,
    fCITariff                 [18] TESATariff
    fCIFeatures               [15] SET (SIZE (1-8) OF
        Feature OPTIONAL,
        fCISupplementaryServices [14] SET (SIZE (1-8) OF
            SupplementaryService
        fCIItems
    }
    [16] SET (SIZE (1-8) OF Item

```

The SSP will check the tag and length of the ASN.1 parameters received to ensure that they are contained in correct structure and then report the ASN.1 encoding in the module 199's appended to the AMA record.

The Parameters the fCIBillingChargingCharacteristics shall/may transport are:

## 1 First FCI Invocation

Scenario A - Before invoking a control connection operation: ETC, CONNECT and received after the opening of a AMA record on behalf of sending an InitialDP operation to the SCP. The following parameters are Mandatory:

fCIRegisterClass

fCIServiceKey

Scenario B - Before invoking a control connection operation ICA/Continue and received after the opening of a AMA record on behalf of sending an InitiateCallAttempt operation to the SCP. The following parameters are Mandatory:

fCIRegisterClass

fCIServiceKey

fCITariff

In both cases if this first FCI Operation does not contain all of these mandatory parameters, the SSF shall abort the TCAP dialogue with the SCF and will initiate the release of the call.

The remaining Parameters are optional.

## 2 Second and subsequent FCI Invocation, which may be sent during the same connection configuration, only the additional information:

fCIFeatures

fCISupplementaryServices

fCIItems

can be sent to the SSP. In the case where EDPS are armed if the FCI contains any other parameters different from the ones mentioned, the SSP shall discard them.

## NAOC support

If an fCITariff parameter is received, in addition to being it decoded and reported in the module 199's the charge information will be passed to the NAO framework which is done by a separate activity. (See 7, A00002637

Network AOC support for spanish trunk metering. The CS2K will not generate ISUP TAR messages based on the received fCITariff.

## ActivateService Filtering Enhancements

### Network specific duration

A new office parm has been created called INAP\_ASF\_FILTERING\_TIMEOUT\_DUR in table OFCENG to specify the network specific ASF duration. The office parameter accepts values in the range -1 to 86,400 seconds, -1 represents an infinite duration. The default value of the office parm is 0. If the SSP receives a ASF operation with a duration of -2, this indicates the value is network specific and the value of the office parameter is used for the ASF operation. Changes to the office parm will only affect new ASF operations and not any that may currently be processing.

### Multi-vendor ASF

This enables the SSP to accept sFBillingChargingCharacteristics that are not in the NortelFreeform format. This is similar to the way FCI can accept multi-vendor FCIBillingChargingCharachteristics.

#### ASN.1 encoding for Telefonica sFBillingChargingCharacteristics

```
SFBillingChargingCharacteristics ::= SEQUENCE {
    sFServiceKey [0] ServiceKey OPTIONAL
    generateChargingInfo [1] TESATariff OPTIONAL
    generateAccountRecord [2] BOOL DEFAULT FALSE
}
```

In order for the CS2K to accept Telefonica format sFBillingChargingCharacteristics the INAP\_VARIANT office parameter in table OFCENG must be set to TELEFONICA

#### Example datafill INAP\_VARIANT office parameter in table OFCENG

| PARMNAME     | PARMVAL           |
|--------------|-------------------|
| -----        | -----             |
| INAP_VARIANT | <b>TELEFONICA</b> |

### Overdecadic digits in the CLI parm of the Connect message

This activity adds supports for overdecadic (B-F) digits in the CLI parm of the Connect message. Although the CS2K supports the reception of overdecadic digits, the protocol used for any subsequent routing may not. Therefore care should be taken that if overdecadic digits are used in the CLI parm of a connect message, all signalling protocols used to onward route the call must also support overdecadic CLI digits.

## **Hardware Requirements or Dependencies**

None

## **Software Requirements or Dependencies**

A00002713 Spanish ISUP Enhancements for Telefonica is required by this functionality.

## **Limitations and restrictions**

### **General Limitations**

In SN06.2 the CS2K IN platform has the following limitations:

#### **Interactions with Explicit Call Transfer**

The CS2K does not support IN service interactions with the Explicit Call transfer feature.

#### **Call Forward denial per IN service**

It is possible to prevent forwarded calls triggering all services but not on a per service basis

#### **Call Waiting**

If a Call Waiting signal is received during a call to a ASF (TeleVote service), the IN dialog will be aborted (as expected) and the TeleVote announcement (if applicable) may be cut short.

#### **Telemetry**

The CS2K does not support the generation of ISUP TAR messages from Tariff information received in an FCI or sFBillingChargingCharacteristics.

#### **Three Way Call**

It is not be possible for services that arm EDPs or CIRP to use the conference capability of 3WC.

#### **Multiple Control Relationships per call**

Multiple IN services are not possible in a single call (e.g. using a Calling card to access a TeleVote number). If multiple services are required looparounds are needed.

#### **Omit missing ISUP parameters from InitDP**

ISUP Parameters missing from ISUP signalling are not omitted from the InitDP, instead an unknown value is used. For example if Redirection info is required in the InitDP and a Redirection Parameter is not received from the ISUP signalling, a redirection parameter with a value of unknown will be sent to the SCP.

**Filtering Criteria for callingAddressValue and location**

The CS2K is not able to filter ASF (TeleVote) calls based on callingAddressValue or location.

**ETC SCFId CorrelationID**

The SCFId and CorrelationID ISUP parameters are not supported by the CS2K. These should be appended to the end of the assistingSSPIPRoutingAddress address

**Telefonica Specific Extension Parameters**

Telefonica specific Extension Parameters are not supported by the CS2K.

**Cancel Operation**

The CS2K does not support the cancel operation.

**ASF (TeleVote) maximum counters = 20**

The CS2K can support a maximum of 20 counters per ASF operation. If more TeleVote numbers are required, several ASF operations are required e.g. one for nbrs 0800000001 to 0800000020, one for 0800000021 to 0800000030 etc.

**ICA in Begin Package**

The CS2K does not currently support the ICA operation in a TCAP begin package.

**TDP4 specific limitations**

Only the following interworkings are supported. Where ETSI ISUP is listed below this includes all national variants.

- ETSI ISUP -> ETSI ISUP
- Line -> ETSI ISUP
- 3WC-> ETSI ISUP
- CFW -> ETSI ISUP
- PRI -> ETSI ISUP

TDP4 as a trigger point is only detectable from the Routing + Alerting PIC. It should not be possible to detect it post answer. However it is a possible for early ACM and ANM messages to be received from the network, and that these are indistinguishable from the real ACM and ANM. Therefore the SSP will trigger TDP4 even if an ANM or ACM has been received.

The originating line/trunk must be an IN capable agent and be subscribed to the TDP4 group datafilled in TRIGGRP. In the case of Lines, 3WC and CFW the relevant OFCPARMS (e.g WTIN\_LINE\_TRIGGERING\_ACTIVE or INAP\_3WC\_INTERWORK) must also be datafilled.

## Interactions

None

## Applicable customer facing sections

### Fault Management

Logs \_N/A\_

Alarms \_N/A\_

### Configuration

Data Schema \_X\_

User Interface \_N/A\_

Element Management \_N/A\_

Security \_N/A\_

Service Order \_N/A\_

Office Parameters \_X\_

Accounting (includes AMA billing) \_N/A\_

Performance (includes operational measurements) \_N/A\_

## Glossary

| Term    | Description                  |
|---------|------------------------------|
| 3WC     | Three Way Call               |
| ACM     | Address Complete Message     |
| AMA     | Automatic Message Accounting |
| ANM     | ANswer Message               |
| ASF     | ActivateService Filtering    |
| ASN.1   | Abstract Syntax Notation One |
| CDN     | CalleD Number                |
| CFW     | Call Forward                 |
| CIRP    | Call Information RePort      |
| CPC     | Calling Party Category       |
| CPCCHAR | CPC Characteristics          |
| CS1-R   | Capability Set 1 - Refined   |



| Term   | Description                                     |
|--------|-------------------------------------------------|
| CS2000 | CallServer 2000                                 |
| CS2K   | CallServer 2000                                 |
| DN     | Directory Number                                |
| EDP    | Event Detection Point                           |
| ETC    | Establish Temporary Connection                  |
| ETSI   | European Telecommunications Standards Institute |
| FCI    | Furnish Charging Information                    |
| IAM    | Initial Address Message                         |
| ICA    | Initiate Call Attempt                           |
| IN     | Intelligent Network                             |
| InitDP | InitialDP                                       |
| ISDN   | Integrated Services Digital Network             |
| ISUP   | ISDN User Part                                  |
| LNP    | Local Number Portability                        |
| NAOC   | Network Advise of Charge                        |
| NOA    | Nature of Address                               |
| NPI    | Numbering Plan Indicator                        |
| PIC    | Point In Call                                   |
| PRI    | Primary Rate Access                             |
| QoR    | Query on Release                                |
| REL    | RELease                                         |
| RN     | Redirecting Number                              |
| SCF    | Service Control Function                        |
| SCFId  | Service Control Function Id                     |
| SCP    | Service Control Point                           |
| SSP    | Service Switching Point                         |
| TAR    | TARiff                                          |
| TCAP   | Transaction Capabilities Application Part       |
| TDP    | Trigger Detection Point                         |

| Term   | Description               |
|--------|---------------------------|
| TRAVER | TRAnslations VERification |

## References

- [1] ITU Intelligent Networks Systems Guide (INSYSGDE in PLS FMDOC)
- [2] AJ5343 CPC Routing
- [3] AJ4884 CDN Translations (enhanced by AJ5346, AT.59013196 & AT.59023654)
- [4] AT.59027497 LNP Query on Release - Non IN
- [5] ACT.A00002713 Spanish ISUP Enhancements for Telefonica
- [6] AG5522 DMS SSP REL 6 (CUSTOMER FACING DOCUMENTATION)
- [7] A00002637 Network AOC support for spanish trunk metering

## Configuration for A00002678

### Hardware and Software Requirements

No non-standard hardware or software requirements.

### Initial Configuration

Not applicable.

### Office/Subnet parameters (OP/SP) (CM & SESM)

#### New/modified office/subnet parameters

#### New or modified parameter

| Parm table | Parameter name                 | NEW/CHANGE<br>D/DELETED/RE<br>LOCATED | Domain (CM or<br>Subnet<br>Management) |
|------------|--------------------------------|---------------------------------------|----------------------------------------|
| OFCENG     | WTIN_TDP4_ACTIVE               | NEW                                   | CM                                     |
| OFCENG     | INAP_ASF_FILTERING_TIMEOUT_DUR | NEW                                   | CM                                     |
| OFCENG     | INAP_VARIANT                   | Changed                               | CM                                     |

## Parameter information

### WTIN\_TDP4\_ACTIVE

Intelligent Networks Trigger Detection Point 4 Active

#### Functional description

TDP4 Query on Release (QoR) Triggering is being introduced by this activity. TDP4 occurs when a release indication is received from the network or internally within the switch. The feature partially implements TDP4, it only allows IN to be triggered on receipt of an ISUP REL message (from ETSI ISUP). The criteria for triggering TDP-4 is based on the cause value received in the ISUP message. The release cause value required to trigger TDP-4 is specified in a new criteria type CAUSE in table TRIGGRP.

Checking for a matching CAUSE criteria introduces a real-time hit for during release message processing. To reduce this a new office parm, WTIN\_TDP4\_ACTIVE has been introduced. If TDP-4 triggering is required in the office this office parm can be set to TRUE. If the office parm is set to FALSE TDP-4 triggering will be disabled regardless of datafill in table TRIGGRP.

#### Provisioning rules

The value should be set to TRUE if TDP-4 triggering is required in this office, and FALSE if it is not required.

#### Range information

##### Range Information

| Minimum | Maximum | Default |
|---------|---------|---------|
| FALSE   | TRUE    | FALSE   |

#### Activation

Any changes are activated immediately

#### Dependencies

None

#### Consequences

If TDP-4 triggering is not required and this office parm is set to TRUE, there will be an unnecessary real time hit for all calls, during backward release.

#### Verification

Make a call which will trigger at TDP-4, if the office is parm is set to TRUE to call will result in the trigger being generated, if set to FALSE the trigger will not occur.

**Memory requirements**

No memory impact.

**Parameter release history update**

Created WTIN\_TDP4\_ACTIVE office parameter in table OFCENG.

**INAP\_ASF\_FILTERING\_TIMEOUT\_DUR**

Intelligent Network Application Part ActivateService Filtering Timeout Duration

**Functional description**

This activity provides the ability to specify a network default ASF duration. If the SSP receives an ASF operation with a duration of -2, this indicates the value is network specific and the network default duration should be used.

A new office parm has been created called INAP\_ASF\_FILTERING\_TIMEOUT\_DUR in table OFCENG to specify the network specific ASF duration.

**Provisioning rules**

This office parm is only applicable to networks which require a network specific ASF duration. The value of this office parm should match the network specific ASF duration or if not required should be entered as 0.

**Range information**

The range accepted by this office parm is -1 - 86,400 seconds. A value of -1 represents an infinite duration.

**Range Information**

| Minimum | Maximum | Default |
|---------|---------|---------|
| -1      | 86,400  | 0       |

**Activation**

Any changes are activated immediately but will only affect new ASF operations and not any that may currently be processing.

**Dependencies**

None

**Consequences**

If there is a network specific ASF duration and the value of this parameter does not match it, an incorrect duration will be used if the network specific duration is requested by the SCP. If there isn't a network specific ASF duration, and this office parm is not datafilled as 0, should an ASF operation be received with a duration of -2, it will not be treated as an error and instead the value of the office parm will be used for the duration of the ASF operation.

**Verification**

Send an ASF operation to the SSP with a duration of -2 and use the ASF MAP CI tool to display the ASF entries and check the duration parameter is set as expected.

**Memory requirements**

No memory impact.

**Parameter release history update**

Created INAP\_ASF\_FILTERING\_TIMEOUT\_DUR office parameter in table OFCENG.

**INAP\_VARIANT**

Intelligent Network Application Part Variant

**Functional description**

Unchanged

**Provisioning rules**

For the Spanish National Market this office parm should be set to TELEFONICA.

**Range information**

A new value of TELEFONICA has been added for the Spanish national market.

**Activation**

Unchanged

**Dependencies**

None

**Consequences**

If this office parameter is not set correctly INAP operations may be encoded/decoded incorrectly.

**Verification**

Unchanged

**Memory requirements**

Unchanged

**Parameter release history update**

Added a new variant TELEFONICA.

**Upgrade Impact**

N/A

## Data schema (DS) (CM)

### New/modified tables

#### New or modified tables

| Table name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|------------|--------------------------|-----------------------------------|
| TRIGGRP    | CHANGED                  | UNCHANGED                         |
| SERVINFO   | CHANGED                  | UNCHANGED                         |

### Table information

#### Name: TRIGGRP

Trigger Group

#### Functional description

Unchanged

#### Usage sequence and implications (CM Only)

Tables must be datafilled in the following sequence:

CPCCHAR  
TRIGGRP

#### Size

##### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| TRIGGRP                | Unchanged      | Unchanged      | Unchanged             |

#### Fields/OIDs

The following table lists fields/OIDs for TRIGGRP.

### Table field descriptions

| Field    | New or Changed | Subfield or refinement | Entry                                 | Explanation and action |
|----------|----------------|------------------------|---------------------------------------|------------------------|
| CRITERIA | Changed        | Subfield               | {..., <b>CAUSE</b> , <b>CPC</b> ,...} |                        |
| CPC      | New            |                        | Alphanumeric 1- 8 characters          | Index to table CPCCHAR |

## Table field descriptions

| Field | New or Changed | Subfield or refinement | Entry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Explanation and action                     |
|-------|----------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| CAUSE | New            |                        | Alphanumeric (one of CSE_0, UNALLOC, NRTOTN, NRTODEST, SSINFTN, MISDTRPR, CSE_6, CSE_7, CSE_8, CSE_9, CSE_10, CSE_11, CSE_12, CSE_13, CSE_14, CSE_15, NORMCLR, USERBUSY, NOUSRESP, NOANSWER, CSE_20, CALLREJ, NUMCHANG, CSE_23, CSE_24, XLAFAIL, CSE_26, DOOSRVC, ADDINCOM, FACREJ, CSE_30, NORMUNSP, CSE_32, CSE_33, NOCIRCAV, CSE_35, CSE_36, CSE_37, NTWKOOO, CSE_39, CSE_40, TEMPFAIL, SWEQCONG, UINFDISC, CHANUNAV, PREEMPT, NPMPTCKT, RESUNAV, CSE_48, CSE_49, CSE_50, CSE_51, OTGCBARD, CSE_53, CSE_54, INCBCUG, CSE_56, BCNAUTH, BCNAVAIL, CSE_59, CSE_60, CSE_61, CSE_62, SONAVAIL, CSE_64, BCNIMPL, CHNLNIMP, CSE_67, CSE_68, FACNIMP, RESBCINF, CSE_71, CSE_72, CSE_73, CSE_74, CSE_75, CSE_76, CSE_77, CSE_78, SONIMPL, CSE_80, INVCRAVAL, CSE_82, CSE_83, CSE_84, CSE_85, CSE_86, USERNCUG, INCOMDST, CSE_89, CSE_90, CSE_91, CSE_92, CSE_93, CSE_94, INVMSG, CSE_96, MSGNIMPL, CSE_98, PARMNIMP, INVPARMC, CSE_101, CSE_102, PNIPASS, CSE_104, CSE_105, CSE_106, CSE_107, CSE_108, CSE_109, CSE_110, PROTERR, CSE_112, CSE_113, CSE_114, CSE_115, CSE_116, CSE_117, CSE_118, CSE_119, CSE_120, CSE_121, CSE_122, CSE_123, CSE_124, CSE_125, CSE_126, INTWUNSP) | Release cause value to trigger on at TDP-4 |

**Datafill example**

The following example shows sample datafill for table TRIGGRP.

**Example datafill TRIGGRP**

| KEY                                             | TRIGDATA |
|-------------------------------------------------|----------|
| -----                                           |          |
| ETSIGRP NETBUSY                                 |          |
| (GENTRIG ( <b>CAUSE CSE_126</b> ) \$ MDCKEY1)\$ |          |
| ETSIGRP INFOCOL                                 |          |
| (GENTRIG ( <b>CPC UNKNOWN</b> ) \$ MDCKEY1)\$   |          |

**Table release history update**

Added new CRITERIA types of CPC and CAUSE

**Supplementary information**

A CRITERIA of CAUSE can only be entered for the TERMATT trigger. CPC can only be entered for INFOCOL, INFOANAL and TERMATT triggers.

**Translation verification other tools**

The following example shows the output from TRAVER when it is used to verify TRIGGRP.



**Example TRAVER using CPC triggering at TDP-2**

```

>traver tr pubm411eiswbe 01628430000 b
TABLE TRKGRP
PUBM411EISWBE IBNT2 0 NPDGP NCRT PUBLIC162MEL 0 MIDL 0 N ANSDISC 0 Y N N N N N
  0 0 N 0 1 0 1 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP ETSIGRP
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
PUBLIC162MEL 0 0 0 DFLT ( CPCRTE )$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
PUBLIC162MEL NXLA PUBMXLA PUBMFET 0 PUBMDIG
TABLE DIGCOL
TUPLE NOT FOUND
Default is RPT
TABLE TRIGGRP
ETSIGRP INFOCOL
  . GENTRIG (CPC UNKNOWN)$ MDCKEY1
Please enter a CPCCHAR protocol name or N
to specify CPC Routing not required
Protocol Name:
>etsiisup
ENTER CPC VALUE FOR ETSIISUP
CPC VALUE:
>0
TABLE CPCCHAR
  . Matched on UNKNOWN
Trigger INAPV8 GENTRIG is applicable to office.
  . . TABLE TRIGINFO
  . . MDCKEY1 EVENT TCAP INAPV8 SS7 EINJAZZ DFLT (SERVKEY 4441) (SERVINFO_INDEX4441)
  . . $
  . . . TABLE SERVINFO
  . . . 4441
  . . . (INITDP_PARMS ( SERVKEY) (CDPA) (CPC) (EVENT_TYPE) $)
  . . . (BILL_INFO (FCI_OPT FREEFORM ) $)
  . . . (DIGIT_COLLECTION_INFO ( FULL_CDPA ) $)
  . . . (EDPS_INFO ( EXPLICIT ) $) (CS1R (CONTINUE) (CWA) $)$
  . . . TABLE C7GTTTYPE
  . . . EINJAZZ CCITT7 0 NATL E164 $
  . . . TABLE C7GTT
  . . . EINJAZZ 4441 4441 PCSSN (K1197RS1 EIN 50) $ SSN
INAP Info Collected TDP:  trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

INAP Info Collected TDP:  trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

**Name: SERVINFO**

Intelligent Network Service Information Table

**Functional description**

Unchanged

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | Unchanged      | Unchanged      | Unchanged             |

**Fields/OIDs**

The following table lists fields/OIDs for SERVINFO.

**Table field descriptions**

| Field             | New or Changed | Subfield or refinement | Entry                             | Explanation and action                                                   |
|-------------------|----------------|------------------------|-----------------------------------|--------------------------------------------------------------------------|
| FCI_OPT           | Changed        | refinement             | {..., <b>TELFONICA</b> ,...}      |                                                                          |
| TELFONICA         | New            |                        | FORMAT_IDENTIFIER                 | Specifies that Telefonica FCI handling should be used                    |
| FORMAT_IDENTIFIER | New            | Subfield               | numeric (in the range 127 to 255) | Denotes a vendor-specific FCIBCC format or IN service                    |
| INITDP_PARMS      | Changed        | refinement             | {..., <b>CAUSE</b> , ...}         |                                                                          |
| CAUSE             | New            |                        | none                              | Specifies that the release CAUSE value should be included in the InitDP. |

**Datafill example**

The following example shows sample datafill for table SERVINFO.

**Example datafill SERVINFO**

| SERVIDX | OPTION                                                                                                                                                                                                                            |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -----   |                                                                                                                                                                                                                                   |
| 4441    | (INITDP_PARMS ( SERVKEY) (CDPA) (CPC) (EVENT_TYPE) ( <b>CAUSE</b> )\$)<br>(BILL_INFO (FCI_OPT <b>TELEFONICA 127</b> ) \$)<br>(DIGIT_COLLECTION_INFO ( FULL_CDPA ) \$)<br>(EDPS_INFO ( EXPLICIT ) \$) (CS1R (CONTINUE) (CWA) \$)\$ |

**Table release history update**

Added new FCI\_OPT option TELEFONICA and INITDP\_PARMS option CAUSE.

**Supplementary information**

None

**Translation verification other tools**

The following example shows the output from TRAVER when it is used to verify SERVINFO.

**Example TRAVER using CPC triggering at TDP-2**

```

>traver tr pubm411eiswbe 06001234 b
TABLE TRKGRP
PUBM411EISWBE IBNT2 0 NPDGP NCRT PUBLIC162MEL 0 MIDL 0 N ANSDISC 0 Y N N N N N N
  0 0 N 0 1 0 1 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP ETSIGRP
INAP Origination Attempt TDP: no subscribed trigger.
TABLE NCOS
PUBLIC162MEL 0 0 0 DFLT $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
PUBLIC162MEL NXLA PUBMXLA PUBMFET 0 PUBMDIG
TABLE DIGCOL
PUBMDIG 0 COL L 7
TABLE TRIGGRP
ETSIGRP INFOCOL
  . GENTRIG ( FTC K11FTC)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE IBNXLA: XLANAME PUBMXLA
PUBMXLA 0600 NET N N 0 N NDGT N N DOD N 310 162_NPRT_201 NLCA_NILLA_200 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
310 IBN NONE NT 0 0 NILSFC 0 PX PUBM0PX NIL 00 162_NPRT_201 NLCA_NILLA_200 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
162_NPRT_201 NSCR 162 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_200 NLCA NIL NILLATA $
TABLE PXHEAD
PUBM0PX DFLT CONT ( XLT PX PUBMPX)$ NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 06001234
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
TABLE PXHEAD
PUBMPX SDFLT NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 06001234
TABLE PXCODE
PUBMPX 0600 0600 CONT ( MM 5 8) ( XLT FA PUBMPSTN)$
TABLE FAHEAD
PUBMPSTN DFLT RTE( MM 8 11)( DEST 1)( CLASS NATL)$DFOP( MM 8 11)( CLASS NATL)$ CON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 06001234
TABLE FACODE
PUBMPSTN 06001 06001 RTE ( MM 3 30) ( DEST 301) ( CLASS NATL)$
TABLE: FARTE
KEY: PUBMPSTN 301
  . S K1197EISWBE
  . S K1197BTWBE
EXIT TABLE FARTE
TABLE TRIGGRP
ETSIGRP INFOANAL
  . GENTRIG ( CDPN K1197GRP)$ NIL

```

```

Trigger INAPV8 GENTRIG is applicable to office.
. . TABLE TRIGDIG
. . K1197GRP GENTRIG 06001 GENTRIG EVENT TCAP INAPV8 SS7 EINJAZZ CALLED
. . (SERVKEY 1111) (SERVINFO_INDEX 1111) $
. . . TABLE SERVINFO
. . . 1111
. . . (INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) (CAUSE) $)
. . . (BILL_INFO (FCI_OPT TELEFONICA) $)
. . . (EDPS_INFO ( EXPLICIT ) $) (CS1R (CONTINUE) (CWA) $)$
. . . TABLE C7GTTTYPE
. . . EINJAZZ CCITT7 0 NATL E164 $
. . . TABLE C7GTT
. . . EINJAZZ 06001234 06001234 PCSSN (K1197RS1 EIN 0) $ SSN
INAP Info Analyzed TDP: trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

## Configuration Walkthrough

Please refer to the FN for ACT.00002678 for details on configuring this functionality.

## *Product = CS2000*

### **A00002680 -- CEPT/Telefonica Spain Changed Number Indication (Int'l UA-IP)**

#### ***Functional Description***

This feature is intended for the Telefonica market to provide intercept service using the UAS platform for telco subscribers who dial directory numbers that are no longer in service. The service is known as AIS (Automatic Intercept System) or CNI (Changed Number Intercept). Note that this feature is not CEPT specific, despite the title.

Currently, the DMS supports AIS via a trunk interface to an external machine that provides all the necessary announcements and functionality. This activity will provide the same type of functionality via an on-switch application utilizing the UAS as the announcement platform.

Callers reaching an intercepted number will receive a customized announcement from the UAS which includes the number that has been dialled (base DN) and the new directory number (reference DN) of the subscriber they

attempted to call. The reference DN will be associated with the base DN through datafill in the DMS.

Following is a description of how to provision and operate this service:

### Routing a Directory Number to Intercept Service

When a subscriber requests a directory number change, their old number will be assigned to OPRT treatment via SERVORD. The intercept treatment OPRT can be assigned via any of the following SERVORD commands: CDN, CHDN, DEL, CICP\_OUT, and EXBEST. In the case where only the generic notification is desired (number change notification without informing of the new number), the directory number should be routed to BLDN treatment instead of OPRT via SERVORD.

The OPRT tuples in TMTCNTL are modified to route to the CLI corresponding to the AIS announcement. This can be accomplished by changing the individual instances (i.e. OPRT in subtable LNT for line terminations) or deleting the OPRT tuple from each TMTCNTL subtable and modifying the entry in OFFTREAT [The entry in OFFTREAT applies to the entire office, but is over-ridden by entries in the other TMTCNTL tuples].

Following is an example of the TMTCNTL datafill necessary to route to OPRT treatment:

#### TMTCNTL Datafill to Route to AIS

```
TABLE: TMTCNTL

EXTTMTNM  TREAT
-----
OFFTREAT ( 234)

>SUB;POS OPRT

TREATMT LOG      FSTRTE
-----
OPRT  Y  S      AIS_ANN
```

For software or virtual directory numbers (numbers not associated with physical circuits), the intercept service can be specified by routing to OPRT treatment via table DNROUTE as shown below:

**DNROUTE Datafill to Route to AIS**

| AREACODE | OFCCODE | STNCODE | DNRESULT |
|----------|---------|---------|----------|
| 919      | 991     | 6100    | D OPRT   |

A list of all directory numbers routed to OPRT treatment can be obtained via the QDNSU command of SERVORD. This command can be used to generate either a numeric count of all numbers routed to OPRT or a listing of all individual directory numbers. Following is an example of the QDNSU command:

**Servord QDNSU Command Output**

```

>qdnsu
DIRECTORY_NUMBER_RANGE: ALL
>
TREATMENT: UNDT
>opr
SUMMARY OR DETAIL: S
>d
COMMAND AS ENTERED
QDNSU ALL OPRT D
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
>y
WARNING : Queries of all DNs or a large range of DNs
          may run for 30 minutes or more before producing any output
Please confirm ("YES", "Y", "NO", or "N"):
>y
REPORT ON UNASSIGNED DN
TREATMENT:OPRT
  9199911004 OPRT
  9199916100 OPRT
TOTAL COUNT OF UNASSIGNED DN:      2
TREATMENT:OPRT

```

A directory number that has been sent to OPRT treatment can be reused at any time by using the NEW command of SERVORD.

## Datafill for AIS Announcement

### Table CLLI

The Common Language Location Identifier (CLLI) or name for the AIS announcement must be defined in table CLLI. The value for field TRKGRSIZ must be set to specify how many individual members will exist for this announcement group.

### Table ANNS

The AIS announcement must be datafilled in table ANNS with ANTYP of AIS and only one entry is permitted. Field MAXCON must be set to one (1) and field CYTIME must be set to zero (0) as the length of each individual announcement is variable and will be determined internally. Field MAXCYC should be set to one (1) as the AIS announcement is a custom type announcement that ignores this field and is only played once.

The following figure depicts example datafill for the AIS announcement in table ANNS:

#### AIS Announcement Datafill for Table ANNS

| TABLE: ANNS |         |         |        |        |      |   |
|-------------|---------|---------|--------|--------|------|---|
| CLLI        | ANNARCH | TRAFSNO | CYTIME | MAXCYC | DATA |   |
| AIS_ANN     | NETWK   | 5       | 0      | 1      | AIS  | 1 |

### Table ANNMEMS

Table ANNMEMS must be datafilled to specify all members of the AIS announcement. The HDWTYPE field must be UAS and the CARD field must be AUD. Since it is desired to provide the AIS announcement simultaneously to more than one user, additional members must be datafilled in this table. The following figure depicts example datafill for the AIS announcement in table ANNMEMS with two members defined:



**AIS Announcement Datafill for Table ANNMEMS**

| TABLE: ANNMEMS |       |         |  |
|----------------|-------|---------|--|
| ANNMEM         |       |         |  |
| HDWTYPE        | CARD  | MEMINFO |  |
| -----          |       |         |  |
| AIS_ANN 0      |       |         |  |
| UAS            | AUD 1 | AUD 0   |  |
| AIS_ANN 1      |       |         |  |
| UAS            | AUD 1 | AUD 0   |  |

**Table ANNPHLST**

Table ANNPHLST is used to create the AIS announcement from individual phrases. Two new external phrase names are introduced by this activity as valid entries for field PHSLIST. These phrase names are AISBASEDN and AISREFDN. The phrase AISBASEDN represents the digits of the subscriber's old directory number or base DN. The phrase AISREFDN represents the digits of the subscriber's new directory number or reference DN. The following figure depicts example datafill for the AIS announcement in table ANNPHLST:

**AIS Announcement Datafill for Table ANNPHLST**

| TABLE: ANNPHLST |           |         |            |
|-----------------|-----------|---------|------------|
| ANNPHKEY        |           | PHSLIST |            |
| -----           |           |         |            |
| AIS_ANN         | 1         |         |            |
| (               | AUD_2014) | (       | AISBASEDN) |
|                 |           | (       | AUD_2015)  |
|                 |           | (       | AISREFDN)  |
|                 |           |         | \$         |

All the phrases present in the phraselist must be assigned or recorded on the UAS. Exceptions to this are the phrases AISBASEDN and AISREFDN, which are manipulated internally to produce a phraselist composed of digits. In the above example, AUD\_2014 and AUD\_2015 are simple text phrases recorded by the Telco. They would be similar to the following: *AUD\_2014-- "The number you have called"* and *AUD\_2015-- "has been changed. The new*

*number is*". The result of the entire tuple in ANNPHLST would be *"The number you have called, OLDNUMBER has been changed. The new number is NEWNUMBER"*.

If multiple cycles of this announcement are desired, repeat the ANNPHLST datafill [in the above example, the tuple would be (AUD\_2014) (AISBASEDN) (AUD\_2015) (AISREFDN) (AUD\_2014) (AISBASEDN) (AUD\_2015) (AISREFDN)].

Also, if a tone or treatment is desired after the AIS announcement completes, add the phrase associated with the desired treatment to the end of the phraselist. In the above example, assuming AUD\_2016 is T120 tone, a fifth phrase is added to the phraselist to provide T120 tone after the AIS announcement [(AUD\_2014) (AISBASEDN) (AUD\_2015) (AISREFDN) (AUD\_2016)].

### AIS Data Organization

There are three tables associated with AIS that were introduced previously via activity BV1522. These tables are also utilized by this activity, though some of the fields associated with them are not applicable to this design. These tables are presented below.

#### Table PAUSPATT

This table is intended to define the location of pauses during the speaking of the AIS base and reference directory numbers. This ability is required for the DRAM platform. Given that the Telefonica requirement is specific to the UAS, the functionality of this table is not relevant as the UAS has its own pause formatting scheme. However, the key of table PAUSPATT is a required field in table AISDBS, so it is necessary to add datafill as shown in the following figure:

**AIS Datafill for Table PAUSPATT**

| TABLE: PAUSPATT |       |       |       |       |
|-----------------|-------|-------|-------|-------|
| PAUSKEY         | PAUS1 | PAUS2 | PAUS3 | PAUS4 |
| UAS             | NP    | NP    | NP    | NP    |

#### Table ISCASSGN

This table introduces the Intercept Status Code (ISC), which is an organizational concept intended to simplify the association of an announcement and a number on intercept. [For example, a seven digit number may be routed to a different announcement than a ten digit number, so this

table would have two entries (i.e. c7 and c10) and the appropriate announcements would be associated here. This key (i.e. c7, c10) would then be referenced in table AISDBS as a quick way to route to the desired announcement.] The ISC concept is not utilized by this activity. The only field of interest in this table is AISMSG, which is used to define the announcement CLLI and index. The entry for field AISMSG must correspond to a valid entry in table ANNPHLST for the desired AIS announcement.

The following figure depicts example datafill for this table:

**AIS Datafill for Table ISCASSGN**

| TABLE: ISCASSGN |          |   |         |
|-----------------|----------|---|---------|
| ISCKEY          | AISMSG   |   | OVFLCHK |
| TMOUTCHK        |          |   |         |
| -----           |          |   |         |
| C7              | AIS_TEST | 1 | NONE    |
| NONE            |          |   |         |

Fields OVFLCHK and TMOUTCHK dictate routes for overflow and time-out conditions and are not utilized in this design. The overflow condition can be addressed by adding additional members for the AIS announcement or using a T-selector in TMTCNTL to specify a routelist. The time-out condition can be addressed by adding the desired treatment to the end of the announcement in table ANNPHLST, as discussed in section “Table ANNMEMS” on page 324.

### Table AISDBS

The main function of table AISDBS is to allow the Telco to associate a reference DN with the base DN. This table also utilizes the key fields from tables PAUSPATT and ISCASSGN. The following figure depicts example datafill for this table:

**AIS Datafill for Table AISDBS**

| TABLE: AISDBS |            |     |      |    |    |       |        |
|---------------|------------|-----|------|----|----|-------|--------|
| AISKEY        | AISPATT    | ISC | YR   | MT | DY | LOCAL | REFREQ |
| -----         |            |     |      |    |    |       |        |
| 9199911004    | UAS        | C7  | 2003 | 6  | 3  | Y     |        |
| DN            | 9199915555 | UAS |      |    |    |       |        |

The date field can be used as a reference by the Telco to identify how long the number has been or should be on intercept treatment; However, it is not used by this feature to provide any functionality. The pause information in fields AISPATT and PAUSREF is not needed by the UAS since it does its own audio formatting. The field ISC provides an association to the phraselist index in table ANNPHLST for the AIS announcement. Field LOCAL is not utilized by this activity and field REFREQ must be set to DN.

The index into table AISDBS is derived from the dialled digits of the originator. Any prefix digits dialled will be removed and the resulting digits will be used as the index into table AISDBS. This may result in the need to datafill multiple entries of a subscriber's old directory number in table AISDBS to address varied dialling plans of the originator (i.e. An example for the North American dialling plan might be to add a seven digit instance of the base DN for line terminations and a ten digit instance of the base DN for trunk terminations).

**Hardware Requirements or Dependencies**

This activity supports the AIS announcement on the UAS platform only. Therefore, AIS announcement members should not be defined on a MTM as this is not supported.

**Software Requirements or Dependencies**

None.

**Limitations and restrictions**

If the AIS announcement cannot be terminated upon during call processing (i.e. due to a problem in the UAS), the originator will be routed to GNCT treatment. If a problem is encountered providing the AIS announcement, the originator will be routed to BLDN treatment.

The index into table AISDBS is derived from the dialled digits of the originator. Any prefix digits dialled will be removed and the resulting digits will be used as the index into table AISDBS. This may result in the need to datafill multiple entries of a subscriber's old directory number in table AISDBS to address varied dialling plans of the originator (i.e. An example for the North American dialling plan might be to add a seven digit instance of the base DN for line terminations and a ten digit instance of the base DN for trunk terminations).

## Interactions

For ISUP and PRI terminations into the switch providing the AIS service, the OPRT treatment must be mapped as local via table TMTMAP for the AIS announcement to be provided. If OPRT is mapped remotely, the remote office will provide whatever treatment is datafilled there for OPRT treatment.

A flash attempt will be denied from a line connected to the AIS announcement. The flash capability and operation of a trunk terminating to the AIS announcement will be dictated by the switch associated with the trunk. Also, since flashing is denied, features that require flash for activation (such as CWT) will be denied when an agent is connected to an AIS announcement.

Call forwarding from a line to a number on AIS intercept is not supported. In the case of CFU, an attempt to forward to a number on AIS intercept will result in BLDN treatment given to the originator. In the case of CFB, the originator will receive BUSY treatment. In the case of CFD, the forward will not be attempted and the originator will continue to ring the base station. Call forwarding to a number on AIS intercept via trunk will function like a trunk termination to the AIS announcement. That is, the originator will receive the AIS announcement stating the old and new numbers associated with the forward-to number once the forwarding trigger is reached (i.e. busy condition for CFB or timer expiration for CFD).

No billing or AIS specific OM pegging is performed upon termination to the AIS announcement. The generic OMs associated with announcements are supported.

If the caller does not exit after the completion of the AIS announcement, the call will be routed to DISC (disconnect) treatment.

This feature supports the Primary and Secondary languages associated with the UAS through the assignment of the external phraseIDs LANGUAGE1 or LANGUAGE2 in table ANNPHLST. Specifying LANGUAGE1 will notify the UAS to play the announcement in its primary language and LANGUAGE2 will notify the UAS to play the announcement in its secondary language. The SL (Secondary Language) line option is not supported nor is the ability to specify a language directly via ANNPHLST datafill.

## Applicable customer facing sections

### Fault Management

Logs \_N/A\_

Alarms \_N/A\_

### Configuration

Data Schema \_Y\_

User Interface \_N/A\_

Element Management \_N/A\_

Security \_N/A\_

Service Order \_N/A\_

Office Parameters \_N/A\_

Accounting (includes AMA billing) \_N/A\_

Performance (includes operational measurements) \_N/A\_

## Glossary

| Term    | Description                                                         |
|---------|---------------------------------------------------------------------|
| AIS     | Automatic Intercept System                                          |
| AUD     | Audio Node                                                          |
| BLDN    | Blank Directory Number                                              |
| CEPT    | Conference of European Posts and Telecommunications Administrations |
| CLLI    | Common Language Location Identifier                                 |
| CNI     | Changed Number Intercept                                            |
| DN      | Directory Number                                                    |
| DRAM    | Digital Recorded Announcement Machine                               |
| GNCT    | General No Circuit Treatment                                        |
| ISC     | Intercept Status Code                                               |
| OPRT    | Operator Treatment                                                  |
| SERVORD | Service Order System                                                |
| UAS     | Universal Audio Server                                              |

## ***Configuration for A00002680***

### **Hardware and Software Requirements**

N/A

### **Initial Configuration**

N/A

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

N/A

### **Data schema (DS) (CM, MIBS, RDB)**

This activity does not introduce new tables, however, it does make use of three existing tables that were previously introduced via activity BV1522. These tables are PAUSPATT, ISCASSGN, and AISDBS. Investigation reveals no reference to these tables in the existing NTP documentation. These tables need to be added to the NTP documentation based on the description given in BV1522.

### **Service Orders (SO) (CM & SESM)**

N/A

### **Software optionality control (SOC)**

N/A

### **Element Management**

N/A

### **Command interface changes**

N/A

### **Security**

N/A

### **Configuration Walkthrough**

N/A







## ISN07 Feature Deltas

### ***Product = CS 2000***

#### **A00002713 -- Spanish ISUP enhancements for Telefonica (Intl UA-IP)**

##### ***Functional Description***

This feature extends the capabilities of the CS2000 Spanish ISUP V2 (PUSI 4/2) trunk interface to support additional capabilities used within the Telefonica España (TESA) network.

The existing CS2000 Spanish ISUP V2 (PUSI 4/2) interface is compliant to Telefonica specifications EG.S3.003 4th ed. and Appendices 1 and 2 with some minor limitations. It satisfies Spanish national network interconnect requirements.

This feature enhances the Spanish ISUP V2 (PUSI 4/2) interface to provide optional support for additional capabilities used within the Telefonica España (TESA) network, and specified in Telefonica specification Gt.EG.s3.403 Sections 5 and 6.

The main additional capabilities introduced by this feature are:

- A TESA defined “Call Stamp” in the IAM of all calls- comprising a Call Reference parameter to uniquely identify the call within the network.
- Support of Charge (#TAR) message enhanced at the call originating node.
- Number Portability support is enhanced to support use of Query on Release mode Local Network Portability within the Telefonica network.
- Transit Network Selection support.
- Barring of Reverse Charge Calls to certain (non-billable) lines.

Each capability will be individually controlled by datafill options and will only be supported on Spanish ISUP V2 trunks. Spanish ISUP V2 trunks are configured by the following set of field values in table TRKSGRP.

- External Protocol = ‘**Q767**’

ITU/ETSI ISUP variants in the CS2000 ISN load.

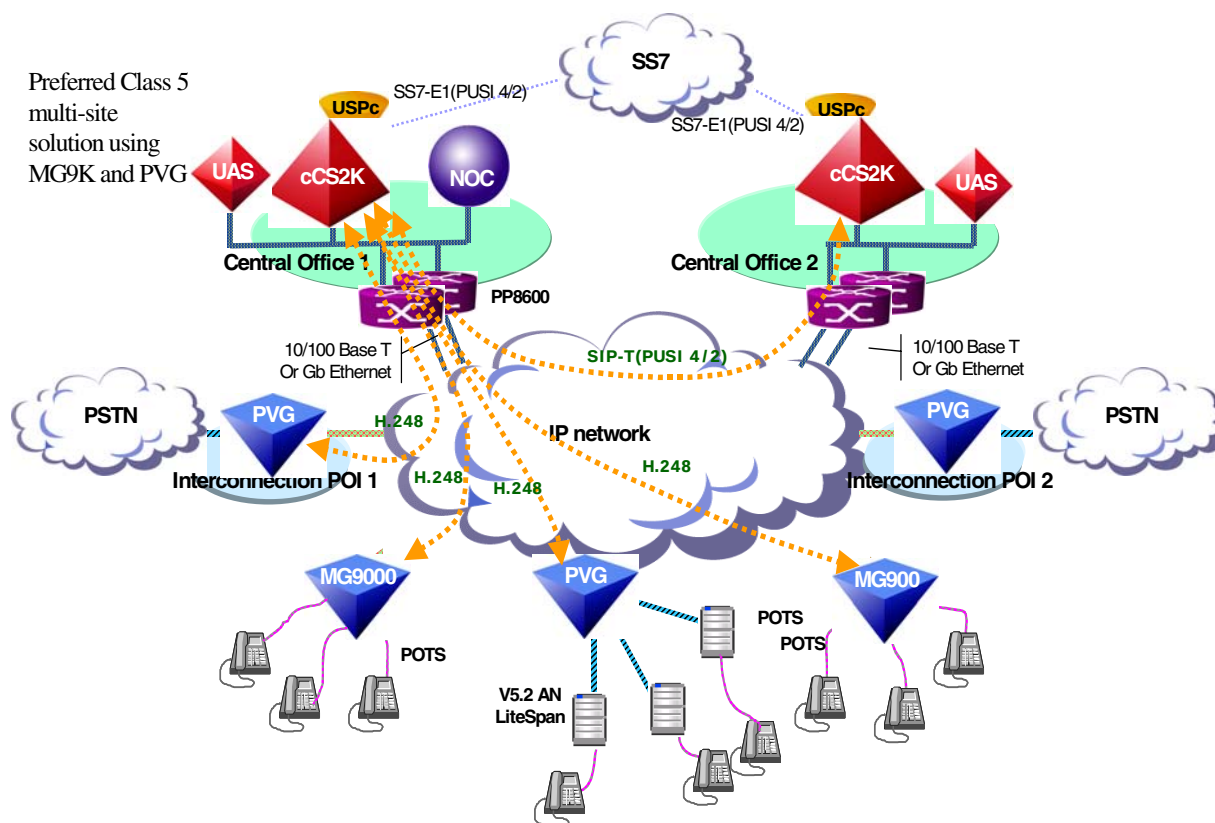
- Version='100\_WHITE'  
indicates that the variant is based on ITU White Book/ETSI ISUP V2 and
- Variant='SPAIN'  
marks the country specific variant as Spain

For example:

```
2W N N UNEQ NONE Q767 THRL 0 DMSNODE N N SPAIN 100_WHITE
$ ETSI CIC
```

Unless stated otherwise in the body of this document support for the features described in this document is limited to the scenario of PUSI 4/2 trunks interworking to Analog Lines - hosted on an MG9000 Gateway or connected via a PVG V5.2 Gateway as shown in the following figure.

### Supported configuration



## Telefonica defined PUSI requirements common to all Operating Companies as defined in GT.EG.S3.403 Section 5

This section describes the CS2000 implementation of Telefonica defined ISUP capabilities that are intended to be common across all Telefonica networks in all countries. These are specified in GT.EG.S3.403 Section 5.

### BACKWARD COMPATIBILITY (GT.EG.S3.403 Section 5.1)

The CS2000 implementation of PUSI 4/2 fully complies to this requirement for compatibility with the previous and future versions of PUSI, by compliance to Point 2.4. of Rec. Q.761 of the White Book.

### TIMERS (GT.EG.S3.403 Section 5.2)

The PUSI timer values agreed upon for all the Grupo Telefónica, are contained in the following table. The column on the left contains the timers; the 2nd column shows the values (0 range of values) allocated in Rec. Q.764 of the White Book ITU-T. The values that have been agreed upon by the Grupo Telefónica, can be seen in the 3rd column and the range configurable on the CS2000 in the 4th column.

Timers which are configurable on CS2000 are generally datafilled in table C7UPTMR. One or more tuples should be created in table C7UPTMR with the values required by the Telefonica network and associated to PUSI trunk groups.

**PUSI Timer Value**

| Timer           | Q.764 range | EG.S3.403 requirement | CS2000 range in C7UPTMR |
|-----------------|-------------|-----------------------|-------------------------|
| T1              | 15 - 60 s   | 30 s                  | 1 to 60                 |
| T2              | 3 m         | 3 m                   | 1 to 240                |
| T3              | 2 m         | 2 m                   | N/A                     |
| T4 <sup>a</sup> | 5 - 15 m    | 10 m                  | 1 to 326s               |
| T5              | 5 - 15 m    | 10 m                  | 1 to 900s               |
| T6              | Q.118       | 60 s                  | 1 to 240s               |
| T7              | 20 - 30 s   | 20 s                  | 1 to 60s                |
| T8              | 10 - 15 s   | 15 s                  | 1 to 60s                |
| T9              | Q.118       | 60 s                  | 1 to 300s               |
| T10             | 4 - 6 s     | 6 s                   | 1 to 30s                |
| T11             | 15 - 20 s   | 15 s                  | 1 to 60s                |
| T12             | 15 - 60 s   | 30 s                  | 1 to 60s                |

**PUSI Timer Value**

| <b>Timer</b> | <b>Q.764 range</b> | <b>EG.S3.403 requirement</b> | <b>CS2000 range in C7UPTMR</b> |
|--------------|--------------------|------------------------------|--------------------------------|
| T13          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T14          | 15 - 60 s          | 30 s                         | 1 to 60s                       |
| T15          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T16          | 15 - 60 s          | 30 s                         | 1 to 60s                       |
| T17          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T18          | 15 - 60 s          | 30 s                         | 1 to 60s                       |
| T19          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T20          | 15 - 60 s          | 30 s                         | 1 to 60s                       |
| T21          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T22          | 15 - 60 s          | 30 s                         | 1 to 60s                       |
| T23          | 5 - 15 m           | 10 m                         | 1 to 900s                      |
| T24          | < 2 s              | 1.5 s                        | 100 to 2000ms                  |
| T25          | 1 - 10 s           | 10 s                         | 1 to 30s                       |
| T26          | 1 - 3 m            | 2 m                          | 1 to 240s                      |
| T27          | 4 m                | 4 m                          | 1 to 300s                      |
| T28          | 10 s               | 10 s                         | 1 to 30s                       |
| T29          | 300 - 600 ms       | 500 ms                       |                                |
| T30          | 5 - 10 s           | 8 s                          |                                |
| T31          | > 6 m              | ( * )                        |                                |
| T32          | 3 - 5 s            | ( * )                        |                                |
| T33          | 12 - 15 s          | 15 s                         |                                |
| T34          | 2 - 4 s            | 2 s                          |                                |
| T35          | 15 - 20 s          | 15 s                         |                                |
| T36          | 10 - 15 s          | 15 s                         |                                |
| T37          | 2 - 4 s            | ( * )                        |                                |
| T38          | Q.118              | ( * )                        |                                |
| T39          | Q.730              | ( * )                        |                                |

**PUSI Timer Value**

| Timer                                   | Q.764 range | EG.S3.403 requirement | CS2000 range in C7UPTMR |
|-----------------------------------------|-------------|-----------------------|-------------------------|
| NortelT35 = initial interdigit timer    | -           | -                     | 1 to 60                 |
| NortelT37 = subsequent interdigit timer | -           | -                     | 1 to 30                 |

a. Not required by Telefonica ISUP - Call Modification not supported

**Call Stamp (GT.EG.S3.403 Section 5.3.1)****Overview**

The aim is to identify all the calls that enter the network in an unequivocal way, whether this be at the originating local exchange or the frontier exchange with other operators (national or international). There are basically two applications: to be able to use this information when providing services (whether they be on the Intelligent Network or not), and to be able to relate the various records, for rating, statistics, or of another kind, that can be carried out at different nodes on the network.

This service is supported by the CS2000 for calls originating from and Terminating to Lines on the CS2000.

**Encoding**

“Call reference” and “Generic Digits” are the two parameters that carry this information.

- “Call reference”:

The “call reference” parameter is as specified in Q.763 [3]. The increasing send interpretation will be applied in both fields of this parameter, that is, the least significant bit in the “call identity” field, is bit 1 of octet 1, and the most significant one is bit 8 of octet 3, whereas bit 1 of octet 4 is the least significant one in the “point code” field and bit 6 of octet 5 is the most significant one.

- “Generic Digits”:

Generic digits implementation is backed out as it is not required by Telefonica.

**Procedure**

The procedure to be followed at the originating exchanges, will be the same for local exchanges and for frontier exchanges. The originating exchange will

carry out the following actions, whether the call is generated from the network itself, or whether it comes from another network:

It will generate the “call reference”.

It will make a note of all the parameters in the respective register: the rating register at the local exchanges and the accountancy register at the frontier exchanges.

It will include call reference in the PUSI initial address message

The pure transit exchanges that do not have to make any note, will pass this parameter without making any modification at all.

**Note:** CS2000 does not support this SSP related functionality at present.

The destination exchanges will discard and will carry on as if they had not received them, if they do not have any specific procedure enabled.

The network outlet exchanges will make a note of this information in the accountancy registers, and will remove the parameters, unless they have a specific agreement with the next network.

#### CS2000 Datafill Control of Call Stamp

##### a) Call Reference Parameter:

This feature meets the Telefonica requirements for the Call Reference parameter for calls originating and terminating to analog lines on the CS2000 and entering or leaving the Telefonica network on Spanish ISUP V1 & V2 or Base ETSI ISUP V2 trunks.

It extends the generic ETSI ISUP Call Reference capability implemented by A59023264.

Calls that enter the Telefonica Spanish ISUP V2 network on Spanish ISUP V1 or V2 or ETSI ISUP V2 will be handled as described in feature A59023264.

To control generation of the Call Reference parameter in the IAM for calls from Lines to Spanish ISUP V2 trunks a new service “CALLREF” is introduced to table ISUP SVC. The CALLREF service will have a vector of options to control which scenarios the trunks should add a Call Reference parameter for. In this release only one option value will be available

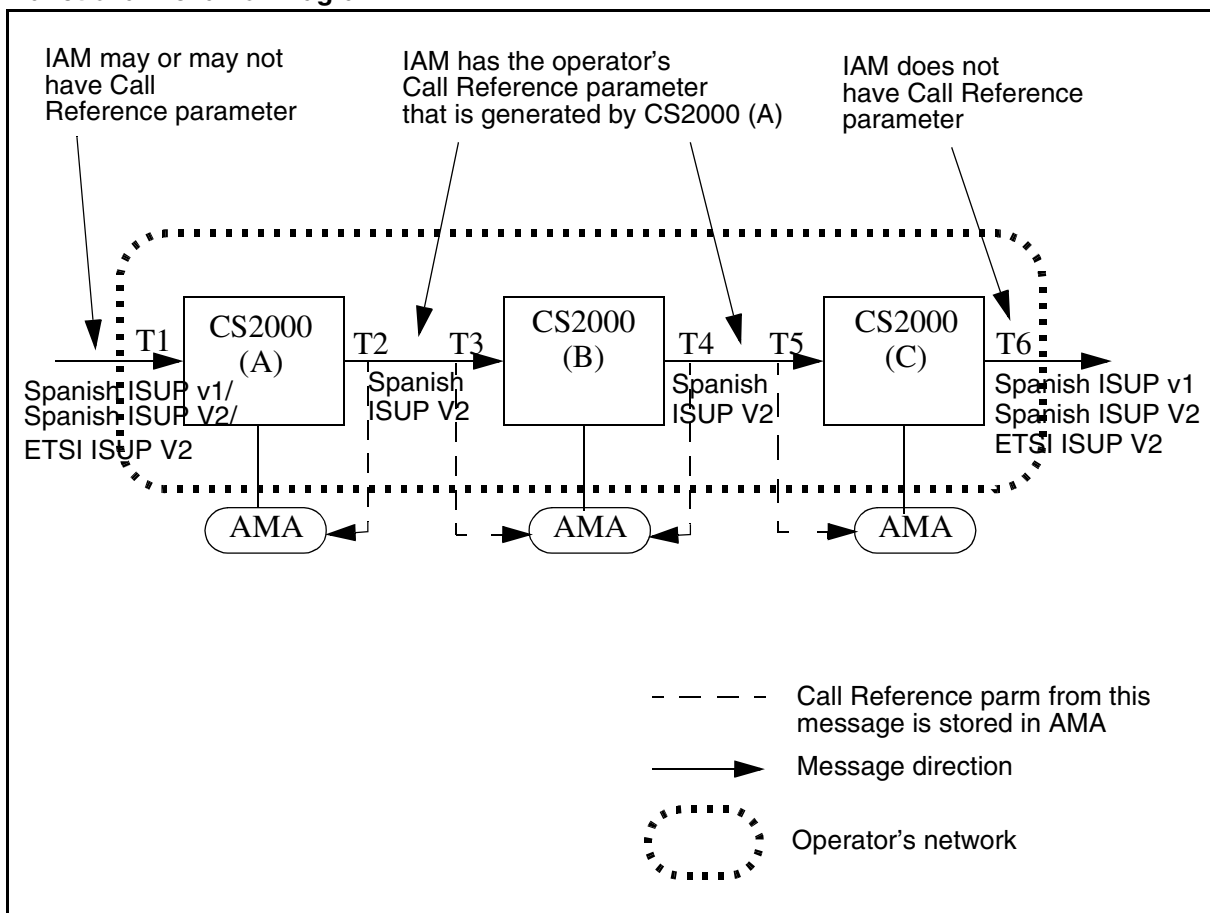
- “LINE” - to indicate that the call reference parameter is required to be generated for Line originated calls.

#### CALLREF LINE

This option will only take effect on trunk groups that also have the TRKOPTS option CALLREF datafilled with no suboptions.

The Call Reference parameter may be optionally captured in the AMA billing record as described in A59023264. This capability is extended to the Line origination and termination scenario by the CALLREF LINE option. This option needs to be datafilled for generating AMA records for Call reference in line origination and termination scenario.

### Functional Behavior Diagram



:

**Setting of TRKOPTS and ISUPSVC options for Telefonica network to generate Call Reference for all Line originations**

| <b>Trunk</b>                                                   | <b>TRKOPT CALLREF Datafill</b>       | <b>ISUPSVC CALLREF Datafill</b> |
|----------------------------------------------------------------|--------------------------------------|---------------------------------|
| Internal trunks within Telefonica network - T2, T3, T4, and T5 | CALLREF \$                           | CALLREF LINE                    |
| T1 and T6 if two-way trunks                                    | CALLREF (ADD_OVERWRITE )(DELETE ) \$ | don't care                      |
| T1 if it is a one-way incoming trunk                           | CALLREF (ADD_OVERWRITE ) \$          | don't care                      |
| T6 if it is a one-way outgoing trunk                           | CALLREF (DELETE ) \$                 | don't care                      |

Refer to A59023264 for full details of the Call Reference support on CS2000.

**SAMPLE DATAFILL FOR CALLSTAMP****1 . CALLREFERENCE PARAMETER****TABLE: TRKSGRP**

ETSIV2IC 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0  
DMSETSI N Y **SPAIN 100\_WHITE** \$ ETSI2W CIC

ETSIV2OG 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0  
DMSETSI N Y **SPAIN 100\_WHITE** \$ ETSI2W CIC

ETSIV2OG and ETSIV2IC, the outgoing and incoming trunks, are configured as Spain variants.

**TABLE: ISUPSVC**

EIV2\_SPAIN (SPAIN \$) (CALLREF LINE \$)

Define a key "EIV2\_SPAIN" in ISUPSVC with option SPAIN. This will be used to configure a trunk as a telefonica trunk when used in table TRKOPTS. Also add option CALLREF with suboption LINE. This option controls the CALL REFERENCE parameter generation for calls originated from line to TELEFONICA trunk. This option also controls AMA billing record generation for line origination and termination within telefonica network along with the existing option "STORE\_CALLREF" in table AMAOPTS.



**TABLE: TRKOPTS**

ETSIV2OG ISUP SVC ISUP SVC EIV2\_SPAIN

**TABLE: AMAOPTS**

STORE\_CALLREF ON

Call Reference parameter is captured in AMA record in module code.

e.g. “calldump full “command after the call, check for:

|                           |        |                              |
|---------------------------|--------|------------------------------|
| MODULE CODE:              | 611C   | GENERIC MOD: ONE DGT STR FMT |
| GENERIC CONTEXT ID:       |        |                              |
| PARSE RULES               | 80035  | CALL REFERENCE               |
| SIGNIFICANT DIGITS        | 00C    | NIL                          |
| GENERIC DIGIT STRING ONE: |        |                              |
| CALL ID                   | 590029 |                              |
| POINT CODE                | 0FA3   |                              |
| SPARE                     | 00000C |                              |

The non full version (i.e. just “calldump” command on CI), look for:

Subrecord data:

```

MODULE_CODE_ID 611C
GENERIC_CONTEXT_ID 8003500C
GENERIC_DIGIT_STRING DF007F958000000C

```

To control Call Reference for transit scenario follow the TRKOPTS datafill as mentioned in table 1 in page 161. An example is shown below, note that this is not the complete datafill in table TRKOPTS for call reference, derive the datafill required from the above mentioned table or refer to feature A59023264 in fmdoc for the exhaustive list.

**TABLE: TRKOPTS**

ETSIV2IC CALLREF CALLREF ADD\_OVERWRITE

**Services in IN (GT.EG.S3.403 Section 5.3.2)**

**The CS2000 does not support this service.** If the generic digits parameters related to this service are received by CS2000 they will be handled according to their corresponding PCI instructions.

The generic digits parameters related to this service are encoded:

*“correlationID” would be as follows: the “encoding scheme” must be 011 (binary) and code 11100 (correlationID) would be used as “type of digits”.*

*“SCFID” would be as follows: the “encoding scheme” must be 011 (binary) and code 11011 (SCFID) would be used as “type of digits”. The digits” field would be encoded as the parameter “call party address” of the SCCP.*

### **Authorization and account codes (GT.EG.S3.403 Section 5.3.3)**

**The CS2000 does not support this service.** If the generic digits parameters related to this service are received by CS2000 they will be handled according to their corresponding PCI instructions.

The generic digits parameters related to this service are encoded as follows:

*The encoding details depend on the specific application. For example, if the local originating exchange receives these codes and cryptographs, which increases the safety of these procedures, then the “encoding scheme” must be 011 (binary encoded). The relevant code would be used as “type of digits”, 00000 for the account code or 00001 for the authorization code.*

This service may be implemented on CS2000 by inband transmission over ISUP trunks of the Authorization and account codes as DTMF digits.

### **Corporate networks (GT.EG.S3.403 Section 5.3.4)**

**The CS2000 does not support this service.** It will not generate the format of generic digits parameter used by this service. If the generic digits parameter related to this service are received by CS2000 they will be handled according to their corresponding PCI instructions.

The generic digits parameters related to this service are encoded as follows:

*The “encoding scheme” must be 011 (binary), and code 00011 (company communications) would be used as “type of digits”. The corporate network code in “digits” would go in 2 octets (65536 possibilities).*

### **PARAMETERS CONFIGURABLE BY ROUTE (GT.EG.S3.403 Section 5.3.4)**

Telefonica requires that frontier exchanges must be able to restrict sending certain parameters out of the network on the basis of the incoming or outgoing route of the call. These parameters will only go to those other routes with which an agreement exists to that effect.

The list of parameters that have to be able to be configurable by route, is defined below.

- Calling number
- Connected number
- Generic number
- Generic digits
- User-to-user information

CS2000 supports this requirement for parameters in the IAM by use of existing table ISPARM. This table allows the network operator to specify one or more parameter(s) to be blocked/removed from an outgoing IAM on a set of trunk groups that are associated to a particular entry in table ISPARM. Any optional parameter can be removed using this table.

Certain parameters in the IAM and other messages may also be blocked by specific datafill that controls the use of messages and parameters on a per service basis.eg: Controls for the User-to-user Service and Call Reference capability.

## **NETWORK SPECIFIC REQUIREMENTS (GT.EG.S3.403 Section 6)**

### **(GT.EG.S3.403 Section 6.1) CTC REQUIREMENTS**

Not Applicable

### **(GT.EG.S3.403 Section 6.2) TASA REQUIREMENTS**

Not Applicable

### **(GT.EG.S3.403 Section 6.3) TDP and TESA REQUIREMENTS**

The following subsections follow the **GT.EG.S3.403** section numbering

#### **(GT.EG.S3.403 Section 6.3.1) Caller categories (TDP requirement)**

Not Applicable

#### **(GT.EG.S3.403 Section 6.3.2) Malicious call (TESA requirement)**

If the destination local exchange does not have the complete calling number. It will make use of the information request procedure to request it. Q.764 xxx2.1.6

The bits for the parameter “information request indicators” that are encoded to 1 are as follows: / “a calling party request indicator”) and H (“malicious call identification request indicator”). The rest will go to 0.

#### **(GT.EG.S3.403 Section 6.3.3) Rating (TESA requirement)**

The following subsections follow the GT.EG.S3.403 section numbering.

### 6.3.3.1 General

Telefónica de España requires the following rating procedure, which makes use of the rating information message #TAR and a parameter referred to as &TFA.

| Rating information message ( #TAR ) ( national use ) |      |        |  |
|------------------------------------------------------|------|--------|--|
| Parameter                                            | Type | Length |  |
| Type of message                                      | F    | 1      |  |
| &TFA                                                 | F    | 5      |  |

### 6.3.3.2 Encoding

The rating information message (#TAR) has only two parameters, both compulsory and of fixed length: message type and rate.

The code 1111 1000 has been allocated to the rate parameter (&TFA), but it is never used, given that it is only used in the message #TAR, where it is compulsory. It occupies 5 octets and is compulsory in the message #TAR. The least significant bit in octet 1, indicates whether octets 2 and 3, which contain rating information, are relevant or not; the following less significant bit, indicates whether octets 4 and 5, which contain charging information, are relevant or not; the rest of the bits in the octet are reserved. Octets 2 and 3, indicate the type of rate. Octets 4 and 5 indicate a number of monetary units to charge to the call.

The name and code of the parameter used is indicated in the following table.

| ACRONYM | NAME | REF | CODE      | notes |
|---------|------|-----|-----------|-------|
| &TFA    | Rate |     | 1111 1000 | @     |

@ = national use parameter.

The format ~TFA can be seen in the figure:

```

Reserve   InP   InT
Type of rate
Monetary units

```

The fields for this parameter are as follows:

InT (rate indicator): indicates whether the rating information (the type of rate) included in the parameter is relevant or not.

0: the rating information (octets 2 and 3) is not relevant

1: the rating information (octets 2 and 3) is relevant

InP (call price indicator): indicates whether the charging information (the monetary units) included in the parameter is relevant or not.

0: the charging information (octets 4 and 5) is not relevant

1: the charging information (octets 4 and 5) is relevant

The type of rate: a code that expresses the number for the type of rate that is to be applied (0-65535) in pure binary form (the most significant bit is 8 from octet 3, and the least significant bit is 1 from octet 2).

d) Monetary units: a code that indicates the number of units to be added to the call, expressed in pure binary form (the most significant bit is 8 from octet 5, and the least significant bit is 1 from octet 4).

### 6.3.3.3 Procedure

The rating procedure that determines the use of the rating message #TAR, together with the use of the various rating indicators (such as those that appear in the “backward call indicators”), is explained in the rating Specification that is in force. The procedures that are followed by default, are explained below.

Criterion for determining whether a call is subject to a rate being applied: all calls will be rated except in the following circumstances:

- If the rate to be applied is zero
- If the final value received for the “backward call indicators” in the “charge indicator”, is “no charge” (01), and none of the values received beforehand, if any had been received beforehand, came with the “charge” (10) meaning.

Call rate determination criterion: the originating local exchange will determine the rate to be applied to the call. If a #TAR is received with relevant rating information prior to the address complete message (#MDC) (or the connection message, #COX), then it will apply that rate, and not the one calculated previously. Furthermore, if a #TAR is received at any time, with relevant charging information, it will add to the caller's meter, the value concerned to the price of the call indicated in the message.

**The CS2000 will not generate the TAR message in this release.**

In transit, the #TAR message will pass without any modifications at all.

**(GT.EG.S3.403 Section 6.3.4) Number Portability (TESA requirement)**

**This requirement is replaced by that in Addendum A.**

This activity implements Numbering Portability by the method of Query on release. Number Portability by IN is covered by a separate activity A00002678

LNP QoR functionality is enabled by existing options in table ISUPSVC which was implemented by feature A59027497.

Additionally, a release cause indicator #126 is supported on spanish trunks for ported numbers. This is controlled by an option in table ISUPSVC in SPAIN service, "NATL\_LNP\_QOR". This is a symbolic option, if this option is datafilled along with LNP service datafill, then a cause value of #126 will be sent for ported numbers otherwise the default cause value 14 will be sent on ported number.

Additionally, accepting NOA value #126 is supported on Spanish ISUP variant having SPAIN service datafilled in table ISUPSVC.

**SAMPLE DATAFILL for LNP QoR**

Datafills as mentioned in Activity A59027497 is required in addition to the following datafills.

**TABLE: TRKSGRP**

ETSIV2IC 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0  
DMSETSI N Y SPAIN 100\_WHITE \$ ETSI2W CIC

**TABLE: ISUPSVC**

EIV2\_SPAIN (SPAIN NATL\_LNP\_QOR \$)

**TABLE: TRKOPTS**

ETSIV2IC ISUPSVC ISUPSVC EIV2\_SPAIN

**(GT.EG.S3.403 Section 6.3.6) Selection of the Transit Network (TESA requirement)**

**This requirement is amended by that in Addendum A.**

It is necessary to prepare the network to allow the user to select the transit network that each call should use. The issue that concerns the PUSI is how to transport this information and - keeping in mind that in Spain we will soon have other basic telephony service local operators besides Telefónica - indicate

to the transit network if the call is offered by subscriber / user selection or through the choice of the operator that provides the access.

It is necessary to note that the existence of several local operators and several transit networks in a same country requires an agreed national network signaling (PUSI) that must be used between frontier exchanges of different networks.

The future anticipates the possibility of selecting a transit network by pre-assignment for all calls of a certain type; in this case, when a user uses the generic dialing (without explicit selection), the calls will be offered to the pre-assigned transit network. Otherwise, the local operator will choose the transit network to which to offer the call.

Whenever the call is offered to a transit network, it must be informed that this call has been offered by user selection (explicit selection or pre-subscription); keeping in mind the existence of local operators other than Telefónica, there will be calls established between subscribers of different local operators that, even without selecting the transit network, must cross the frontier exchanges of these operators and must be discriminated from the former for statistical and accounting purposes.

The origin local exchange will include the Transit Network Selection parameter in the Initial Address Message. This parameter will also be included in the Initial Address Message when the transit network selection is carried out by pre-assignment. This parameter will contain the digits that identify the selected transit network. The transit exchanges will analyze the content of the Transit Network Selection parameter received in the Initial Address Message to route the call to the frontier exchange with the Operator selected by the user. In the frontier exchanges, the initial address messages that do not contain the Transit Network Selection parameter will correspond to calls that do not require the transit network selection.

The following strategy will be used to introduce this parameter:

The update process will take some time during which the prefixes method will be used. In other words, the CSO (Operator Selection Code) will be used as prefix in the Called Party Number parameter. First, the transit network will be updated so that it supports the Transit Network Selection parameter; then, the entire access network will be updated, and when all the network exchanges support the Transit Network Selection parameter (even if they are not using it), it will be necessary to determine a point in time in which to carry out the change. The exchanges will have both logics implemented (prefix and use of the Transit Network Selection parameter), and at the time determined, the change will be made from one logic to another. At this time, the exchanges will begin to send the Transit Network Selection parameter, as well as the Called

Party Number parameter without the prefix. The Transit Network will already be prepared to handle it.

The coding of the transit network selection parameter will be made according to Recommendation Q.763, as shown in the figure:

Even /odd Type of network identifier Network identification plan. Network identifier

a) Odd / even indicator: 0 = even number of digits. 1 = odd number of digits.

a) Odd / even indicator: 0 = even number of digits. 1 = odd number of digits.

b) Type of network identifier: 010 = national code.

c) Network identification plan: 0000 = default value.

d) Network identifier: BCD coding of the digits that identify the selected transit network.

The possible user dialing that will allow the transit network selection for each call will be of the type indicated next:

05Y

1050 1070T1T2 (six figures)

1051 1071

1052 1072

1053 1073

1054 1074

1055 1075

1056 1076

1057 1077

1058T1 (five figures) 1078T1 (five figures)

1059T1 (five figures) 1079T1 (five figures)

### **CS200 Implementation**

TNS implemented by activity A59017057 will be reused for this feature.



This feature ensures CDPN format requirements for telefonica can be selected due to Spanish ISUP variant and existing Carrier Selection/Preselection datafill. Note that TNS parameter is not supported by this activity.

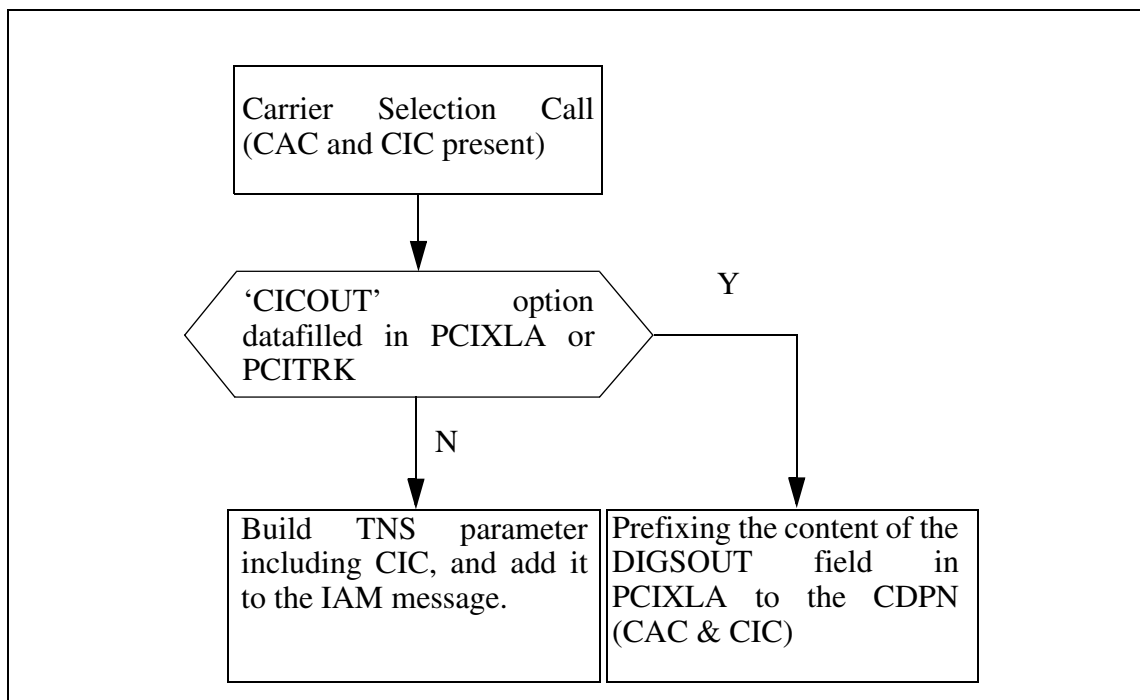
The carrier selection related information can be sent out either in the Transit Network Selection (TNS) parameter or to the called party number (CDPN) parameter. This is controlled by an option in on the outgoing trunk group or the route.

The Carrier Selection related information, the Carrier Access Code (CAC) and the Carrier Identification Code (CIC) can either be transported in the Transit Network Selection Parameter (TNS) or the Called Party Number plus (CDPN+). The Called Party Number plus consists of a prefix ('10xx', '10' = CAC and 'xx' = CIC) and the regular Called Party Number.

The decision which parameter will be used will be done by the CICOUT option in table PCIXLA or PCITRK. This option was implemented under "[2] A59012694.AA, Carrier Preselection and charge category based routing." This implementation adds the content of the field DIGSOUT in table PCIXLA as a prefix to the Called Party Number. Therefore this field has to be datafilled with the CAC and CIC information (e.g. '10xx').

In case the CICOUT option is not present in tables PCIXLA or PCITRK, the CIC information will be sent in the Transit Network Selection parameter (TNS). The mechanism for routing according to this information is covered in "[1] A19008748.AA, Austrian ISUP - TNS parameter invoked routing and CLI screening."

Decision either TNS or CDPN+ is used to transport CS information.



**(GT.EG.S3.403 Section 6.3.7) Vacant Lines (TESA requirements)**

CS2000 does not support this requirement. It is not possible to initiate a call from a vacant line on CS2000.

**(GT.EG.S3.403 Section 6.3.8) Compatibility Information (TESA requirement)**

CS2000 is compliant to the following requirements, with no datafill control required.

**6.3.8.1 Minimum value of message**

This edition does not use any message defined by Telefónica de España.

**6.3.8.2 Minimum value of a parameter**

The minimum value of the compatibility information value for a parameter, is the following encoding: “transit interpretation”, “do not release call”, “do not send notification”, “do not discard message (pass it on)” and in the “pass indicator not possible” field, “discard parameter”.

This is the one that will be used by default in the parameters defined by Telefónica de España.

**(GT.EG.S3.403 Section 6.3.9) Reverse charge tagging (TESA requirement)**

With respect to reverse charge calls through the operator, it is possible that the person who picks up the telephone and informs the operator that he or she is willing to pay for the call, will not necessarily be the person who eventually does pay for it. As a result, frauds could take place in public places, such as hospitals and hotels, which are provided with direct dialling from extensions.

If this situation is to be prevented, it is necessary to tag the reverse charge calls. With a view to this, bit N from the parameter “forward call indicators” will be used to mean “indicated: reverse charge call”, and will be encoded in the following way: if N = 0: ordinary call, if N = 1: reverse charge call. Certain exchanges will generate it, it will pass transparently through transit, and the relevant procedure will be applied at the destination (it will be ignored by default). The frontier exchanges will either set it at 0 or let it pass through transparently, depending on the route.

**Note: Cs2k does not set Bit N to 0 or 1 i.e. the frontier exchange capability is not supported. The functionality supported by this activity is just as described in the following paragraph.**

Reverse charge tagged calls indicated by the N bit set to 1 in “forward call indicators” will not be allowed to terminate on a line with ACCB (Automatic collect call blocking) option enabled. This will be controlled by an option **REV\_CHG** in table ISUP SVC on the incoming trunk. Calls will be checked for reverse charge (bit N) only if this option is datafilled on the incoming spanish ISUP trunk.

**SAMPLE DATAFILL****TABLE: TRKSGRP**

```
ETSIV2IC 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0
DMSETSI N Y SPAIN 100_WHITE $ ETSI2W CIC
```

**TABLE: ISUP SVC**

```
EIV2_SPAIN (SPAIN REV_CHG $)
```

**TABLE: TRKOPTS**

```
ETSIV2IC ISUP SVC ISUP SVC EIV2_SPAIN
```

**Hardware Requirements or Dependencies**

None

## Software Requirements or Dependencies

This feature is an increment to the Spanish ISUP V2 functionality in NSUP0001. Feature reference 59027768: SPANISH ISUP - V2 VARIANT'

## Limitations and restrictions

### Agent Interworking

This capabilities introduced by this feature are only supported for the agent interworkings given below. The feature should not be activated on Spanish ISUP v2 trunks that will have any other interworkings as the behavior in other scenarios is undefined.

#### Agent interworking for the current feature

| Platform | Originator                 | Terminating agents |                 |                            |                        |
|----------|----------------------------|--------------------|-----------------|----------------------------|------------------------|
|          |                            | IBN lines (POTS)   | V5.2 IBN (POTS) | PUSI 4/2 (Spanish ISUP V2) | SIP-T(Spanish ISUP V2) |
| CS2K     |                            |                    |                 |                            |                        |
|          | IBN (POTS)                 |                    |                 | X                          | X                      |
|          | V5.2 IBN (POTS)            |                    |                 | X                          | X                      |
|          | PUSI 4/2 (Spanish ISUP V2) | X                  | X               | X                          | X                      |
|          | SIP-T(Spanish ISUP V2)     | X                  | X               | X                          | X                      |

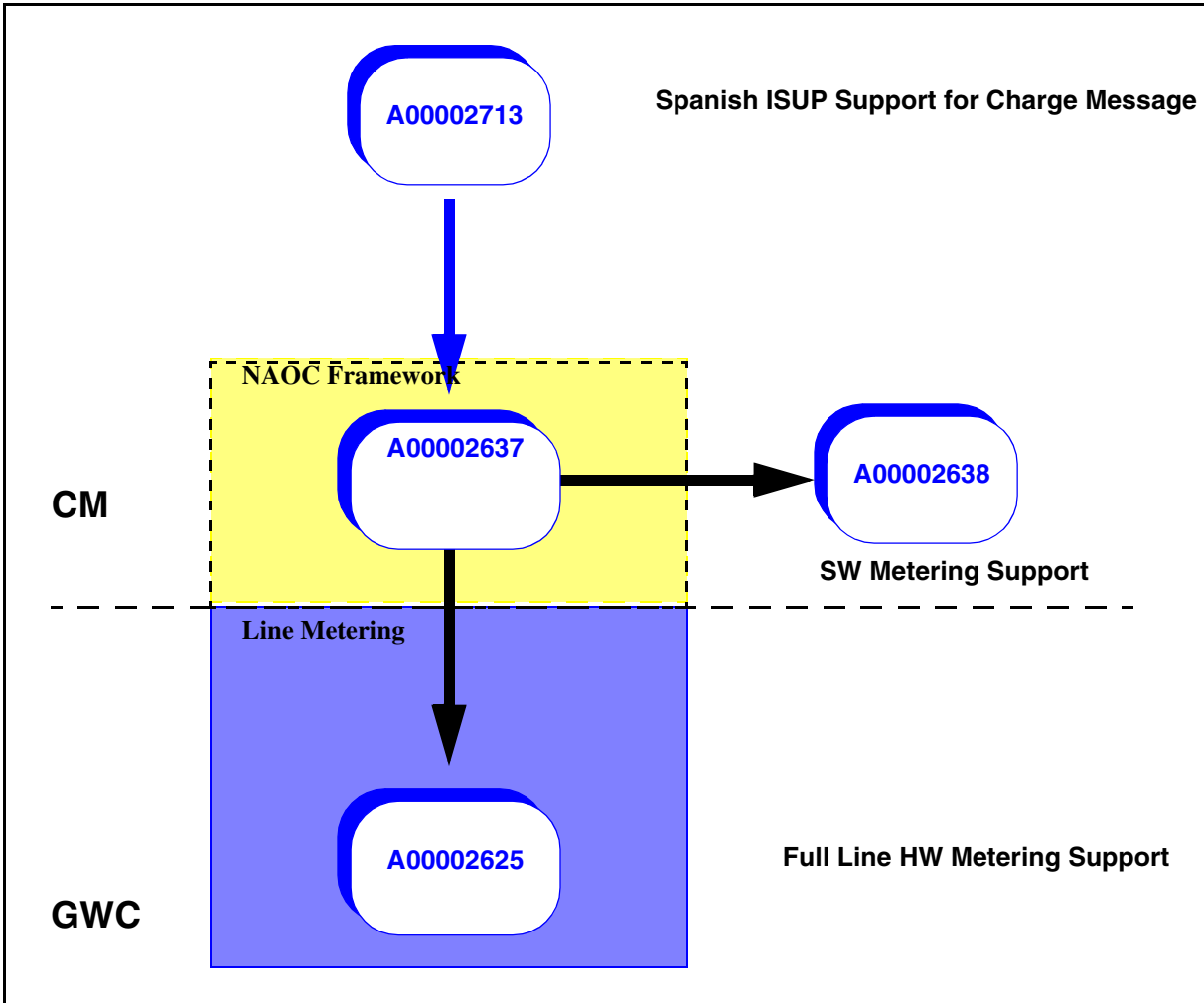
## Interactions

The current activity interacts with the features listed below and their dependencies to support Line HW Metering and Software Metering and Billing when the charge determination point for the call is not the originating office and the call tariff and/or incremental charges are signalled across the ISUP network:

- i. NAOC for Spanish Trunk Metering Enhancements [7]
- ii. Software Metering Billing support [8]
- iii. Full Line HW Metering Billing compliance [9]

A brief overview of the feature interworkings is depicted in the following figure, “New NAOC features interworking”.

#### New NAOC features interworking



#### Hardware Requirements or Dependencies

No new hardware requirements or dependencies specifically for this feature.

#### Applicable customer facing sections

Fault Management

Logs

\_\_\_\_\_N/A

Alarms

\_\_\_\_\_N/A

Configuration

|                                                 |          |
|-------------------------------------------------|----------|
| Data Schema                                     | _____X   |
| User Interface                                  | _____N/A |
| Element Management                              | _____N/A |
| Security                                        | _____N/A |
| Service Order                                   | _____N/A |
| Office Parameters                               | _____X   |
| Accounting (includes AMA billing)               | _____X   |
| Performance (includes operational measurements) | _____N/A |

## Glossary

| Term         | Description                            |
|--------------|----------------------------------------|
| <b>AOC</b>   | Advice of Charge                       |
| <b>AOCRG</b> | Add-On Charge                          |
| <b>APM</b>   | Application Transport Message          |
| <b>APP</b>   | Application Transport Parameter        |
| <b>BCD</b>   | Binary Coded Digit                     |
| <b>BRI</b>   | Basic Rate Interface                   |
| <b>CCB</b>   | Call Condense Block                    |
| <b>CCS7</b>  | Common Channel Signalling System No. 7 |
| <b>CDN</b>   | Called Party Directory Number          |
| <b>CDP</b>   | Charge Determination Point             |
| <b>CGN</b>   | Calling Party Directory Number         |
| <b>CGP</b>   | Charge Generation Point                |
| <b>CFBP</b>  | Call Forward Busy Programmable         |
| <b>CFBF</b>  | Call Forward Busy Fix                  |
| <b>CFDP</b>  | Call Forward Don't Answer Programmable |
| <b>CFDF</b>  | Call Forward Don't Answer Fix          |
| <b>CFF</b>   | Call Forward Fix                       |
| <b>CFU</b>   | Call Forward Universal Programmable    |
| <b>CIC</b>   | Carrier Identification Code            |

---

|               |                                               |
|---------------|-----------------------------------------------|
| <b>CLF</b>    | Calling Line Identification with Flash        |
| <b>CLID</b>   | Calling Line Identification                   |
| <b>CONT</b>   | Translation Option - Continue                 |
| <b>CRGA</b>   | Charging Acknowledgment                       |
| <b>CRGT</b>   | Charging Tariff                               |
| <b>CRP</b>    | Charge Registration Point                     |
| <b>CS</b>     | Carrier Selection                             |
| <b>CS2000</b> | Communication Server 2000                     |
| <b>CS2K</b>   | Communication Server 2000                     |
| <b>CSP</b>    | Carrier Selection Parameter                   |
| <b>ECT</b>    | Explicit Call Transfer                        |
| <b>ELN</b>    | Essential Line                                |
| <b>ETSI</b>   | European Telecommunication Standard Institute |
| <b>IAM</b>    | Initial Address Message                       |
| <b>IBN</b>    | Integrated Business Network                   |
| <b>IP</b>     | Internet Protocol                             |
| <b>ISUP</b>   | Integrated Services Digital Network User Part |
| <b>LNP</b>    | Local Number Portability                      |
| <b>MEB</b>    | Metering Extension Block                      |
| <b>MMP</b>    | Multi Market Platform                         |
| <b>NAOC</b>   | Network Advice of Charge                      |
| <b>NDC</b>    | National Destination Code                     |
| <b>NLO</b>    | New Licensed Operator                         |
| <b>NP</b>     | Number Portability                            |
| <b>ODP</b>    | Open Dial Plan                                |
| <b>OLE</b>    | Originating Local Exchange                    |
| <b>PCA</b>    | Payment Ceiling Advice                        |
| <b>PVG</b>    | Passport Voice Gateway                        |
| <b>PRI</b>    | Primary Rate Interface                        |
| <b>RTE</b>    | Translation Option - Route                    |

|              |                                         |
|--------------|-----------------------------------------|
| <b>SIE</b>   | Service Interaction Environment         |
| <b>SIP</b>   | Session Initiation Protocol             |
| <b>SIP-T</b> | Session Initiation Protocol - Telephony |
| <b>SNP</b>   | Service Number Portability              |
| <b>UXLA</b>  | Universal Translations                  |
| <b>VBD</b>   | Voice Band Data                         |
| <b>XLA</b>   | Translations                            |

## References

| <b>REF #</b> | <b>Description of Reference</b>                                                                                                                    |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| [1]          | Telefonica specification GT.EG.S3.003 Ed 4: Common Channel Signalling System (SCC) Integrated Services User Part (PUSI 4)                          |
| [2]          | Telefonica specification GT.EG.S3.003 Ed 4 App.1                                                                                                   |
| [3]          | Telefonica specification GT.EG.S3.003 Ed 4 App.2                                                                                                   |
| [4]          | Telefonica specification GT.EG.S3.403 1st Edition 1997: Unified Specifications for the User Part of the Integrated Services Digital Network (PUSI) |
| [5]          | Telefonica specification GT.EG.S3.403 1st Edition Addendum 1 June1998:                                                                             |
| [6]          | Rating in the digital switching exchanges, GT.ER.d4.463 (Spanish Metering specification)                                                           |

## *Configuration for A00002713*

### **Hardware and Software Requirements**

N/A

### **Initial Configuration**

N/A



## Office parameters (OP)

### New/modified office parameters

| Parm table | Parameter name | NEW/CHANGED/<br>DELETED/<br>RELOCATED | Domain (CM or<br>Subnet<br>Management |
|------------|----------------|---------------------------------------|---------------------------------------|
| OFCVAR     | ORIGNETID      | NEW                                   | CM                                    |

### Parameter information

#### ORIGNETID

Originating Network Identification

#### Functional description

This parameter will be datafilled with a numeric value. This parameter determines the originating network identification number. This value is in the range (0 to 65535). This parameter will be the default value and is used for calls from line agents.

For Interconnect trunks, this value will be different and will be datafilled in the table TRKOPTS against the corresponding spanish ISUP V2 trunk.

#### Provisioning rules

N/A

#### Range information

| Minimum | Maximum | Default |
|---------|---------|---------|
| 0       | 65535   | 0       |

#### Activation

Immediate.

#### Dependencies

None.

#### Consequences

None.

#### Verification

The following figure shows the verification for setting the parameter to the possible datafills.

**% % Changing the parameter value to 34532**

```
CI> TABLE OFCVAR;FORMAT PACK
>pos ORIGNEID
>ORIGNEID 12345
>cha
>Y
PARMVAL: 34532
Y
TUPLE TO BE CHANGED:
ORIGNEID 34532
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE CHANGED
JOURNAL FILE INACTIVE
```

**Memory requirements**

No memory impact.

**Parameter release history update**

N/A

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)**

N/A

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = CS 2000*****A00002754 -- China INAP Compliance Enhancement Part 1 (Succession on DMS)*****Functional Description***

This feature is to improve Nortel SSP's INAP functionality to comply with China INAP requirement.

**Functional Overview**

The enhancement is based on the China INAP specification and China INAP test specification (see reference 1, 2). Following enhancement is provided:

- CallGap(CG) parameter support enhancement: gapInterval.
- Multiple CallGaps support enhancement.
- ResetTimer parameter support enhancement: timerValue.
- CallInformationRequest/Report parameter support enhancement: legID, calledAddress & releaseCause.
- ActiveServiceFiltering parameter support enhancement: sfBillingRecordCharacteristics.
- ApplicationContextName negotiation support.
- ApplyChargingReport enhancement: conversation time measurement
- Support CS-1R ICA.

This feature is developed for both TDM and IP platform.

These functions are not agent specific, they are supported on the originating agents with the condition: the originating agent <-> INAP interworking is ALREADY supported. For example, China ISUP, IBN lines, SIP-T (no ISUP), China PRI.

The office parameter: INAP\_Variant is used for China INAP specific enhancement: only when INAP\_Variant = Chinese, the China INAP specific enhancement will take effect.

Following sections give detail of this feature:

### **CG parameter Support Enhancement: gapInterval**

This enhancement is general for all INAP market.

This enhancement is to enhance the processing for gapInterval value '0'.

The CG parameter gapInterval specifies the minimum time between calls being allowed through. A CG with gapInterval = 0 indicates that calls matching the CG's gapCriteria are not to be rejected. An InitialDP is sent to SCP, with cGEncountered set to the value of this CG's controlType.

**Note:** InitialDP will carry the cGEncountered when 'CGE' is datafilled in INITDP\_PARMS of table SERVINFORM.

### **Multiple CGs Support Enhancement**

This enhancement is to comply with China INAP specific rules for multiple CGs scenarios (please refer to reference 2):

Suppose: CG2 is received after CG1, within CG1's duration.

#### **1. Two CGs with same gapCriteria but different controlType**

This enhancement is China INAP specific.

In this scenario:

- CG1's data should be overwritten by CG2 EXCEPT the controlType: the gapIndicator in CG1 is replaced by CG2's gapIndicator, gapTreatment in CG1 is replaced(or appended) by CG2's gapTreatment if it exists in CG2.
- The controlType is set to manuallyInitiated because its priority is higher.

As a result, there won't be a new CG data saved for CG2 but CG1's parameters are updated. For example: Following two CGs are received,

#### **CG1 and CG2 with Same gapCriteria But Different controlType**

```
CG1{
  gapCriteria {gapOnService 200}
  gapIndicator {duration=30000sec, gapInterval=30sec}
  controlType=manuallyInitiated
}
```

**CG1 and CG2 with Same gapCriteria But Different controlType**

```
CG2{
  gapCriteria {gapOnService 200}
  gapIndicator {duration=60000sec, gapInterval=60sec}
  controlType= sCPOverloaded
  gapTreatment {toneID=1, duration=10}
}
```

Then CG1 will be updated to:

**Updated CG1**

```
CG1{
  gapCriteria {gapOnService 200}
  gapIndicator {duration=60000sec, gapInterval=60sec}
  controlType=manuallyInitiated
  gapTreatment {toneID=1, duration=10}
}
```

When next INAP calls comes in, the above CG data will be used.

In the above example, if CG1's controlType is sCPOverloaded and CG2's controlType is manuallyInitiated, the updated CG1 will be the same with that is shown in Table "Updated CG1" because manuallyInitiated has higher priority.

**1. Two CGs with different gapCriteria**

This enhancement is general for all INAP market.

In this scenario, these two CGs co-exist in SSP. If an IN service is to be triggered and it meets both of these two CG's criterias, then the CG to be activated should be the one whose criteria is more specific.

"More specific" means: first, gapCriteria has a higher priority. Following list shows gapCriteria from high priority to low priority:

- calledAddressValueAndService
- calledAddressValue
- callingAddressValueAndService
- gapOnService

Second, if two CGs have a gapCriteria with same priority, "More specific" means the gapCriteria is more detail. Following are examples:

- a. For gapCriteria calledAddressValueAndService, calledAddressValue and callingAddressValueAndService, if two CGs are found in both control types(manuallyInitiated and sCPOverloaded), the CG, whose gapCriteria has higher priority, takes effect.

For example: Following two CGs are received,

**CG1 and CG2 with gapCriteria: calledAddressValue**

|                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{   gapCriteria{calledAddressValue, 8765}   gapIndicator {duration=60000sec, gapInterval=60sec}   controlType=manuallyInitiated }</pre> |
| <pre>CG2{   gapCriteria{calledAddressValue, 87654}   gapIndicator {duration=60000sec, gapInterval=60sec}   controlType=sCPOverloaded }</pre>    |

when an IN service with calledAddressValue is 876543 is to be triggered, CG2 should be activated because its matched address value is longer, in another word, it's more specific.

- a. For gapCriteria gapOnService, the one has an exact match takes effect. For example: Following two CGs are received,

**CG1 and CG2 with gapCriteria: gapOnService**

|                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{   gapCriteria{gapOnService, 1}   gapIndicator {duration=60000sec, gapInterval=60sec}   controlType=manuallyInitiated }</pre> |
| <pre>CG2{   gapCriteria{gapOnService, 10}   gapIndicator {duration=60000sec, gapInterval=60sec}   controlType=sCPOverloaded }</pre>    |

When an IN service is to be triggered and

- if the service key is 1, CG1 should be activated;
  - if the service key is 10, CG2 should be activated;
  - if the service key is 101, no CG should be activated.
- a. If the criteria is met in both control types and they are the same specific, the CG whose controlType is manuallyInitiated takes effect because its priority is higher. For example: the incoming call matches the criteria of two CGs (Table “CG1 and CG2 have the same

gapCriteria but different controlType”), in this case CG1 should take effect if both of them meet the gap criteria.

#### CG1 and CG2 have the same gapCriteria but different controlType

|                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{   gapCriteria{calledAddressValue, 8765}   gapIndicator {duration=60000sec, gapInterval=60sec}   controlType=manuallyInitiated }</pre> |
| <pre>CG2{   gapCriteria{calledAddressValue, 8765}   gapIndicator {duration=30000sec, gapInterval=60sec}   controlType=sCPOverloaded }</pre>     |

**Note:** This won't happen in China INAP because these two CGs can not coexist, see requirement (1).

#### RT Parameter Support Enhancement: timerValue

This enhancement is to extend the supported timerValue value.

In INAP call, timer Tssf is used to prevent the call from suspending too long, protect the dialogue between SSF and SCF. ResetTimer operation is sent from SCF to SSF, to restart Tssf timer using the timerValue, so that Tssf will not time out. It only takes effect in the following 3 states:

- waiting for instruction (WFI)
- waiting for end of user interaction (WFEOUI)
- waiting for end of temporary connection (WFEOTC)

This feature performs the following enhancement:

1. report UnexpectedDataValue error when the timerValue exceed 0-2047.

This enhancement is China INAP specific.

2. extend the supported timer values between 10 seconds & 60 seconds: 15, 20, 25, 30, 35, 40, 45, 50, 55 seconds support is added. For in-range value other than one of the above values, it is rounded up to the next supported value.

This enhancement is general for all INAP market.

3. extend the supported range for timerValue in WFI state to 1-60 seconds.

This enhancement is general for all INAP market.

## CIRQ/CIRP Parameter Support Enhancement: legID, calledAddress & releaseCause

This enhancement is general for all INAP market.

This enhancement is to:

1. support CS-1R CIRP: if CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included:

**Table 1 Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                                |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200     | (INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$)<br>(TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$)<br>(CS1R ( <b>CIRP</b> ) \$) \$ |

2. add support for calledAddress and releaseCause parameters in CIRQ/CIRP:
  - calledAddress indicates the incoming called party address that was received by the SSF (i.e. before translation by the SCF) and is as available on the UNI or NNI and interpreted as per the numbering plan. The format is shown in Table “calledAddressValue Format (it uses the format of ISUP parameter: GenericNumber)”.
  - releaseCause is defined the same as Q.762, which is applied to the indicated or default party. The format is shown in Table “releaseCauseValue Format (same as ISUP parm: CauseIndicators)”. The diagnostics is not included in the releaseCauseValue of CIRP.

**Note:** for release cause, if the incoming release message is not in Q.762 format, then default value: ‘normal clearing’ is used.

**Table 2 calledAddressValue Format (it uses the format of ISUP parameter: GenericNumber)**

|                            |                             |   |   |                    |   |                |   |
|----------------------------|-----------------------------|---|---|--------------------|---|----------------|---|
| 8                          | 7                           | 6 | 5 | 4                  | 3 | 2              | 1 |
| Number qualifier indicator |                             |   |   |                    |   |                |   |
| Odd/even                   | Nature of address indicator |   |   |                    |   |                |   |
| NI Ind.                    | Numbering plan Ind.         |   |   | Presentation Ind.  |   | Screening Ind. |   |
| 2nd address signal         |                             |   |   | 1st address signal |   |                |   |
| .....                      |                             |   |   | .....              |   |                |   |
| Filler(if necessary)       |                             |   |   | nth address signal |   |                |   |

**Table 3 releaseCauseValue Format (same as ISUP parm: CauseIndicators)**

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|
|---|---|---|---|---|---|---|---|



**Table 3 releaseCauseValue Format (same as ISUP parm: CauseIndicators)**

|                      |                 |       |              |
|----------------------|-----------------|-------|--------------|
| Ext.                 | Coding standard | spare | Location ... |
| Ext.                 | Cause Value     |       |              |
| Diagnostics (if any) |                 |       |              |
| .....                |                 |       |              |
| Diagnostics (if any) |                 |       |              |

**ASF Parameter Support Enhancement: sFBillingRecordCharacteristics**

This enhancement is general for all INAP market.

This enhancement is to provide support the sFBillingChargingCharacteristics. Whatever received, this parameter and sub-parameter is treated as: noINCharging.

The following functions are provided for sFBillingChargingCharacteristics subparameter:

- noINCharging
- iNCharging
- sendChargeInformation

**Note:** the decoding of sFBillingChargingCharacteristics is not supported. When received correct sFBillingChargingCharacteristics, no handling, no reject or return error. When received sFBillingChargingCharacteristics with problems, no handling, no reject or return error.

Following table gives the definition of SFBCC (highlighted in bold):

**China INAP ActiveServiceFiltering Definition:**

```
ActiveServiceFiltering ::= SEQUENCE {
    filteredCallTreatment [0] IMPLICIT SEQUENCE {
        sFBillingChargingCharacteristics [0] CHOICE {
            noINCharging [0] IMPLICIT NULL,
            iNCharging [1] IMPLICIT SEQUENCE {
                ..... } OPTIONAL },
            sendChargeInformation [2] IMPLICIT SEQUENCE {...} } OPTIONAL,
        informationToSend [1] CHOICE {
            maximumNumberOfCounters [2] IMPLICIT INTEGER (1..100) OPTIONAL,
            releaseCause [3] IMPLICIT OCTET STRING (SIZE (2..20)) OPTIONAL},
        .....
    }
```

**ACN Negotiation Support**

This enhancement is to provide the following functions:

1. Support China INAP ACNs

This enhancement is China INAP specific.

The ACN definition of China INAP is shown in the following table:

**China INAP Specific Application Context Name (Based on ISO/IEC DIS 8824-1)**

|                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACN pattern:<br>D'00 - CCITT(ITU-TS)<br>D'03 - Network Operator<br>D'xxxx - DNIC (market based)<br>D'01 - INAP field<br>D'01 - INAP<br>D'01 - Application Context<br>D'xx - specific AC value (see below)<br>D'00 - market based version                                                                                                                                                                                          |
| ACN Values:<br><br>DNIC = D'4605<br><br>Specific AC values: xx = H'00 - H'07<br>00 - SSP uses InitialDP to initiate dialogue<br>01 - SSP uses AssistRequestInstruction to initiate dialogue<br>03 - SCP uses InitiateCallAttempt to initiate dialogue<br>04 - SCP uses CallGap to initiate dialogue<br>05 - SCP uses ActivateServiceFiltering to initiate dialogue<br>06 - SSP uses ServiceFilteringResponse to initiate dialogue |
| ACN coding: H'(03 a3 7d 01 01 01 xx 00)                                                                                                                                                                                                                                                                                                                                                                                           |

## 1. Support ACN negotiation

This enhancement is general for all INAP market.

Following ACN negotiation rules for SSP are supported:

- a. when SSP sends TC-BEGIN package:
  - encode the correct ACN into the package and store the ACN value.
- b. when SSP receives TC-BEGIN package:
  - if the ACN is supported, go on processing the TC component.
  - else, response SCP with TC-U-ABORT. Abort reason is 'application context name not supported'.
  - when processing component, if the component contains a China INAP operation, verify the application context according to the operation code (please refer to Table "China INAP Specific Application Context Name (Based on ISO/IEC DIS 8824-1)"). If fails, response SCP with TC-U-ABORT, abort reason is 'application context name not supported'. Else, go on processing the component.
- c. when SSP receives the first response from SCP in TC-CONTINUE/TC-END:

- if the ACN match the ACN value of previous TC-BEGIN, go on processing the TC component.
- else, response SCP with TC-U-ABORT. Abort reason is ‘application context name not supported’.
- d. when SSP receives the first response from SCP in TC-U-ABORT:
  - release the current dialogue.

### **ACR Enhancement: Conversation Time Measurement**

This enhancement is China INAP specific.

This enhancement is to fix the following problem: For INAP call being charged using AC operation, when the conversation is longer than 255 seconds, the duration value in ACR will go incorrect. This problem exists in max conversation time, duration, report interval measurement.

### **Support CS-1R ICA**

This enhancement is general for all INAP market.

This enhancement is to:

- support ICA in TC-BEGIN package
- support multiple components in TC-BEGIN package

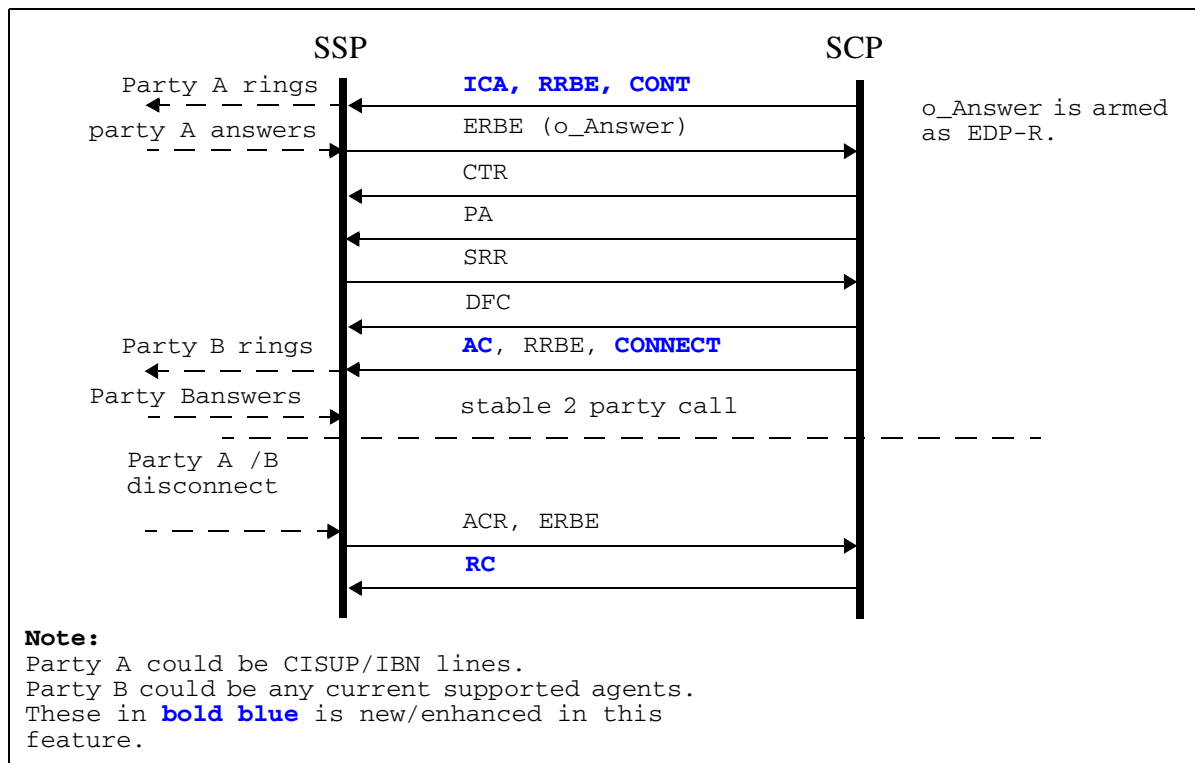
The operation sequence must be: the first operation is ICA; the subsequence call processing operations could be RRBE, CONT, CWA, FCI, AC; the last operation must be CONT or CWA.

If the operations in the BEGIN package does not obey the rule, the package will be aborted.

If the package match the above rules but has logic conflict in the operations it carries, then it is out of this feature’s scope. The existing handling will be used. Also the imply and handling of each operation except ICA is out of this feature’s scope.

- support CS-1R ICA
- support virtual agent -> IBN line interworking  
No line features is supported in the interworking.
- enhance the AC, CONNECT handling for extended dialogue.

Following figure shows an example for ICA usage:

**China ICA Implementation Example**

As different markets may have different configuration on ICA in BEGIN package, some general rules is defined for what call related operation can be in BEGIN package:

- If the first operation is callp related, it must be ICA
- If the first operation is ICA, RRBE must be in the same package and the last operation must be CONT (CONTINUE) or CWA (ContinueWithArgument)
- The following callp operations are supported in BEGIN package if the first operation is ICA: RRBE, CWA, CONT, FCI, AC.

**Data Requirement**

Standard datafill for IN will be used.

**Hardware Requirements or Dependencies**

N/A.

**Software Requirements or Dependencies**

N/A.

## Limitations and restrictions

- This feature does not support the following ACN negotiation scenario: when SSP receives the first response from SCP in TC-U-ABORT, with abort reason is 'application context name not supported', then verify its ACN value, if it is valid, initiate a new dialogue using the new ACN, and release the current dialogue.
- This feature only accepts the Chinese ASF SfBillingChargeCharacteristics, does not handle it. In EINTRACE, this parms is displayed. There is no any handling on this parameter.
- For parameters not mentioned in this document, their implementation exceeds this feature's range.
- In the scenario that SCP originates a call to IBN lines, only the IBN lines use DGT are supported.

## Interactions

N/A.

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description              |
|------|--------------------------|
| AC   | ApplyCharging            |
| ACN  | Application Context Name |

| Term | Description                          |
|------|--------------------------------------|
| ACR  | ApplyChargingReport                  |
| ASF  | ActiveServiceFiltering               |
| CIRP | CallInformationReport                |
| CIRQ | CallInformationRequest               |
| CG   | CallCap                              |
| CON  | Connect                              |
| CONT | Continue                             |
| CTR  | ConnectToResource                    |
| CWA  | ContinueWithArgument                 |
| DFC  | DisconnectForwardConnection          |
| DGT  | Digit Tone                           |
| ERBE | EventReportBCSMEvent                 |
| ICA  | InitialCallAttempt                   |
| IN   | Intelligent Network                  |
| INAP | Intelligent Network Application Part |
| ISUP | ISDN User Part                       |
| PA   | PlayAnnouncement                     |
| PCUI | PromptAndCollectUserInformation      |
| RC   | ReleaseCall                          |
| RRBE | RequestReportBCSMEvent               |
| RT   | ResetTimer                           |
| SCP  | Service Control Point                |
| SRR  | SpecialResourceReport                |
| SSP  | Service Switching Point              |

### Recommended Reading/References

1. GF017-1995 China INAP Specification
2. YDN107.2-1999, INAP test spec - SSP part
3. DMS Implementation of CS-n INAP (ITU-T Recommendations Q.12 n8), release PRE 10.0

## ***Configuration for A00002754***

### **Hardware and Software Requirements**

N/A.

### **Initial Configuration**

N/A.

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A.

### **Upgrade Impact**

N/A.

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/ OLD/UNCHANGED)</b> |
|-----------------------|---------------------------------|-------------------------------------------|
| OFCENG                | Changed                         | Changed                                   |
| SERVINFO              | Changed                         | Unchanged                                 |

#### **Table/MIB/Remote Database Schema information**

##### **Name: OFCENG**

##### **Functional description**

The range of INAP\_TSSF\_WFI\_TIMER is changed from '1-10' to '1-60', and the datafillable value is changed from '1-10' to '1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60'.

Usage example: suppose the following datafill is supplied. The SSP will use

##### **Datafill Example:**

```
TABLE: OFCENG
PARMNAME PARMVAL
-----
INAP_TSSF_WFI_TIMER 15
```

value 15 as the default timer in the WFI state.

##### **Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| OFCENG                 | no change      | no change      | N/A                   |

**Fields/OIDs**

The following table lists fields/OIDs for OFCENG.

**Table field descriptions**

| Field               | New or Changed | Subfield or refinement | Entry             | Explanation and action                     |
|---------------------|----------------|------------------------|-------------------|--------------------------------------------|
| INAP_TSSF_WFI_TIMER | Changed        | refinement             | OFFICE_PARM_VALUE | value range and datafillable value changed |

**Datafill example****Datafill Example:**

```
TABLE: OFCENG
PARMNAME PARMVAL
-----
INAP_TSSF_WFI_TIMER 15
```

**Table release history update**

The range of INAP\_TSSF\_WFI\_TIMER is changed from '1-10' to '1-60', and the datafillable value is changed from '1-10' to '1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60'.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.



**Name: SERVINFO****Functional description**

A new selection: CIRP is introduced into CS1R option to indicate that: If CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included:

**Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                                |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200     | (INITDP_PARDS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$)<br>(TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$)<br>(CS1R ( <b>CIRP</b> ) \$) \$ |

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | no change      | no change      | N/A                   |

**Fields/OIDs**

The following table lists fields/OIDs for SERVINFO.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry            | Explanation and action  |
|-------|----------------|------------------------|------------------|-------------------------|
| CS1R  | Changed        | refinement             | enumerated value | Add new selection: CIRP |

**Datafill example****Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                                |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200     | (INITDP_PARDS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$)<br>(TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$)<br>(CS1R ( <b>CIRP</b> ) \$) \$ |

**Table release history update**

A new selection: CIRP is introduced into CS1R option to indicate that: If CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

N/A.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

N/A.

**Configuration Walkthrough**

N/A.

***Product = CS 2000*****A00002755 -- China Line Service Compliance (Succession on DMS)*****Functional Description***

This activity enhances IBN line services to comply with the China PSTN line service requirements in the China specification YDN065 and YDT1128 (partial) for DMS-Hybrid TDM solution and CS2Kc-IAD IP solution.

The following table shows the IBN line services which are chosen to achieve the corresponding China PSTN line service requirements.

**Line Services Required By China Market**

| <b>IBN Line Service</b> | <b>Requirement</b>                            |
|-------------------------|-----------------------------------------------|
| CEPT SC                 | YDN065: Abbreviated Dialling                  |
| CEPT WML                | YDN065: Hot Line Service with Time-Out        |
| CEPT ILR                | YDN065: Outgoing Call Barring                 |
| CEPT CDND               | YDN065: Don't Disturb Service                 |
| CLF                     | YDN065: Malicious Call Tracing                |
| CEPT IWUC               | YDN065: Alarm-Call Service                    |
| CEPT CFU                | YDN065: Call Forwarding Unconditional         |
| CEPT CFD                | YDN065: Call Forwarding on No Answer          |
| CEPT CFB                | YDN065: Call Forwarding on Busy               |
| CEPT CDTA               | YDN065: Absent-Subscriber Service             |
| CEPT ICWT, CEPT SCWID   | YDN065: Call Waiting                          |
| CEPT CCBS               | YDN065: Call Back                             |
| CEPT I3WC               | YDN065: Three Party Services                  |
| CEPT I6WC               | YDN065: Conference Service                    |
| CND                     | YDN065: Calling Identity Delivery             |
| CNDB, SUPPRESS          | YDN065: Calling Identity Delivery Restriction |
| AUL                     | YDT1128: Hot Line                             |
| CEPTPW                  | YDT1128: Password                             |
| CEPTRA                  | YDT1128: Call Forwarding Remote Access        |
|                         | YDT1128: Outgoing Call Barring Remote Access  |

This activity is divided into following components:

- Identification of China line service usage
- CEPT line service on the IBN line without CEPT option
- China line service's interaction compliance
- China line service's operation and administration compliance
- New downloadable China toneset CHINALGC

## Identification of China line service usage

In order to identify in which market the line services are working, this activity introduce a new field MARKET into the tuple CEPTONCENTREX. At present, two values are available for this field. One is DEFAULT and another is CHINA. For the chinese office, this field must be set to CHINA.

Refer to following datafill example of tuple CEPTONCENTREX:

### Datafill example of tuple CEPTONCENTREX

```
TABLE ISERVOPT
=====
CEPTONCENTREX CEPTONCENTREX CHINA (SC) (WML) (ILR) $
```

## CEPT line service on the IBN line without CEPT option

For the CEPT line services in Table , “Line Services Required By China Market,” on page 375, this activity allows them to work on the IBN line without CEPT option. In addition, this activity also allows the following CEPT line services to work on the IBN lines without CEPT option, which are not stated in the China Specification, but are used by China Market on DMS100I:

- CEPT CDTO
- CEPT CFF
- CEPT ICT

In order to allow all CEPT line services mentioned above on the IBN line without CEPT option, the corresponding service options must be present in tuple CEPTONCENTREX in table ISERVOPT. The following table shows the available options in tuple CEPTONCENTREX, and the associated CEPT line services:

***Note:** The CEPTONCENTREX options with **bold** font are introduced by this activity.*

### CEPTONCENTREX Options and CEPT Line Services

| CEPTONCENTREX<br>OPTION | Associated CEPT Line Service               |
|-------------------------|--------------------------------------------|
| SC                      | SCL, SCS                                   |
| WML                     | WML                                        |
| ILR                     | ILR                                        |
| CDIV                    | CDND, CFU, CFB, CFD, CFF, CDTA, CDTO, CFRA |
| ICT                     | ICT                                        |
| ICWT                    | ICWT                                       |

| <b>CEPTONCENTREX<br/>OPTION</b> | <b>Associated CEPT Line Service</b> |
|---------------------------------|-------------------------------------|
| IWUC                            | IWUC                                |
| ICWT                            | ICWT                                |
| CCBS                            | CCBS                                |
| I3WC                            | I3WC                                |
| I6WC                            | I6WC                                |
| CEPTPW                          | CEPTPW                              |
| CEPTRA                          | CEPTRA                              |

Refer to the following datafill example of tuple CEPTONCENTREX:

**Datafill example of tuple CEPTONCENTREX**

```
TABLE ISERVOPT
=====
CEPTONCENTREX CEPTONCENTREX CHINA (SC) (WML) (ILR) (IWUC) (CDIV)
(ICT) (ICWT) (CCBS) (I3WC) (I6WC) (CEPTPW) (CEPTRA) $
```

### China line service's interaction compliance

For the Chinese market, the line services in Table , “Line Services Required By China Market,” on page 375 have following interactions (Note: This activity does not cover the interaction with the line services from that table):

**IBN Line Services Interaction according to China requirement**

| <b>IBN Line Service</b> | <b>Interaction</b>                                                                                                                                                                                                                                                                                                            |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CEPT SC                 | The option SCS/SCL can not be assigned together with AUL. No precedence interactions with other line services.                                                                                                                                                                                                                |
| CEPT WML                | The option WML can not be assigned together with AUL. CEPT WML can not be activated when the ILR is registered to the class which restricts all calls.                                                                                                                                                                        |
| CEPT ILR                | The option ILR can not be assigned together with AUL. The ILR can not be registered to the class which restricts all calls when CEPT WML or CEPT I3WC is activated.                                                                                                                                                           |
| CEPT CDND               | The option CDND can not be assigned together with AUL, CDTA, CCBS or IWUC. The CEPT CDND takes precedence of CEPT CFU, CEPT CFD and CEPT CFB. The CEPT CDND takes precedence of the CEPT IWCT, no waiting calls can be established if the CEPT CDND is activated. The CLF can not be performed if the CEPT CDND is activated. |

| IBN Line Service | Interaction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLF              | The option CLF is compatible with other line options. The CLF functionality can not be invoked if the CEPT CDND or CEPT CDTA is activated. When the CLF functionality is invoked, the CLI must be provided if it is available, even the CLI delivery is restricted. For the diverted calls, the original calling party number should be traced if possible.                                                                                                                                                                                                                                 |
| CEPT IWUC        | The option IWUC can not be assigned together with AUL, CDND or CDTA. The CEPT IWUC can not be activated if CEPT CFU, CEPT CFD or CEPT CFB is activated.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CEPT CFU         | The option CFU can not be assigned together with AUL, CDTA or CCBS. The CEPT CFU can not be activated if CEPT IWUC is activated. The CEPT CDND takes precedence of CEPT CFU, no calls can be diverted to the destination number if the CEPT CDND is activated. The CEPT CFU takes precedence of CEPT ICWT, CEPT CFD and CEPT CFB. The party who has the CFU is not aware of the occurrence of the unconditional call diversion, and CND is not allowed to invoke on the party who diverting the CFU call. For the diverted call, the original calling party number is provided if possible. |
| CEPT CFD         | The option CFD can not be assigned together with AUL, CDTA or CCBS. The CEPT CDND takes precedence of CEPT CFD, no calls can be diverted to the destination number if the CEPT CDND is activated. The CEPT CFD can not be activated if CEPT IWUC is activated. When the call is diverted, the CND is allowed to invoke on the party who diverting the CFD call. For the diverted call, the original calling party number is provided if possible.                                                                                                                                           |
| CEPT CFB         | The option CFB can not be assigned together with AUL or CDTA. The CEPT CDND takes precedence of CEPT CFB, no calls can be diverted to the destination number if the CEPT CDND is activated. The CEPT CFB can not be activated if CEPT IWUC is activated. The CEPT CFB takes precedence of CEPT ICWT. The party who has the CFB is not aware of the occurrence of the call diversion on busy, and CND is not allowed to invoke on the party who diverting the CFB call. For the diverted call, the original calling party number is provided if possible.                                    |
| CEPT CDTA        | The option CDTA can not be assigned together with AUL, CCBS, CDND, IWUC, CFU, CFD or CFB. The CEPT CDTA takes precedence of the CEPT ICWT, no waiting calls can be established if the CEPT CDTA is activated. The CLF can not be performed if the CEPT CDTA is activated.                                                                                                                                                                                                                                                                                                                   |

| IBN Line Service      | Interaction                                                                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CEPT ICWT, CEPT SCWID | The option ICWT can not be assigned together with AUL. The CEPT CFU and CEPT CFB take precedence of CEPT ICWT, and for the CFU or CFB calls, the SCWID is not allowed.                                |
| CEPT CCBS             | The option CCBS can not be assigned together with AUL, CDND, CDTA, CFU or CFD. No precedence interactions with other line services.                                                                   |
| CEPT I3WC             | The option I3WC can not be assigned together with AUL. The CEPT I3WC functionality can no be invoked when the ILR is registered to the class which restricts all calls.                               |
| CEPT I6WC             | As Nortel provision. There are not detailed requirement according to the China specification YDN065.                                                                                                  |
| CND                   | The option CND is compatible with other line options. The CND is not allowed to invoke on the party who diverting CFU or CFB calls.                                                                   |
| CNDB, SUPPRESS        | The option CNDB can not be assigned together with AUL. No precedence interactions with other line services.                                                                                           |
| AUL                   | The option AUL can not be assigned together with SCS, SCL, WML, ILR, CDND, IWUC, CFU, CFD, CFB, CDTA, ICWT, CCBS, I3WC, I6WC or CNDB. The AUL has the highest precedence against other line services. |
| CEPTPW                | The option CEPTPW is compatible with other line options. No precedence interactions with other line services.                                                                                         |

**Note:** Refer to Section , , Alarm-Call Service is incompatible with call diversion service (Call Forward Unconditional, Call Forward on No answer or Call Forward on Busy), however, refer to Section , Alarm-Call Service is compatible with call diversion service. After confirmed with the specification YDT1128 drafter, the interaction is that Alarm-Call Service can be assigned together with the call diversion service to the same subscriber, but both service can not be activated at the same time.

The customer can achieve the China specific line options compatibilities/incompatibilities by changing the table OPTOPT manually. Regarding the current release, the following changes are required to perform into table OPTOPT according to the China requirement:

- Remove ICWT, I3WC and I6WC options from the CLF tuple;
- Remove CLF option from the ICWT tuple;
- Remove CLF option from the I3WC tuple;

- Remove CLF option from the I6WC tuple;
- Add AUL, CCBS, CDTA and IWUC options to the CDND tuple;
- Add AUL, CDND and CDTA options to the IWUC tuple;
- Add CDTA and CCBS options to the CFU tuple;
- Add CDTA and CCBS options to the CFD tuple;
- Add CDTA option to the CFB tuple;
- Add CDND, IWUC, CFU, CFD, CFB and CCBS options to the CDTA tuple;
- Add CDND, CFU, CFD and CDTA options to the CCBS tuples,
- Add CDND and IWUC options to the AUL tuples.

The changes in table OPTOPT can be done by deleting the existing tuple, and adding a new tuple. Please note that, during the ONP, the table OPTOPT can not be transferred to the inactive side automatically, so the operator has to change the table OPTOPT according to the China requirement manually after the ONP.

The field MARKET of tuple CEPTONCENTREX in table ISERVOPT must set to CHINA to achieve the China line service's interaction compliance.

## **China line service's operation and administration compliance**

### **ILR Password: Display and Change**

Prior to this activity, the ILR password can not be displayed by using QDN command (it is masked with "NNNN"), and the password can not be changed by using CHF command. This activity introduces a new field SHOW\_CHG\_PSWD into the tuple ILRCLS in table ISERVOPT. If this field is set to Y, the ILR password allows to be displayed and changed.

Refer to following datafill example of tuple ILRCLS:



**Datafill example of tuple ILRCLS**

```
TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>ILRCLS
OPTION:
>ILRCLS
ILR_PROG:
>N
SDT:
>N
CR_PSWD: N
>Y
SHOW_CHG_PSWD: N
>Y
TUPLE TO BE ADDED:
ILRCLS ILRCLS N N Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**IWUC: Abort wakeup request if line is in use**

The existing implementation of IWUC service, if the line is in use at the scheduled time, the wakeup request may retry after a given time delay. However, according to the China specification, the wakeup request should be aborted automatically if the line is in use.

This activity introduces a new field ABORT\_IF\_IN\_USE into the tuple IWUC in table ISERVOPT. If this field is set to Y, the wakeup request is aborted automatically when the line is in use at the scheduled time, and the IWUC102 log with the reason 'LINE IN USER' will be generated to indicate the abortion of the wakeup request.

Refer to following datafill example of tuple IWUC:

**Datafill example of tuple IWUC**

```

TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>IWUC
OPTION:
>IWUC
MIN_AHEAD_TIME:
>1
REPEAT_NEXT_DAYS: N
>
ABORT_IF_IN_USE: N
>Y
REPEAT_PER_REQUEST:
>1
NUMBER_OF_REQUEST:
>ONE
OVERWRITE: N
>Y
TUPLE TO BE ADDED:
IWUC IWUC 1 N Y 1 ONE Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

**ICWT: Datafillable Timer for “Called Party Ignores Waiting Call”**

In the existing implementation of ICWT service, the time-out of timer “Called Party Ignores Waiting Call” is hardcoded as 30 seconds, however, according to China Specification YDN065, this time-out should be set to 15 seconds.

This activity introduces a new field ICWT\_IGNORE\_WAITING\_TMO into tuple ICWT in table ISERVOPT. The operator can specify a value from 10 to 45 seconds for the timer “Called Party Ignores Waiting Call” of ICWT service. If the tuple ICWT is not present in table ISERVOPT, by default, the time-out of 30 seconds is used.

Refer to following datafill example of tuple ICWT:

**Datafill example of tuple ICWT**

```

TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>icwt
OPTION:
>icwt
ICWT_IGNORE_WAITING_TMO:
>15
ICWT_ANN_ACTIVE: N
>N
ICWT_TMO_ANN_ACTIVE: N
>N
ICWT_TIMEOUT_TREATMENT:
>NOSC
TUPLE TO BE ADDED:
ICWT ICWT 15 N N NOSC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

**CEPTRA: Collect DN and PIN in Different Stages**

According to China Specification YDN1128, the service CEPTRA is required to collect DN and PIN in different stages, that is, the subscriber should input DN firstly, and receive prompt, then input PIN.

This activity introduces a new field COLLECT\_DNPIN\_IN\_DIFF\_STAGES into tuple CEPTPW in table ISERVOPT, if this field is set to Y, the CEPTRA will collect DN and PIN in different stages.

Moreover, in order to support to play announcements to prompt the subscriber to input DN and PIN, two new announcements (COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY) are introduced to the service CEPTRA, the operator can datafill tuple CEPTPW in table ISERVOPT to assign the corresponding announcement trunks which are connected for the new announcement names.

When provisioning the announcements for the service CEPTRA, if the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES is set to Y, the announcement IDs COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY are required to provision, and the announcement ID DNPIN is useless, and the datafill is not required. If the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES is set to N, the announcement ID DNPIN is required to provision, and the announcement IDs COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY are useless.

Refer to following datafill examples of tuple CEPTPW and announcement provision when the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES is set to Y:

**Datafill example of tuple CEPTPW**

```
TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT_PIN:
>3333
PIN_VALID:
>n
COLLECT_DNPIN_IN_DIFF_STAGES:
>y
ANNOUNCE:
>y
ANNC_STATE:
>SILENCE
CEPT_ANNC:
>chgpin ceptpw_chgpin
CEPT_ANNC:
>vldpin ceptpw_vldpin
CEPT_ANNC:
>collect_dn_only ceptra_coll_dn
CEPT_ANNC:
>collect_pin_only ceptra_coll_pin
CEPT_ANNC:
>$
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1234 Y Y AUD_RNG (CHGPIN CEPTPW_CHGPIN)
(VLDPIN CEPTPW_VLDPIN) (COLLECT_DN_ONLY CEPTRA_COLL_DN)
(COLLECT_PIN_ONLY CEPTRA_COLL_PIN)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Announcement Provision when the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES is set to Y**

|                                           |     |                    |     |    |      |   |     |                      |  |
|-------------------------------------------|-----|--------------------|-----|----|------|---|-----|----------------------|--|
| TABLE CLLI                                |     |                    |     |    |      |   |     |                      |  |
| CLLI ADNUM TRKGRSIZ ADMININF              |     |                    |     |    |      |   |     |                      |  |
| -----                                     |     |                    |     |    |      |   |     |                      |  |
| CEPTPW_CHGPIN                             | 991 | 5                  |     |    |      |   |     | CEPTPW_ANNOUNCEMENT  |  |
| CEPTPW_LOCKED                             | 992 | 5                  |     |    |      |   |     | CEPTPW_ANNOUNCEMENT  |  |
| CEPTPW_VLDPIN                             | 993 | 5                  |     |    |      |   |     | CEPTPW_ANNOUNCEMENT  |  |
| CEPTR_A_COLL_DN                           | 994 | 5                  |     |    |      |   |     | CEPTR_A_ANNOUNCEMENT |  |
| CEPTR_A_COLL_PIN                          | 995 | 5                  |     |    |      |   |     | CEPTR_A_ANNOUNCEMENT |  |
| CEPTR_A_SCODE                             | 996 | 5                  |     |    |      |   |     | CEPTR_A_ANNOUNCEMENT |  |
| TABLE: ANNS                               |     |                    |     |    |      |   |     |                      |  |
| CLLI ANNTYP TRAFSNO MAXCONN CYTIME MAXCYC |     |                    |     |    |      |   |     |                      |  |
| -----                                     |     |                    |     |    |      |   |     |                      |  |
| CEPTPW_CHGPIN                             | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| CEPTPW_LOCKED                             | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| CEPTPW_VLDPIN                             | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| CEPTR_A_COLL_DN                           | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| CEPTR_A_COLL_PIN                          | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| CEPTR_A_SCODE                             | ALL | 1                  | 3   | 1  | STND | N | 255 | 1                    |  |
| TABLE: ANNMEMS                            |     |                    |     |    |      |   |     |                      |  |
| ANNMEM HDWTYPE CARD MEMINFO               |     |                    |     |    |      |   |     |                      |  |
| -----                                     |     |                    |     |    |      |   |     |                      |  |
| CEPTPW_CHGPIN                             | 0   | DRAM               | DRA | (0 | DTM  | 0 | 5)  | \$                   |  |
| CEPTPW_LOCKED                             | 0   | DRAM               | DRA | (0 | DTM  | 0 | 6)  | \$                   |  |
| CEPTPW_VLDPIN                             | 0   | DRAM               | DRA | (0 | DTM  | 0 | 7)  | \$                   |  |
| CEPTR_A_COLL_DN                           | 0   | DRAM               | DRA | (0 | DTM  | 0 | 8)  | \$                   |  |
| CEPTR_A_COLL_PIN                          | 0   | DRAM               | DRA | (0 | DTM  | 0 | 9)  | \$                   |  |
| CEPTR_A_SCODE                             | 0   | DRAM               | DRA | (0 | DTM  | 0 | 10) | \$                   |  |
| TABLE: ANNPHLST                           |     |                    |     |    |      |   |     |                      |  |
| ANNPHKEYPHSLIST                           |     |                    |     |    |      |   |     |                      |  |
| -----                                     |     |                    |     |    |      |   |     |                      |  |
| CEPTPW_CHGPIN                             | 0   | (CEPTPW_CHGPIN)    | \$  |    |      |   |     |                      |  |
| CEPTPW_LOCKED                             | 0   | (CEPTPW_LOCKED)    | \$  |    |      |   |     |                      |  |
| CEPTPW_VLDPIN                             | 0   | (CEPTPW_VLDPIN)    | \$  |    |      |   |     |                      |  |
| CEPTR_A_COLL_DN                           | 0   | (CEPTR_A_COLL_DN)  | \$  |    |      |   |     |                      |  |
| CEPTR_A_COLL_PIN                          | 0   | (CEPTR_A_COLL_PIN) | \$  |    |      |   |     |                      |  |
| CEPTR_A_SCODE                             | 0   | (CEPTR_A_SCODE)    | \$  |    |      |   |     |                      |  |

On the above announcements provisioning example, the announcements CEPTRA\_COLL\_DN and CEPTRA\_COLL\_PIN for the announcement IDs COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY should be recorded as:

- **CEPTR\_A\_COLL\_DN:** “Please enter your telephone number”

This is an interruptible announcement and applied to the subscriber when he/she dials DISA DN in order to use CEPTRA. It is datafilled as CEPTRA\_COLL\_DN 0 in the datafill example in the figure .

- **CEPTR\_A\_COLL\_PIN:** “Please enter your password of the telephone number which you entered just now”

This is an interruptible announcement and applied to the subscriber when he/she dials a valid telephone number. It is datafilled as CEPTRA\_COLL\_PIN 0 in the datafill example in the figure .

For provisioning other announcements, please refer to the FN of activity A00001919.

### **New downloadable China toneset CHINALGC**

This activity introduces a downloadable China toneset CHINALGC, which can be specified for the PLGC in table LTCINV to support the ADSI CAS tone.

The toneset CHINALGC has the following tones definitions:

- Test and Diagnostic Tones
- DTMF Tones
- Simple Supervisory Tones
- Periodic Supervisory Tones

The operating company can change the field TONESET of the PLGC datafill in table LTCINV to specify the toneset CHINALGC. For the toneset change, the PLGC is requested to perform BSY and RTS manipulation in the MAPCI interface to take it effect, the toneset parameters can then be downloaded from the CM as part of XPM's static data upon RTS.

Please refer to section “ Tone Specifications” on page 413 for more information.

The following datafills are required for activating feature tones in the existing parameters and tables:

- For all feature tones, in OFCENG table,  
FEATURE\_TONE\_SET CHINALGC
- For CWT in OFCVAR table,  
CWT\_TONE\_LENGTH 4  
CWT\_TONE\_CYCLE\_TIME 5  
CWT\_NO\_OF\_ALERTS 3

### **Hardware Requirements or Dependencies**

N/A.

### **Software Requirements or Dependencies**

N/A.

### **Limitations and restrictions**

- According to the existing handling, during the ONP, the table OPTOPT can not be transferred to the inactive side automatically, so the operator has to

change the table OPTOPT according to the China requirement manually after the ONP.

- For the line services that Centrex and CEPT are sharing the same line options (such as CFU, CFD and CFB), if the corresponding service options are present in tuple CEPTONCENTEX in table ISERVOPT, then only the CEPT line services can be available in the office.
- Regarding the China requirement of the service “Hot Line Service with Time-Out” in section , the CEPT WML service can not be activated by the subscriber when the CEPT ILR service has been activated as restriction class K=1 on the line. However, the CEPT WML service can be activated by the operator via SERVORD when the CEPT ILR service has been activated as restriction class K=1 on the line.
- Regarding the China requirement of the service “Outgoing Call Barring” in section , the CEPT ILR service can not be activated as restriction class K=1 by the subscriber when the CEPT WML service has been activated or the CEPT I3WC service has been assigned on the line. However, the CEPT ILR service can be activated as restriction class K=1 by the operator via SERVORD when the CEPT WML service has been activated or the CEPT I3WC service has been assigned on the line.
- Regarding the China requirements of the service “Call Forwarding Unconditional” in section , “Call Forwarding on No Answer” in section , and “Call Forwarding on Busy” in section , the CEPT CFU, CFD and CFB services can not be activated by the subscriber when the subscriber has activated a wake-up request. However, the CEPT CFU, CFD and CFB services can be activated by the operator via SERVORD when the subscriber has activated a wake-up request.
- Regarding the China requirement of the service “Three Party Service” in section , the line option I3WC can be assigned to the line by the operator via SERVOR even when the CEPT ILR service is activated as restriction class K=1 on the line.
- Regarding the China requirement of the service “Call Waiting” in section , the CEPT ICWT service can not support the permanent activation. The operator can activate the ICWT service when assigning it to the subscriber, however, the subscriber can deactivate the ICWT by dialing corresponding access code.
- For the subscriber assigned with the CEPT services such as ICWT, I3WC, I6WC and ICT, in order to invoke the corresponding functionalities (such as: toggle, disconnect talking party or establish conference) of these services, the subscriber must to dial the R-Code after flashing. The R-Code is one digit code of 1~9 or 0. This implicitly means only one digit is allowed to input when the subscriber goes flash, and the digit \* and # is illegal. It is not allowed to activate/deactivate/program/interrogate other services when these services require the subscriber to dial the R-Code.

- According to the feature A00001919, the R1 loopback trunks are required to perform digit collection for CEPTRA calls incoming from ISUP/TUP/FDCP R2 trunks. However, if UTR (Universal Tone Receiver) card exists on the XPM, the digit collection is supported on incoming ISUP/TUP/FDCP R2 trunks directly, no R1 loopback trunks are required. This feature is responsible to verify this functionality on the China variant trunks (CISUP/CTUP/FDCP C1) only. For the other markets request this functionality, the further verification is required accordingly.
- Refer to existing restrictions of the related line services.

## Interactions

Please refer to Section “China line service's interaction compliance” on page 377.

## Applicable customer facing sections

### Fault Management

|        |            |
|--------|------------|
| Logs   | <u>N/A</u> |
| Alarms | <u>N/A</u> |

### Configuration

|                    |            |
|--------------------|------------|
| Data Schema        | <u>X</u>   |
| User Interface     | <u>N/A</u> |
| Element Management | <u>N/A</u> |
| Security           | <u>N/A</u> |
| Service Order      | <u>N/A</u> |
| Office Parameters  | <u>X</u>   |

|                                   |            |
|-----------------------------------|------------|
| Accounting (includes AMA billing) | <u>N/A</u> |
|-----------------------------------|------------|

|                                                 |            |
|-------------------------------------------------|------------|
| Performance (includes operational measurements) | <u>N/A</u> |
|-------------------------------------------------|------------|

## Glossary

| Term | Description                         |
|------|-------------------------------------|
| ADSI | Analogue Display Services Interface |
| AUL  | Automatic Line                      |
| CAS  | CPE Alerting Signal                 |
| CCBS | Call Completion to Busy Subscriber  |



| Term   | Description                                                        |
|--------|--------------------------------------------------------------------|
| CDND   | CEPT Do Not Disturb                                                |
| CDTA   | Call Diversion To Announcement                                     |
| CDTO   | Call Diversion to Operator                                         |
| CEPT   | European Conference of Post and Telecommunications Administrations |
| CEPTPW | CEPT Features' Password                                            |
| CEPTRA | CEPT Features Remote Access                                        |
| CFB    | Call Forward on Busy                                               |
| CFD    | Call Forward on Don't Answer                                       |
| CFF    | Call Forward Fixed                                                 |
| CFU    | Call Forward Unconditional                                         |
| CLF    | Calling Line Identification with Flash                             |
| CND    | Calling Number Delivery                                            |
| CNDB   | Calling Number Delivery Blocking                                   |
| I3WC   | International Three Way Call                                       |
| I6WC   | International Six Way Call                                         |
| ICT    | International Call Transfer                                        |
| ICW    | International Call Waiting                                         |
| ILR    | International Line Restriction                                     |
| IWUC   | International Wake-Up Call                                         |
| SC     | Speed Call                                                         |
| SCWID  | Spontaneous Call Waiting ID                                        |
| WML    | Warm Line                                                          |

## References

| REF               | Description of Reference                  |
|-------------------|-------------------------------------------|
| CEPTONIBN (FMDOC) | CR.Q00638696, China Line Services in SN06 |
| A00001919 (FMDOC) | CEPT SERVICES PASSWORD ENHANCEMENT        |

## **Appendix 1 for A00002755: China PSTN Line supplementary Services (YDN065)**

### **Abbreviated Dialling**

#### **Service Description**

Subscriber can specify a list of target numbers (local, national or international numbers), and assign a one- or two-digit code (abbreviated code) to each number.

When the subscriber dials the abbreviated code, the switch associates it with the assigned TN and attempts to complete the call.

#### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*51\*MN\*TN#,
- Receives confirmation tone,
- Goes on-hook.

where the code MN stands for the abbreviated code, the code TN stands for the target number, which can be a local, national or international number.

#### **Service Usage**

The subscriber can use this service through the following steps:

- Subscriber goes off-hook,
- Receives dial tone
- Dials \*\*MN

where the code MN stands for abbreviated code.

#### **Service Cancellation**

This service can be cancelled on the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*51\*MN#,
- Receives confirmation tone,
- Goes on-hook.

where the code MN stands for the abbreviated code.

### **Interaction with other services**

- a. No collision with other PSTN line services.

## **Hot Line Service with Time-Out**

### **Service Description**

If the subscriber lifts the handset and dials no digit during a given time, the switch will set up a call to a predetermined destination number after the timer expires. The subscriber can program the predetermined destination number.

### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*52\*TN#,
- Receives confirmation tone,
- Goes on-hook.

where the code TN stands for the target number.

### **Service Usage**

If the subscriber wants to call a predetermined destination number, the call can be established automatically by switch if the subscriber lifts the handsets and dials no digit within 5 seconds.

If the subscriber wants to call the subscriber other than the predetermined destination number, the subscriber can start dialing within 5 seconds, and the call is processed as a regular call.

### **Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #52#,
- Receives confirmation tone,
- Goes on-hook.

### **Interaction with other services**

- a. Outgoing Call Barring

Hot Line Service with Time-Out can not be activated when Outgoing Call Barring Service is activated and its restriction class (K) is registered to 1. On the other hand, Outgoing Call Barring Service can not set its restriction Class (K) to 1 when Hot Line Service with Time-Out Service is activated.

- b. No collision with other PSTN line services.

## **Outgoing Call Barring**

### **Service Description**

This service restricts the outgoing calls according to the restriction class (K):

- Deny all outgoing calls (K=1), includes the local calls.
- Deny the national and international direct dial calls (K=2).
- Deny the international direct dial calls (K=3)

### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*54\*KSSSS#,
- Receives confirmation tone,
- Goes on-hook.

where the code K stands for the restriction class (K=1/2/3), the code SSSS stands for 4 digits password, which is preassigned by the administrator when the user subscribes this service.

### **Service Usage**

If the restriction class is set, all restricted outgoing calls from the phone are routed to a busy tone.

### **Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #54\*KSSSS#,
- Receives confirmation tone,
- Goes on-hook.

where the code K stands for the restriction class, which must be identical with the registered restriction class; The code SSSS stands for 4-digits password, which is preassigned by the administrator when the subscriber applies this service.

### **Service Interrogation**

The subscriber can interrogate service status through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*#54#,
- Receives confirmation tone,
- Goes on-hook.

### **Interaction with other services**

- a. Hot Line Service with Time-Out

Refer to Section , item a.

- b. Three Party Services

The subscriber can not apply Three Party Service when Outgoing Call Barring Service is activated and its restriction class (K) is registered to 1, on the other hand, Outgoing Call Barring Service can not set its restriction Class (K) to 1 when Three Party Service is assigned to the subscriber.

- c. No collision with other PSTN line services.

## **Don't Disturb Service**

### **Service Description**

This service can be used when the subscriber does not want to receive any incoming calls in a period. The switch will route all incoming calls to an announcement. This service does not impact the outgoing calls of this subscriber.

### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*56#,
- Receives confirmation tone,
- Goes on-hook.

**Service Usage**

If this service is activated, all incoming calls to the subscriber are routed to an announcement.

**Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #56#,
- Receives confirmation tone,
- Goes on-hook.

**Interaction with other services**

- a. Call Diversion (including: Call Forwarding Unconditional, Call Forwarding on No Answer and Call Forwarding on Busy)

When the subscriber has registered both Call Diversion and Don't Disturb Service at the same time, Don't Disturb Service takes precedence of Call Diversion.

- b. Absent-Subscriber Service

Absent-Subscriber Service and Don't Disturb Service are incompatible. The subscriber can not apply Absent-Subscriber Service and Don't Disturb Service at the same time.

- c. Call Back

Call Back and Don't Disturb Service are incompatible. The subscriber can not apply Call Back and Don't Disturb Service at the same time.

- d. Call Waiting

It is impossible that the subscriber has the waiting call when Don't Disturb Service is activated.

- e. Malicious Call Tracing

The malicious call can not be traced when Don't Disturb Service is activated.

- f. Alarm-Call Service

Alarm-Call Service and Don't Disturb Service are incompatible. The subscriber can not apply Alarm-Call Service and Don't Disturb Service at the same time.

- g. No collision with other PSTN line services.

## Malicious Call Tracing

### Service Description

The subscriber can apply this service to trace the calling number of the malicious call.

### Service Registration

This service is assigned by the operator per request from the subscriber.

### Service Usage

The subscriber can use this service through the following steps:

- Subscriber receives a malicious call,
- Goes flash and receives dial tone,
- Dials \*32#,
- Receives confirmation tone,
- Goes on-hook.

### Service Cancellation

This service is cancelled by the operator per request from the subscriber.

### Interaction with other services

- a. Call Diversion (including: Call Forwarding Unconditional, Call Forwarding on No Answer and Call Forwarding on Busy)

For the call scenario that subscriber A calls subscriber B, and this call is diverted to subscriber C (A->B->C), if the subscriber C requests Malicious Call Tracing service, the switch should provide the number of subscriber A if possible. For some reason or restriction, for example, subscriber A and B belong to the same local network, but subscriber B and C belong to different network, and subscriber B and C are connected via R2 MFC trunk (C1), then the subscriber C only can get the number of subscriber B.

- b. Calling Identity Delivery Restriction

Even when the calling party has Calling Identity Delivery Restricting Service (in this case, the calling number can not be allowed to be displayed on the called party), the operating company must provide the calling number to the subscriber.

- c. Don't Disturb Service  
Refer to Section , item e.
- d. Absent-Subscriber Service

The malicious call can not be traced if Absent-Subscriber Service is activated. The subscriber can not apply Absent-Subscriber Service and Malicious Call Tracing at the same time.

- e. No collision with other PSTN line services.

## **Alarm-Call Service**

### **Service Description**

The switch can ring the phone automatically at the subscriber specified time to remind the subscriber.

### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*55\*H<sub>1</sub>H<sub>2</sub>M<sub>1</sub>M<sub>2</sub>#,
- Receives confirmation tone,
- Goes on-hook.

where the code H<sub>1</sub>H<sub>2</sub> stands for the hour (00-23), M<sub>1</sub>M<sub>2</sub> stands for the minute (00-59).

### **Service Usage**

At the subscriber specified time, the switch will ring the subscriber's phone. If the subscriber goes off-hook, he/she can receive the reminder announcement, and this service is cancelled automatically. If the call is not answered, the ring will last 1 minute. Five minutes later, the switch will ring the phone again. If the second attempt is also not answered, this service will be cancelled after 1 minute ring. Moreover, at the subscriber specified time, if the phone is in use, this Alarm-Call Service will be cancelled automatically.

### **Service Cancellation**

This service can be cancelled on the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #55#,
- Receives confirmation tone,
- Goes on-hook.

### **Interaction with other services**

- a. Don't Disturb Service



Refer to Section , item f.

b. Absent-Subscriber Service

Absent-Subscriber Service and Alarm-Call Service are incompatible. The subscriber can not apply Absent-Subscriber Service and Alarm-Call Service at the same time.

c. Call Diversion

Call Diversion and Alarm-Call Service are incompatible. The subscriber can not apply Call Diversion and Alarm-Call Service at the same time.

d. No collision with other PSTN line services.

### **Interception Calls**

The switch should have the capability to intercept the calls that can not be established successfully (for instance, vacant number or the blocked route), and route these calls to the announcement.

### **Registered Call**

This service is not used at present. Omitted here.

### **Call Forwarding Unconditional**

#### **Service Description**

This service allows the subscriber to divert all incoming calls to a predetermined destination number (including the voice mail box), regardless of the subscriber's state.

#### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*57\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for the predetermined destination number (the number in this example is 6 digits).

#### **Service Usage**

After this service is activated, all incoming calls to the subscriber will be diverted to the predetermined destination number automatically.

**Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #57#,
- Receives confirmation tone,
- Goes on-hook.

**Service Interrogation**

The subscriber can interrogate service status through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*#57\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for predetermined destination number (the number in this example is 6 digits).

**Interaction with other services**

a. Absent-Subscriber Service

Absent-Subscriber Service and Call Forward Unconditional are incompatible. The subscriber can not apply Absent-Subscriber Service and Call Forward Unconditional at the same time.

b. Don't Disturb Service

Refer to Section , item a.

c. Call Waiting

Call Forwarding Unconditional takes precedence of Call Waiting if both services are activated.

d. Alarm-Call Service

Refer to Section , item b.

e. Malicious Call Tracing

Refer to Section , item a.

f. Call Back

Call Back and Call Forwarding Unconditional are incompatible. The subscriber can not apply Call Back and Call Forward Unconditional at the same time.

- g. Call Forwarding on Busy  
Call Forward Unconditional Service takes precedence of Call Forwarding on Busy Service if both services are activated.
- h. Call Forwarding on No Answer  
Call Forwarding Unconditional takes precedence of Call Forwarding on No Answer if both services are activated.
- i. Calling Identity Delivery  
If subscriber A makes call to subscriber B, and this call is diverted to subscriber C (that is, A->B->C), in case that both subscriber B and C have Calling Identity Delivery Services, only the subscriber C can display the subscriber A's number.
- j. No collision with other PSTN line services.

## **Call Forwarding on No Answer**

### **Service Description**

This service allows the subscriber to divert the incoming calls to a predetermined destination number if the called party does not answer within a prescribed time.

### **Service Registration**

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*41\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for the predetermined destination number (the number in this example is 6 digits).

### **Service Usage**

After this service is activated, all incoming calls which are not answered within a prescribed time will be diverted to the predetermined destination number automatically.

### **Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,

- Dials #41#,
- Receives confirmation tone,
- Goes on-hook.

### **Service Interrogation**

The subscriber can interrogate service status through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*#41\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for predetermined destination number (the number in this example is 6 digits).

### **Interaction with other services**

#### **a. Absent-Subscriber Service**

Absent-Subscriber Service and Call Forward on No Answer are incompatible. The subscriber can not apply Absent-Subscriber Service and Call Forward on No Answer at the same time.

#### **b. Don't Disturb Service**

Refer to Section , item a.

#### **c. Alarm-Call Service**

Refer to Section , item b.

#### **d. Malicious Call Tracing**

Refer to Section , item a.

#### **e. Call Back**

Call Back and Call Forward on No Answer are incompatible. The subscriber can not apply Call Back and Call Forward on No Answer at the same time.

#### **f. Calling Identity Delivery**

If subscriber A makes call to subscriber B, and the unanswered call is diverted to subscriber C (that is, A->B->C), in case that both subscriber B and C have Calling Identity Delivery Service, the subscriber A's number can be displayed on both phones of subscriber B and C.

#### **g. No collision with other PSTN line services.**

## Call Forwarding on Busy

### Service Description

This service allows the subscriber to divert the incoming calls to a predetermined destination number if the called party is in busy state.

### Service Registration

This service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*40\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for predetermined destination number (the number in this example is 6 digits).

### Service Usage

After this service is activated, if the called line is in use, all incoming calls to the subscriber will be diverted to the predetermined destination number automatically.

### Service Cancellation

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #40#,
- Receives confirmation tone,
- Goes on-hook.

### Service Interrogation

The subscriber can interrogate service status through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*#40\*PQABCD#,
- Receives confirmation tone,
- Goes on-hook.

where the code PQABCD stands for predetermined destination number (the number in this example is 6 digits).

### **Interaction with other services**

a. Absent-Subscriber Service

Absent-Subscriber Service and Call Forward on Busy are incompatible. The subscriber can not apply Absent-Subscriber Service and Call Forward on Busy at the same time.

b. Don't Disturb Service

Refer to Section , item a.

c. Call Waiting

Call Forward on Bust takes precedence of Call Waiting if both services are activated.

d. Alarm-Call Service

Refer to Section , item b.

e. Malicious Call Tracing

Refer to Section , item a.

f. Calling Identity Delivery

If subscriber A makes call to subscriber B in busy state, and the call is diverted to subscriber C (that is, A->B->C), in case that both subscriber B and C have Calling Identity Delivery Service, only the subscriber C can display the subscriber A's number.

g. No collision with other PSTN line services.

### **Absent-Subscriber Service**

#### **Service Description**

The subscriber can activate this service when he/she is absent. The operating company will respond to all incoming calls on behalf of the subscriber.

#### **Service Registration**

This service can be registered through following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*50#,
- Receives confirmation tone,
- Goes on-hook.

**Service Usage**

When this service is activated, all incoming calls are routed to an announcement to inform the calling party that the called party is absent at present.

**Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #50#,
- Receives confirmation tone,
- Goes on-hook.

**Interaction with other services**

a. Call Back

Call Back and Absent-Subscriber Service are incompatible. The subscriber can not apply Call Back and Absent-Subscriber Service at the same time.

b. Malicious Call Tracing

Refer to Section , item d.

c. Call Waiting

Absent-Subscriber Service takes precedence of Call Waiting. If Absent-Subscriber Service is activated, no waiting calls can be established.

d. Alarm-Call Service

Refer to Section , item b.

e. Call Diversion

Refer to Section , item a; Section , item a; Section , item a.

f. Don't Disturb Service

Refer to Section , item b.

g. No collision with other PSTN line services.

**Call Waiting****Service Description**

When the subscriber A is talking with subscriber B, if the subscriber C attempts to make a call to subscriber A, A will get a call waiting indication to know someone else is waiting for a call connection.

### Service Registration

For the permanent service of Call Waiting, it is assigned by the operator per the request from the subscriber. No special registration action is required when using this service.

If the subscriber only uses this service casually, this service can be registered through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*58#,
- Receives confirmation tone,
- Goes on-hook.

### Service Usage

When the subscriber A is talking with B, and the subscriber C calls subscriber A, the subscriber A will receive the waiting tone, and the subscriber C will receive ring back tone, the subscriber has three options:

- 1 Reject the connection request of the waiting subscriber  
Do nothing, the waiting call will be dropped after 15 seconds.
- 2 Hold the active connection and talk with the waiting subscriber
  - Subscriber goes flash,
  - Receives dial tone,
  - Dials 2
- 3 Terminate the active connection and talk with the waiting subscriber
  - Subscriber goes flash,
  - Receives dial tone,
  - Dials 1

### Service Cancellation (For casual using)

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #58#,
- Receives confirmation tone,
- Goes on-hook.



**Interaction with other services****a. Calling Identity Delivery**

When both services of Calling Identity Delivery and Call Waiting are activated, the calling number should be displayed on the phone when the subscriber receives the call waiting tone.

**b. Call Diversion**

Refer to Section , item c and Section , item c.

**c. No collision with other PSTN line services.****Call Back****Service Description**

This service provides the subscriber with ability to set up an automatic call back in the switch when he/she encounters a busy called party.

**Service Registration**

In case that the called party is busy, the calling party can register a call back request in switch through following steps:

- Subscriber goes flash,
- Receives dial tone,
- Dials \*59#,
- Receives confirmation tone,
- Goes on-hook.

**Service Usage**

If this service is registered, when both parties are idle, the calling party is given ring when the calling party answers, the call is set up and called party is given ring.

The call back request is cancelled if the calling party is not answered at the first call back attempt.

**Service Cancellation**

This service can be cancelled by the subscriber through the following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials #59#,
- Receives confirmation tone,
- Goes on-hook.

**Interaction with other services**

- a. Absent-Subscriber Service  
Refer to Section , item a.
- b. Don't Disturb Service  
Refer to Section , item c.
- c. Call Diversion  
Refer to Section , item f; Section , item e.
- d. No collision with other PSTN line services.

**Three Party Services****Service Description**

This service provides a subscriber with the ability to place an existing call on hold and set up a call to another subscriber. The controller can put three parties into a conference, or toggle and drop the active party when the three-way call is in progress.

**Service Registration**

This service is assigned by the operator per request from the subscriber. No special registration action is required when using this service.

**Service Usage**

- 1 When subscriber A is talking with subscriber B, if subscriber A wants to talk with subscriber C, A can go flash to hold the connection with B and dial the number of C after receiving dial tone, A can talk with C after the connection is created. In case that A can not connect C, A can go flash again to resume the conversation of B.
- 2 When A is talking with C, if A wants to talk with B again and remain the connection of C, A can go flash and dial digit 2 after receiving dial tone. If A doesn't want to remain the connection of C, A can go flash and dial digit 1 after receiving dial tone, the connection of C will be dropped and the connection is switched to B.
- 3 When A is talking with C, if A wants B to join in this conversation, A can go flash and dial digit 3 after receiving dial tone, then the three party conference can be established.
- 4 During the three party conference, if the controller A wants to talk with one party privately and hold another party, A can go flash and dial digit 2.

**Interaction with other services**

- a. Outgoing Calling Barring

Refer to Section , item b.

- b. No collision with other PSTN line services.

## **Conference Service**

### **Service Description**

This service provides more than three ports connection during a call. The conference must be established by the operator.

## **Calling Identity Delivery**

### **Service Description**

This service can deliver the calling number to the called party, and display the calling number on the called party's phone.

This service is applicable to the called subscriber only.

This service is assigned by the operator per request from the subscriber. No special registration action is required when the subscriber uses this service.

### **Interaction with other services**

- a. Call Diversion

Refer to Section , item i; Section , item f; Section , item f.

- b. Malicious Call Tracing

Refer to Section , item b.

- c. Call Waiting

Refer to Section , item a.

- d. Calling Identity Delivery Restriction

If the calling number is restricted to the called party, the calling number can not be displayed on the called party even though the called party applies Calling Identity Delivery Service.

- e. No collision with other PSTN line services.

## **Calling Identity Delivery Restriction**

### **Service Description**

The subscriber can use this service to restrict the display of the calling number on the called party's phone.

### **Service Registration**

The subscriber must specify which category he/she belongs to when applying this service from the operator:

- Category A subscriber, who can restrict the calling number delivery through the certain operation on an individual call basis. By default, the calling number is allowed to be displayed on the called party.
- Category B subscriber, who can allow the calling number delivery through the certain operation on an individual call basis. By default, the calling number is restricted to be displayed on the called party.
- Category C subscriber, who never allows the calling number delivery to the called party.

### **Service Usage**

- 1 For the category A subscriber, in this particular call, the calling number is allowed to be delivered to the called party through the following steps:
  - Subscriber goes off-hook,
  - Receives dial tone,
  - Dials \*62, following with the called number.
- 2 For the category B subscriber, the calling number is not allowed to be delivered to the called party through the following steps:
  - Subscriber goes off-hook,
  - Receives dial tone,
  - Dials \*68, following with the called number,

### **Interaction with other services**

- a. Malicious Call Trace  
Refer to Section , item b.
- b. No collision with other PSTN line services.

## **Appendix 2 for A00002755: Additional China PSTN Line supplementary Services (YDT1128, Partial)**

### **Enhanced Remote Access Services**

#### **Call Forwarding Remote Access**

##### **Service Registration**

This service is assigned by the operator per request from the subscriber.

##### **Service Activation**

The subscriber A can activate the call diversion from the remote location through following steps:

- a. Subscriber A goes off-hook and receives dial tone. A dials “0X<sub>1</sub>X<sub>2</sub>PQRYYYYY” if the remote phone and the subscriber A’s base station do not belong to the same local network, or dials “PQRYYYYY” if the remote phone and the subscriber A’s base station belong to the same local network.

In the above dialing, “0X<sub>1</sub>X<sub>2</sub>PQR” stands for the area code and the office code of the subscriber A’s base station, “YYYYY” stands for the access code of this service.

- b. Subscriber A receives the announcement which prompts to input the base station number. A dials “PQRABCD”, which is the number.
- c. Subscriber A receives the announcement which prompts to input the subscriber A’s password. A dials “S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>”, which is the password.
- d. Subscriber A receives the prompt announcement. A dials \*SC\*FTN#, receives the announcement to inform that the operation is successful. A goes on-hook.

In the above dialing, “SC” stands for the access code of call diversion (Unconditional/Busy/No Answer, SC=57/40/41), “FTN” stands for the forwarded target number.

### Service Usage

If the corresponding call diversion of the subscriber A is activated, the call to subscriber A will be diverted to the target number according to the state of the line and the activated type of call diversion.

### Service Deactivation

The subscriber A can deactivate the call diversion from the remote location through the following steps:

- a. Subscriber A goes off-hook and receives dial tone. A dials “0X<sub>1</sub>X<sub>2</sub>PQRYYYYY” if the remote phone and the subscriber A’s base station do not belong to the same local network, or dials “PQRYYYYY” if the remote phone and the subscriber A’s base station belong to the same local network.

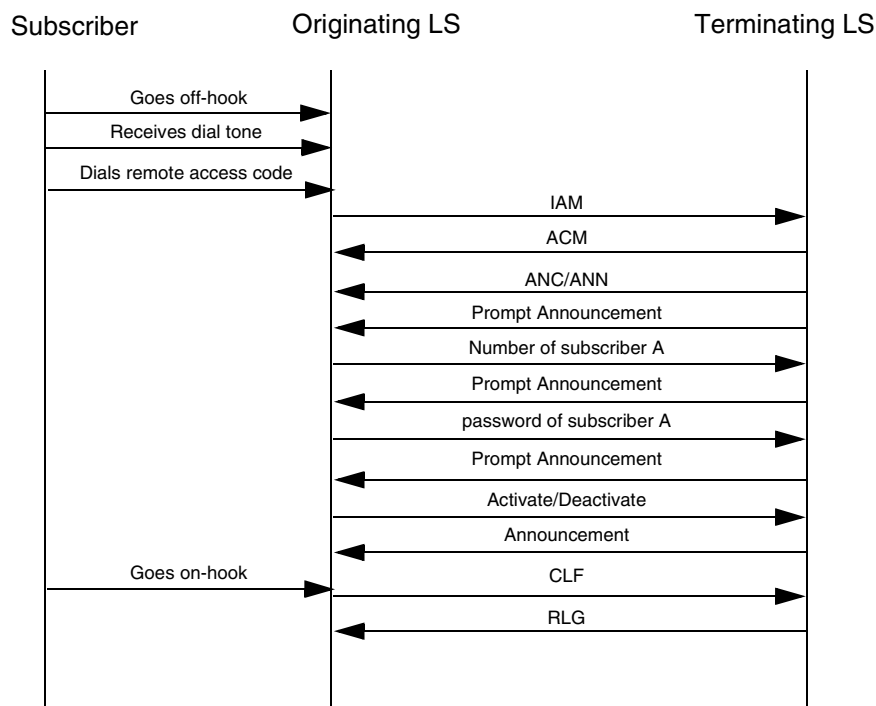
In the above dialing, “0X<sub>1</sub>X<sub>2</sub>PQR” stands for the area code and the office code of the subscriber A’s base station, “YYYYY” stands for the access code of this service.

- b. Subscriber A receives the announcement which prompts to input the base station number. A dials “PQRABCD”, which is the number.
- c. Subscriber A receives the announcement which prompts to input the remote subscriber A’s password. A dials “S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>”, which is the password.

- d. Subscriber A receives the prompt announcement. A dial #SC#. A receives the announcement to inform that the operation is successful, goes on-hook.

In the above dialing, “SC” stands for the access code of call diversion (Unconditional/Busy/No Answer, SC=57/40/41).

### Signalling Flow



### Interaction with other services

- a. Alarm-Call Service

Both services can be used on the same subscriber.

- b. Refer to Section , and for the interaction with other services.

### Outgoing Call Barring Remote Access

#### Service Registration

This service is assigned by the operator per request from the subscriber.

#### Service Activation

The subscriber A can activate the Outgoing Call Barring service from the remote location through the following steps:

- a. Subscriber A goes off-hook and receives dial tone. A dials “0X<sub>1</sub>X<sub>2</sub>PQRYYYY” if the remote phone and the subscriber A’s base station do not belong to the same local network, or dials “PQRYYYY” if the remote phone and the subscriber A’s base station belong to the same local network.

In the above dialing, “0X<sub>1</sub>X<sub>2</sub>PQR” stands for the area code and the office code of the subscriber A’s base station, “YYYY” stands for the access code of this service.

- b. Subscriber A receives the announcement which prompts to input the base station number. A dials “PQRABCD”, which is the number.
- c. Subscriber A receives the announcement which prompts to input the subscriber A’s password. A dials “S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>”, which is the password.
- d. Subscriber A receives the prompt announcement. A dials \*54\*KS<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>#. A receives the announcement to inform the subscriber the operation is successful. A goes on-hook.

In the above dialing, the code K stands for the restriction class:

K=1: Deny all outgoing calls, includes the local calls.

K=2: Deny the national and international direct dial calls.

K=3: Deny the international direct dial calls.

### Service Usage

If Outgoing Call Barring of the subscriber A is activated, all restricted outgoing calls from this phone is routed to a busy tone or an announcement.

### Service Deactivation

The subscriber A can deactivate the Outgoing Call Barring service from the remote location through following steps:

- a. Subscriber A goes off-hook and receives dial tone. A dials “0X<sub>1</sub>X<sub>2</sub>PQRYYYY” if the remote phone and the subscriber A’s base station do not belong to the same local network, or dials “PQRYYYY” if the remote phone and the subscriber A’s base station belong to the same local network.

In the above dialing, “0X<sub>1</sub>X<sub>2</sub>PQR” stands for the area code and the office code of the subscriber A’s base station, “YYYY” stands for the access code of this service.

- b. Subscriber A receives the announcement which prompts to input the base station number. A dials “PQRABCD”, which is the number.
- c. Subscriber A receives the announcement which prompts to input the remote subscriber A’s password. A dials “S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>”, which is the password.

- d. Subscriber A receives the prompt announcement. A dials “#54\*KS<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>”. A receives the announcement to inform the subscriber the operation is successful. A goes on-hook.

**Signalling Flow**

Refer to Section .

**Interaction with other services**

- a. Refer to Section for the interaction with other services.

**Hot Line****Service Registration**

This service is assigned and programmed by the operator. The subscriber must predetermine the target number when applying this service.

**Service Usage**

When the subscriber goes off-hook, the switch immediately sets up the call to the predetermined terminating target number.

**Interaction with other services**

Hot line can not be compatible with the line services which require the operations via phone.

**Password****Service Registration**

The subscriber must apply this service and provide the password when applying the other line services require password (Such as: Outgoing Call Barring or Remote Access Services).

This service is assigned by the operator.

**Service Usage**

This service only can be used for other PSTN line services which require password.

**Password Modification**

The subscriber only can change the password at his/her own phone station via following steps:

- Subscriber goes off-hook,
- Receives dial tone,
- Dials \*77\*old\_pw\*S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>\*S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>#
- Receives confirmation tone,



— Goes on-hook.  
 where “old\_pw” stands for the old password, “S<sub>1</sub>S<sub>2</sub>S<sub>3</sub>S<sub>4</sub>” stands for the new password.

## Tone Specifications

### DTMF Tones

The DTMF tones specified for China market are contained in the table below:

| Tone         | Frequency (Hz)       | Level (dBm)  |
|--------------|----------------------|--------------|
| DTMF Digit 1 | 697 + 1209 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 2 | 697 + 1336 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 3 | 697 + 1477 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 4 | 770 + 1209 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 5 | 770 + 1336 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 6 | 770 + 1477 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 7 | 852 + 1209 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 8 | 852 + 1336 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 9 | 852 + 1477 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit 0 | 941 + 1336 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit * | 941 + 1209 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit # | 941 + 1477 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit A | 697 + 1633 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit B | 770 + 1633 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit C | 852 + 1633 (+/-2.0%) | -7/-9 (+/-3) |
| DTMF Digit D | 941 + 1633 (+/-2.0%) | -7/-9 (+/-3) |

Note, according to the China specification YDN065, section 8, for the DTMF tones, the allowed levels of low frequency and high frequency can be -4 ~ -23dBm, and the distinction of the levels of low frequency and high frequency can not exceed 6dBm. This activity sets -7dBm for the low frequency, and -9dBm for the high frequency.

### Audible Tones

The following sections provide the tables that describe the audible tones in the CHINALGC toneset specified for the China market. For each tone, a format is provided to include the meaning, frequency, level and cadence information.

### Idle Tone

|                       |            |
|-----------------------|------------|
| <b>Meaning</b>        | Silence    |
| <b>Frequency (Hz)</b> | 300        |
| <b>Level (dBm)</b>    | -          |
| <b>Cadence</b>        | Continuous |

Note: this tone is cloned from toneset CHINA100.

### Dial Tone

|                       |                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b>        | A tone advising that the exchange is ready to receive call information and inviting the user to start sending call information. |
| <b>Frequency (Hz)</b> | 450 (+/-10%)                                                                                                                    |
| <b>Level (dBm)</b>    | -10 (+/-3)                                                                                                                      |
| <b>Cadence</b>        | Continuous                                                                                                                      |

### Special Dial Tone

|                       |                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b>        | A tone advising that the exchange is ready to receive call information and inviting the user to start sending call information, at the same time reminding the caller that special conditions (such as CFU is activated). are encountered. |
| <b>Frequency (Hz)</b> | 450 (+/-10%)                                                                                                                                                                                                                               |
| <b>Level (dBm)</b>    | -10 (+/-3)                                                                                                                                                                                                                                 |
| <b>Cadence</b>        | 400 ms ON<br>40 ms OFF<br>Repeated pattern                                                                                                                                                                                                 |

### Busy Tone

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Meaning</b>        | A tone advising the caller that the called party is busy. |
| <b>Frequency (Hz)</b> | 450 (+/-10%)                                              |
| <b>Level (dBm)</b>    | -10 (+/-3)                                                |

|                |                                                           |
|----------------|-----------------------------------------------------------|
| <b>Meaning</b> | A tone advising the caller that the called party is busy. |
| Cadence        | 350 ms ON<br>350 ms OFF<br>Repeated pattern               |

### Congestion Tone

|                |                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the caller that the groups of lines or switching equipment necessary for the setting up of the required call or for the user of a specific service are temporarily engaged. |
| Frequency (Hz) | 450 (+/-10%)                                                                                                                                                                                |
| Level (dBm)    | -10 (+/-3)                                                                                                                                                                                  |
| Cadence        | 700 ms ON<br>700 ms OFF<br>Repeated pattern                                                                                                                                                 |

### Ring Back Tone

|                |                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the caller that the connection has been made and that a calling signal is being applied to the telephone number or service point. |
| Frequency (Hz) | 450 (+/-10%)                                                                                                                                      |
| Level (dBm)    | -10 (+/-3)                                                                                                                                        |
| Cadence        | 1000 ms ON<br>4000 ms OFF<br>Repeated pattern                                                                                                     |

### Vacant Number Tone

|                |                                                                     |
|----------------|---------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the party during a call that a toll call is waiting |
| Frequency (Hz) | 450 (+/-10%)                                                        |
| Level (dBm)    | -10 (+/-3)                                                          |

|                |                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the party during a call that a toll call is waiting                                                          |
| Condense       | 100 ms ON<br>100 ms OFF<br>100 ms ON<br>100 ms OFF<br>100 ms ON<br>100 ms OFF<br>400 ms ON<br>400 ms OFF<br>Repeated pattern |

### Toll Break In

|                |                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the party during a local call that the operator wants to establish a toll call to the party. |
| Frequency (Hz) | 450 (+/-10%)                                                                                                 |
| Level (dBm)    | -20 (+/-3)                                                                                                   |
| Cadence        | 200 ms ON<br>200 ms OFF<br>200 ms ON<br>600 ms OFF<br>Repeated pattern                                       |

### Call Waiting Tone

|                |                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the user of the call waiting service who engaged on a talking call that another call is attempting to connect to this user. |
| Frequency (Hz) | 450 (+/-10%)                                                                                                                                |
| Level (dBm)    | -10 (+/-3)                                                                                                                                  |

|                |                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | A tone advising the user of the call waiting service who engaged on a talking call that another call is attempting to connect to this user. |
| <b>Cadence</b> | 400 ms ON<br>4000 ms OFF<br>Repeated pattern                                                                                                |

### Holding Tone (Reminder Tone)

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| <b>Meaning</b>        | The subscriber on hold receives holding tone during the conference or enquiry call. |
| <b>Frequency (Hz)</b> | 950 (+/-10%)                                                                        |
| <b>Level (dBm)</b>    | -20 (+/-3)                                                                          |
| <b>Cadence</b>        | 400 ms ON<br>10000 ms OFF<br>Repeated pattern                                       |

### Howler Tone (Receiver Offhook Tone)

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Meaning</b>        | Prompts the subscriber to place the receiver on-hook. |
| <b>Frequency (Hz)</b> | 1400 / 2060 / 2460 / 2600 (+/-5%)                     |
| <b>Level (dBm)</b>    | -6                                                    |
| <b>Cadence</b>        | 100 ms ON<br>100 ms OFF<br>Repeated pattern           |

### Confirmation Tone

|                       |                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b>        | Indication to a subscriber controlling a supplementary service that the control procedure for access to that service or a service feature has been successfully completed and accepted. |
| <b>Frequency (Hz)</b> | 450 (+/-10%)                                                                                                                                                                            |
| <b>Level (dBm)</b>    | -10 (+/-3)                                                                                                                                                                              |

|                |                                                                                                                                                                                         |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meaning</b> | Indication to a subscriber controlling a supplementary service that the control procedure for access to that service or a service feature has been successfully completed and accepted. |
| <b>Cadence</b> | 160 ms OFF<br>160 ms ON<br>160 ms OFF<br>320 ms ON<br>640 ms OFF<br>Nonrepeated pattern                                                                                                 |

### ADSI CAS Tone

The ADSI CAS tone specified for China market is shown in the table below:

| <b>Tone</b>   | <b>Frequency (Hz)</b> | <b>Level (dBm)</b> |
|---------------|-----------------------|--------------------|
| ADSI CAS tone | 2130 + 2750 (+/-0.5%) | -15/-15 (+/-1)     |

### Test and Diagnostic Tones

The test and diagnostic tones are cloned from the toneset CHINA100:

| <b>Tone</b> | <b>Frequency (Hz)</b> | <b>Level (dBm)</b> |
|-------------|-----------------------|--------------------|
| Low Tone    | 450                   | -20                |
| 1004Hz Tone | 1004                  | 0                  |
| 950Hz Tone  | 950                   | -20                |
| Milliwatt   | 950                   | 0                  |

### Appendix 3 for A00002755 -- Q00869086 FN

This is the documentation for CR: Q00869086 - CI tool for line services auto update.

**Note:** In this document, both ‘option’ and ‘service’ are referring to the services that can be provided on lines through SERVORD tool.

### Function Description

The SN07 feature “A00002755 China Line Service Compliance” introduces line services that compliant to China line services spec (YDN065). While on SN06, some lines are using non China compliance services.

So the requirement rises: in an SN06 -> SN07 upgrade, update the non China compliance services to compliance services. The CI tool is designed to achieve this.

The CI tool is named “SERVUPD”, it does not require parameters.

The SERVUPD tool uses the datafill in CEPTONCENTREX to decide which services need update. Following table list the decision logic: if the option in ‘CEPTONCENTREX option’ column is datafilled, the service listed in ‘From Service’ column is updated to those listed in ‘To Service’ column. The “Update Description” column describes the update action.

### Service Update Decision Logic

| CEPTONCENTREX option | From Service | To Service         | Update Description                                                                                                                                                                                                                                                                   |
|----------------------|--------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IWUC                 | WUCR         | CEPT IWUC          | Wake up call.<br>- The wake up timer setting in WUCR will be transferred to IWUC.                                                                                                                                                                                                    |
| CDIV                 | MSB          | CEPT CDND          | Make set busy.<br>- The MSB state will be transferred to CDND.                                                                                                                                                                                                                       |
|                      | CFO          | CEPT CDTA/<br>CDTO | Call forward to operator.<br>- Since CFO can be mapped to CDTA or CDTO, according to the CFO route, it will not be updated by SERVUPD. The operator can update it manually. No update action.                                                                                        |
|                      | CFF          | CEPT CFF           | Call forward fix.<br>- No update action.                                                                                                                                                                                                                                             |
| ICT                  | CXR          | CEPT ICT           | Call transfer.                                                                                                                                                                                                                                                                       |
| ICWT                 | CWT          | CEPT ICWT          | Call waiting.<br>- Before updating, if the line has CWI, CCW, CWTACT & SCWID, they will be deleted first: the CWTACT state will be transferred to ICWT, the SCWID will be added back after ICWT added.<br>- The ICWT_ACTIVE field will be set to default 'Y' if there was no CWTACT. |
| CCBS                 | RAG          | CEPT CCBS          | Ring back (call complete to busy subscriber).<br>- If RAG is activated on a line, its setting will NOT be transferred to CCBS.                                                                                                                                                       |
| I3WC                 | 3WC          | CEPT I3WC          | Three way call.                                                                                                                                                                                                                                                                      |
| I6WC                 | CNF(C06)     | CEPT I6WC          | Six way call.<br>- Only CNF(C06) will be updated to I6WC.                                                                                                                                                                                                                            |

When the operator types ‘SERVUPD’, following actions will be taken:

1. Read the CEPTONCENTREX tuple of ISERVOPT, first check the MARKET field. If it is not China, prompt the error message and abort.

Following is the intended error message.

### ERROR Message

```
>ServUpd
Error:
ServUpd is for China market usage only.
If the market is China, please set the following field to CHINA, then retry:
table ISERVOPT, tuple CEPTONCENTREX, field MARKET
ServUpd not started.
```

2. If the MARKET is China, get the datafilled options in it.

Following is an example of CEPTONCENTREX.

### Datafill Example of CEPTONCENTREX in table ISERVOPT

```
SOPTSKEY SOPTSVAR
-----
CEPTONCENTREX CEPTONCENTREX China (SC) (WML) (ILR) (CCBS) (I3WC) (CDIV) $
```

3. Prompts to list the services that will be updated one by one, ask for the confirm from operator. (refer to on page 421)
4. Then list all services that will be updated, also list the services that can be updated but not datafilled in CEPTONCENTREX, and wait for the confirm from operator.



Following is the intended prompt.

### Prompt Example of ServUpd

```
>SERVUPD
Update: From 3WC to CEPT I3WC, agree?
Type 'y' or 'n'
>Y
Update: From CFO to CEPT CDTA/CDTO, agree?
Type 'y' or 'n'
>Y
Update: From MSB to CEPT CDND, agree?
Type 'y' or 'n'
>Y
Update: From RAG to CEPT CCBS, agree?
Type 'y' or 'n'
>Y
-----
Following line service update will be performed:
From 3WC TO CEPT I3WC
From MSB TO CEPT CDND
From RAG TO CEPT CCBS
-----
Warning:
Following line services can be updated but not required by user:
From 6WC TO CEPT 6WC
From CWT TO CEPT ICWT
From CXR TO CEPT ICT
From WUCR TO CEPT IWUC
They will not be updated.
-----
Type 'Y' to start, type 'N' to abort.
>Y
```

5. If the operator types 'N', just abort the command. If the operator types 'Y', perform the service update.

The SERVORD DEO/ADO utilities will be used to perform the update. The SERVORD requirement on line state applies, lines will not be updated if the state is invalid(eg: SB).

6. During update, the result will be printed to the screen. When update finishes, report the summary.

There are four kinds of result:

- success. It is counted in the 'number of success' in summary.
- error occurred. Some options may have been deleted before error occurs, the deleted option will be printed. It is counted in the 'number of not updated' in summary.
- line state not proper. It is counted in the 'number of not updated' in summary.

- partly success: the option is updated successfully, but the option setting before update lost. It is counted in the 'number of partly success' in summary.

Following is the result and summary example. Could use the existing CI tool 'RECORD' to record the logs into a file on disk.

### Logs/Report Example of ServUpd

```
Type 'Y' to confirm, type 'N' to abort.
>Y
Services being updated:
-----
LG 0 0 0 0: From 3WC TO CEPT I3WC ... success.
LG 0 0 0 1: From MSB TO CEPT CDND ... success.
.....
LG 0 1 0 0: From RAG TO CEPT CCBS ... Line state is not proper, no update. Please
retry later.
LG 0 1 0 1: From RAG TO CEPT CCBS ... success.
.....
LG 0 2 0 1: From MSB TO CEPT CDND ... Partly success, the service setting before
update lost.
LG 0 2 0 2: From MSB TO CEPT CDND ... Error occurred. Not updated.
Deleted Options:
MSB
.....

ServUpd completed,
Following line services are updated:
-----
3WC -> CEPT I3WC
Total number of success lines:      300
Total number of partly success lines:0
Total number of not updated lines:  3
-----
MSB -> CEPT CDND
Total number of success lines:      125
Total number of partly success lines:0
Total number of not updated lines:  0
-----
RAG -> CEPT CCBS
Total number of success lines:      200
Total number of partly success lines:0
Total number of not updated lines:  2
```

### Limitation

- The SERVUPD tool will be used for ONP only, it will be put in no context. The ONP team can bring it to site on tape for usage.
- Only one-way update is supported. This means, when an option is removed from the CEPTONCENTREX tuple in table ISERVOPT, the lines using this option can not be updated using 'ServUpd' command. For example:

ServUpd can change the RAG to CEPT CCBS, but can not change CEPT CCBS to RAG.

- The tool only uses SERVORD utilities to delete/add services on line. The service related translations, office parameters, etc. has to be deleted/added by the operator.
- When adding CEPT options to line, if the 'assign' action option is datafilled to be metered in table MTRFEAT, and the line has MOG option, the metering of 'Assign' will increase.
- When update RAG to CEPT CCBS, if the RAG is activated on the line, SERVUPD will only update RAG to CEPT CCBS, the RAG setting will NOT be transferred to CCBS to reduce the risk.

## ***Configuration for A00002755***

### **Hardware and Software Requirements**

N/A

### **Initial Configuration**

N/A

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

N/A

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/ OLD/UNCHANGED)</b> |
|-----------------------|---------------------------------|-------------------------------------------|
| ISERVOPT              | CHANGED                         | UNCHANGED                                 |

#### **Table/MIB/Remote Database Schema information**

##### **Name: ISERVOPT**

International Services options

##### **Functional description - Tuple CEPTONCNETREX**

A new field MARKET into the tuple CEPTONCENTREX in table ISERVOPT. The field MARKET is used to identify in which market the line services are working. Now, two value are available for this field. One is

DEFAULT and another is CHINA. For the chinese office, this field must be set to CHINA.

In order to allow all CEPT line services mentioned above on the IBN line without CEPT option, the corresponding service options must be present in tuple CEPTONCENTREX in table ISERVOPT. The following table shows the available options in tuple CEPTONCENTREX, and the associated CEPT line services:

**Note:** The CEPTONCENTREX options with **bold** font are introduced by this activity.

**CEPTONCENTREX Options and CEPT Line Services**

| <b>CEPTONCENTREX<br/>OPTION</b> | <b>Associated CEPT Line Service</b>        |
|---------------------------------|--------------------------------------------|
| SC                              | SCL, SCS                                   |
| WML                             | WML                                        |
| ILR                             | ILR                                        |
| CDIV                            | CDND, CFU, CFB, CFD, CFF, CDTA, CDTO, CFRA |
| ICT                             | ICT                                        |
| ICWT                            | ICWT                                       |
| IWUC                            | IWUC                                       |
| ICWT                            | ICWT                                       |
| CCBS                            | CCBS                                       |
| I3WC                            | I3WC                                       |
| I6WC                            | I6WC                                       |
| CEPTPW                          | CEPTPW                                     |
| CEPTRA                          | CEPTRA                                     |

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Current table size unchanged.

**Fields/OIDs**

The following table lists fields for table ISERVOPT;

**Table field descriptions for tuple CEPTONCENTREX**

| Field   | New or Changed | Subfield or refinement | Entry                                                                   | Explanation and action                                                                                            |
|---------|----------------|------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| MARKET  | New            |                        | DEFAULT, CHINA                                                          | Indicate in which market the line service is used.                                                                |
| OPTIONS | Changed        |                        | {SC, WML, ILR, CDIV, ICT, ICWT, CCBS, I3WC, IWUC, I6WC, CEPTPW, CEPTRA} | Indicate if the corresponding CEPT line services are allowed to work on IBN line without CEPT line option or not. |

**Datafill example**

Refer to the following datafill example of tuple CEPTONCENTREX:

**Datafill example of tuple CEPTONCENTREX**

```
TABLE ISERVOPT
=====
CEPTONCENTREX CEPTONCENTREX CHINA (SC) (WML) (ILR) (IWUC) (CDIV)
(ICT) (ICWT) (CCBS) (I3WC) (I6WC) (CEPTPW) (CEPTRA) $
```

**Table release history update**

A new field MARKET and new CEPT line service options are introduced into the tuple CEPTONCENTREX by this activity.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Functional description - Tuple ILRCLS**

A new field SHOW\_CHG\_PSWD is introduced into the tuple ILRCLS in table ISERVOPT. If this field is set to Y, the ILR password allows to be displayed and changed.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Current table size unchanged.

**Fields/OIDs**

The following table lists fields for table ISERVOPT;

**Table field descriptions for tuple ILRCLS**

| Field         | New or Changed | Subfield or refinement | Entry  | Explanation and action                                 |
|---------------|----------------|------------------------|--------|--------------------------------------------------------|
| SHOW_CHG_PSWD | New            |                        | {Y, N} | Indicate if the ILR password can be shown and changed. |

**Datafill example**

Refer to following datafill example of tuple ILRCLS:

**Datafill example of tuple ILRCLS**

```
TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
SOPTSKEY:
>ILRCLS
OPTION:
>ILRCLS
ILR_PROG:
>N
SDT:
>N
CR_PSWD: N
>Y
SHOW_CHG_PSWD: N
>Y
TUPLE TO BE ADDED:
ILRCLS ILRCLS N N Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Table release history update**

A new field SHOW\_CHG\_PSWD is introduced into the tuple ILRCLS by this activity.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Functional description - Tuple IWUC**

A new field ABORT\_IF\_IN\_USE is introduced into the tuple IWUC in table ISERVOPT. If this field is set to Y, the wakeup request is aborted automatically

when the line is in use at the scheduled time, and the IWUC102 log with the reason 'LINE IN USER' will be generated to indicate the abortion of the wakeup request.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Current table size unchanged.

**Fields/OIDs**

The following table lists fields for table ISERVOPT;

**Table field descriptions for tuple IWUC**

| Field           | New or Changed | Subfield or refinement | Entry  | Explanation and action                                                                          |
|-----------------|----------------|------------------------|--------|-------------------------------------------------------------------------------------------------|
| ABORT_IF_IN_USE | New            |                        | {Y, N} | Indicate if the wakeup request is aborted or not when the line is in use at the scheduled time. |

**Datafill example**

Refer to following datafill example of tuple IWUC:

**Datafill example of tuple IWUC**

```
TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>IWUC
OPTION:
>IWUC
MIN_AHEAD_TIME:
>1
REPEAT_NEXT_DAYS: N
>
ABORT_IF_IN_USE: N
>Y
REPEAT_PER_REQUEST:
>1
NUMBER_OF_REQUEST:
>ONE
OVERWRITE: N
>Y
TUPLE TO BE ADDED:
IWUC IWUC 1 N Y 1 ONE Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Table release history update**

A new field ABORT\_IF\_IN\_USE is introduced into the tuple ILRCLS by this activity.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Functional description - Tuple ICWT**

A new field ICWT\_IGNORE\_WAITING\_TMO is introduced into tuple ICWT in table ISERVOPT. The operator can specify a value from 10 to 45 seconds for the timer “Called Party Ignores Waiting Call” of ICWT service.

By default, if the tuple ICWT is not datafilled in table ISERVOPT, the time-out of timer “Called Party Ignores Waiting Call” is 30 seconds.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.



**Size**

Current table size unchanged.

**Fields/OIDs**

The following table lists fields for table ISERVOPT;

**Table field descriptions for tuple ICWT**

| Field                   | New or Changed | Subfield or refinement | Entry      | Explanation and action                                                                               |
|-------------------------|----------------|------------------------|------------|------------------------------------------------------------------------------------------------------|
| ICWT_IGNORE_WAITING_TMO | New            |                        | {10 TO 45} | This field specifies the time-out of the timer "Called Party Ignores Waiting Call" for ICWT service. |

**Datafill example**

Refer to following datafill example of tuple ICWT:

**Datafill example of tuple ICWT**

```
TABLE ISERVOPT
=====
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>icwt
OPTION:
>icwt
ICWT_IGNORE_WAITING_TMO:
>15
ICWT_ANN_ACTIVE: N
>N
ICWT_TMO_ANN_ACTIVE: N
>N
ICWT_TIMEOUT_TREATMENT:
>NOSC
TUPLE TO BE ADDED:
ICWT ICWT 15 N N NOSC
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Table release history update**

A new field ICWT\_IGNORE\_WAITING\_TMO is introduced into the tuple ICWT by this activity.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Functional description - Tuple CEPTPW**

A new field COLLECT\_DNPIN\_IN\_DIFF\_STAGES and two announcement IDs COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY are introduced into tuple CEPTPW.

If the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES is set to Y in tuple CEPTPW, a new DN and PIN dialing sequence is adopted by CEPTRA, that is, the subscriber should input DN firstly, and receive announcement, then input PIN.

When the subscriber dials the DISA DN in order to use CEPTRA service, if the field COLLECT\_DNPIN\_IN\_DIFF\_STAGES and ANNOUNCE are set to Y in tuple CEPTPW and the announcements are provisioned correctly, the subscriber will hear the announcement associated by announcement ID COLLECT\_DN\_ONLY to prompt to input DN, after the subscriber inputs the valid DN, he/she will hear the announcement associated by announcement ID COLLECT\_PIN\_ONLY to prompt to input password.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Current table size unchanged.

**Fields/OIDs**

The following table lists fields for table ISERVOPT;

**Table field descriptions for tuple CEPTPW**

| Field                        | New or Changed | Subfield or refinement | Entry | Explanation and action                                                                                                                                                                                                                                                                                |
|------------------------------|----------------|------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COLLECT_DNPIN_IN_DIFF_STAGES | New            |                        | {N,Y} | This field indicates if the new DN and PIN dialing sequence is adopted for CEPTRA service. If this field is set to Y, the subscriber should input DN firstly, and receive announcement, then input PIN. If the field is set to N, the subscriber should input DN and PIN as "DN*PIN" at once dialing. |

Table field descriptions for tuple CEPTPW

| Field     | New or Changed | Subfield or refinement | Entry                                                                                  | Explanation and action                                        |
|-----------|----------------|------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------|
| CEPTANNID | Changed        |                        | {DNPIN,CHGPIN,SCODE,VLDPIN,LOCK, <b>COLLECT_DN_ONLY</b> ,<br><b>COLLECT_PIN_ONLY</b> } | New announcement IDs for the new DN and PIN dialing sequence. |

**Datafill example**

Refer to following datafill example of tuple CEPTPW:

**Datafill example of tuple CEPTPW**

```
TABLE ISERVOPT
=====
>abort
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT_PIN:
>3333
PIN_VALID:
>n
COLLECT_DNPIN_IN_DIFF_STAGES:
>y
ANNOUNCE:
>y
ANNC_STATE:
>SILENCE
CEPT_ANNC:
>chgpin ceptpw_chgpin
CEPT_ANNC:
>vldpin ceptpw_vldpin
CEPT_ANNC:
>collect_dn_only ceptra_coll_dn
CEPT_ANNC:
>collect_pin_only ceptra_coll_pin
CEPT_ANNC:
>$
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1234 Y Y AUD_RNG (CHGPIN CEPTPW_CHGPIN)
(VLDPIN CEPTPW_VLDPIN) (COLLECT_DN_ONLY CEPTRA_COLL_DN)
(COLLECT_PIN_ONLY CEPTRA_COLL_PIN)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Table release history update**

A new field COLLECT\_DNPIN\_IN\_DIFF\_STAGES and two announcement IDs COLLECT\_DN\_ONLY and COLLECT\_PIN\_ONLY are introduced into tuple CEPTPW by this activity.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = CS 2000*****A00002756 -- Japan Trunk Services (Succession on DMS)*****Functional Description***

This activity migrates Japan trunk services “Notification of Time and Charge” (NTC), “Carrier Name Notification” (CNN) and “Account Code” (ACCT) from the legacy MMP product to CS2K Hybrid product IP side in ISN07. It transparently ports the functionality implemented under these MMP features onto the CS2K Hybrid IP side. “Hybrid” always means “CS2K Hybrid” within this document.

If these services are triggered by incoming IP side in hybrid, they are provided by IP side directly. On the contrary, if triggered by incoming TDM side, they are provided by legacy MMP features.

About the services provided by TDM side in hybrid, it is not the scope of this activity and please read the original MMP activities listed below.

The existing MMP NTC service was implemented by following activities:

- AR0480 Notification Of Time & Charge
- AR1344 NTC
- AR1599 Enhancement to NTC
- AR1816 Multilingual NTC
- A59017299 Japan Interconnect ISUP

The service of “Carrier Name Notification for Japan” has been provided on MMP under following activities:

- A59027517 Equal Access Carrier Name Notification
- A59034248 Carrier Name Notification for Carrier Designation Service

The “Account Code” service on MMP was originally done under following activities:

- AR2028 Account Code
- A59017299 Japan Interconnect ISUP

## **Notification of Time and Charge (NTC)**

### **Functional Overview**

Notification of Time and Charge is a service provided over JI-ISUP trunks to the Japanese domestic market.

The subscriber activates this service by using the NTC service code prior to the destination address digits. A call is registered as requesting NTC service when traversing a tuple in universal translation that has the NTC feature assigned to it. The NTC service contains two calls: original NTC call and NTC callback.

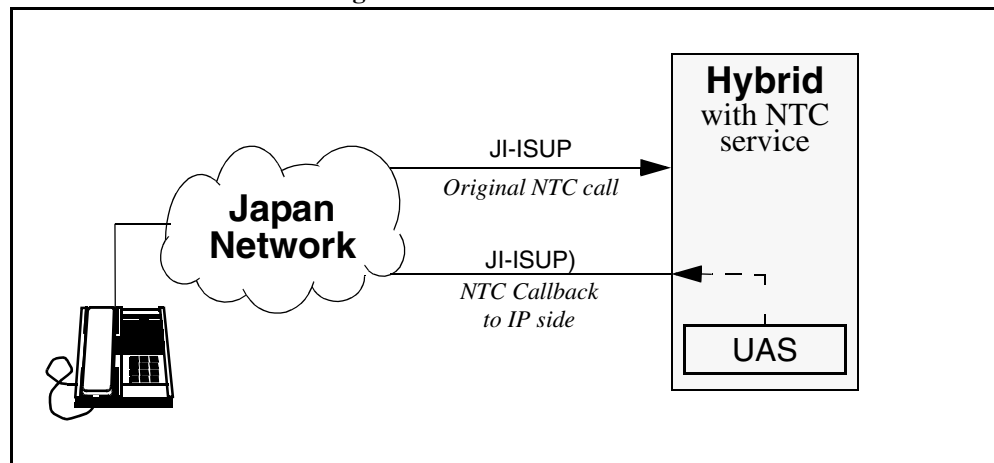
The original NTC call proceeds normally. After a successful call is answered, released and an AMA billing record is produced, NTC service calls the subscriber back using the Calling Line Identifier (CLID) and provides an announcement indicating such information as the destination address digits, the duration of the original call and the charge amount for this service. The NTC announcement is delivered from EDRAM hardware on Hybrid TDM side. As a Hybrid switch IP side is unlikely to use EDRAM hardware, this activity will rework the feature to use the newer UAS hardware in IP side.

The NTC announcement is a custom announcement that consists of a number of simple and compound phrases. Each simple phrase has a corresponding recording on UAS. Each compound phrase is composed of 1 or simpler phrases.

NTC service is not affected by the out going agent of the original NTC call. The service works providing the interworking from JI-ISUP to the outgoing agent is available and AMA record is used for the call.

Please refer to the following figure.

**NTC Functional Behavior Diagram**



### Linguistic Logic

In this feature, the linguistic logic supports all of the nine languages, Japanese, English, Tagalog, Portuguese, Chinese, Korean, Thai, Spanish and Malay, supported by legacy MMP features.

Following shows the English version NTC announcement.

*This is IDC. The international call you have just made to **A** the number **B** was **C** hours **D** minutes **E** seconds long and cost **F** yen. Repeat, **C** hours, **D** minutes, **E** seconds long and cost **F** yen. Thank you for using IDC. This is a recording.*

Here:

**A** = Area Name

**B** = the number recorded by hybrid during the original call.

**C** = Hours quantity, range is from 1 to 277.

**D** = Minutes quantity, range is from 0 to 59.

**E** = Seconds quantity, range is from 0 to 59.

**F** = Yen quantity, range is from 1 to 10 065 533 yen.

### Repeating/Skipping a Language during Cyclic Announcement

NTC service provides announcement in a cyclic fashion. In order to provide the subscriber with some control over NTC announcement playing, this feature supports '\*' key for repeating a language in the same cycle and '#' key for skipping to the next language.

- *skipping*: the received '#' keys are used for skipping.

Skipping does not change the playing sequence of the selected languages. This means that a '#' key stops the language currently being played immediately and starts the *next language* right after. The next language here may be the next one on the current cycle, or the first language of the next cycle if the stopped language is the last one of this cycle.

If a '#' key is received while the last language is being played during the last cycle, skipping is ignored. This is so for providing an explicit ending of the NTC service, i.e. either by a complete announcement in the last language or by subscriber disconnect.

- *repeating*: the received '\*' keys are used for repeating.

A received '\*' key stops the language currently being played immediately and starts to repeat the *same* language on the current cycle.

The maximal number of repeats allowed per cycle of NTC announcement is datafillable via an office parameter. If '\*' keys are received beyond the maximum datafilled, the '\*' keys are ignored.

Office parameter NTC\_ANNC\_CONTROL in table OFCVAR has two fields.

1. The first field sets the total number of cycles for NTC service. This field has a range from 1 to 8 with a default value of 2.
2. The second field sets the maximal number of repeats (i.e. '\*' keys) allowed per cycle of the announcement. This field has a range from 0 to 7 with a default value of 2.

Let's say there are three languages: A, B and C. One cycle is defined as (A B C) and NTC\_ANNC\_CONTROL is set to (4 2), i.e. four cycles and maximum of two repeats per cycle. The entire announcement without repeating (note, skipping may be happening) is:

(A B C) (A B C) (A B C) (A B C)

If skipping occurs during the above announcement, the language sequence would still be the same. The only difference is the skipped language would be stopped (except for C in the last cycle above) once the '#' key is received by

hybrid and the next language, which may be the next language on the current cycle or the first language on the next cycle, starts playing right after. Without skipping, each language would be played completely.

With repeating, the actual announcement may be:

(A A A B C) (A B B C C) (A B C) (A B B C)

Note that during the first cycle above, language B or C cannot be repeated any more since the only two repeats allowed per cycle is used up for language A. This means that all the '\*' keys received during the playing time of B and C in this cycle are ignored.

## Carrier Name Notification (CNN)

### Functional Overview

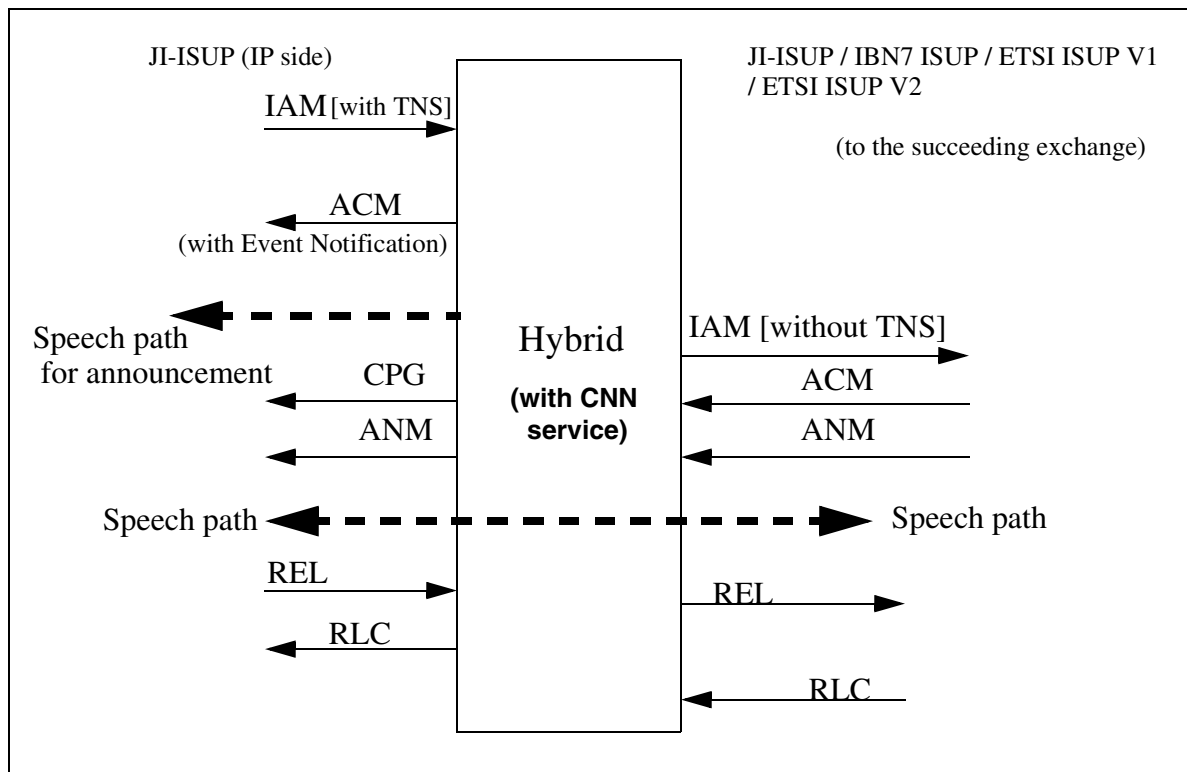
When a JI-ISUP IAM reaches hybrid IP side, the IAM is analyzed for a number of parameters as to whether the announcement is to be played. Once the hybrid decides to provide Carrier Name Notification announcement (for the conditions please refer to A59034248 FN section "Conditions for Feature activation"), an early ACM is sent to the calling party that serves to open a backward speech path and then the announcement is played.

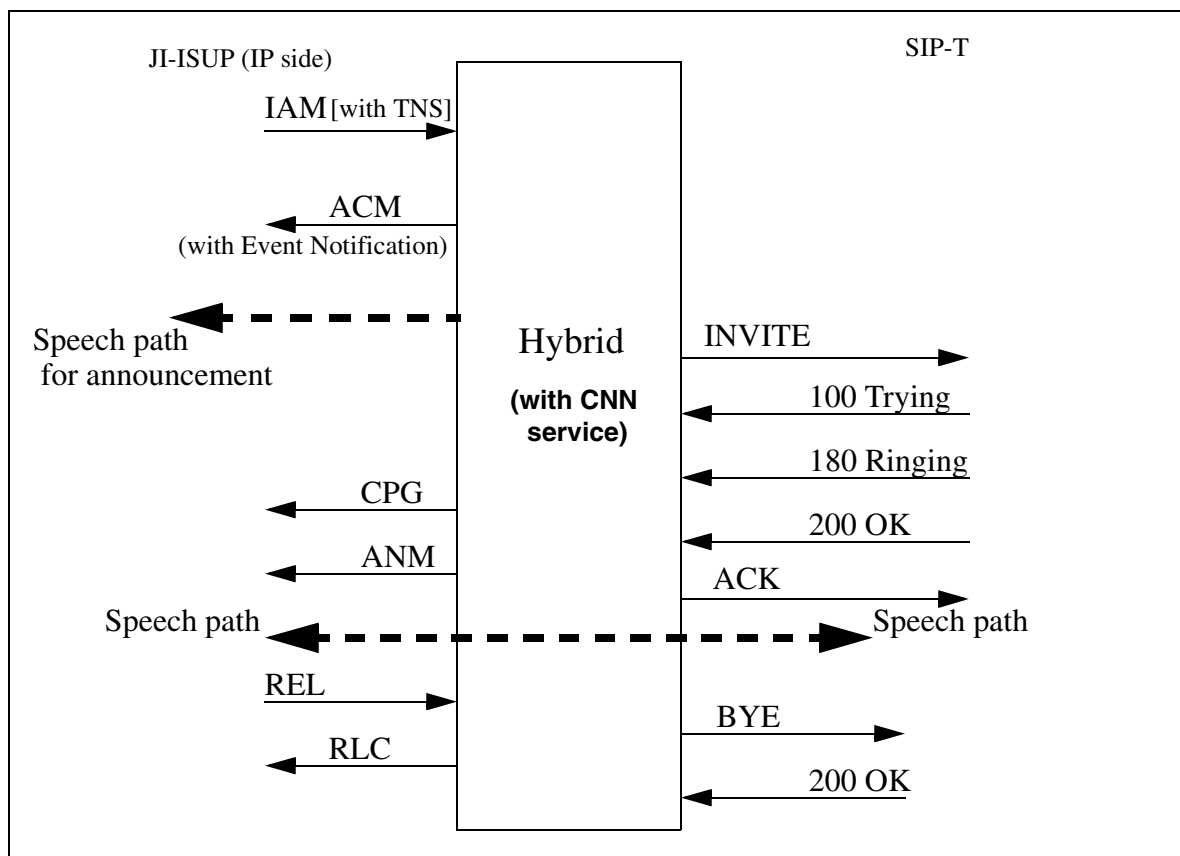
Please refer to ["CNN Call Flow for Interworking with ISUP" on page 437](#) and ["CNN Call Flow for interworking with SIP-T" on page 438](#).

This service is supported in the following interworking scenarios by this activity:

- JI-ISUP -> JI-ISUP
- JI-ISUP -> IBN7 ISUP
- JI-ISUP -> ETSI ISUP V1
- JI-ISUP -> ETSI ISUP V2
- JI-ISUP -> SIP-T (JI-ISUP)
- JI-ISUP -> SIP-T (No ISUP to IMS)



**CNN Call Flow for Interworking with ISUP**

**CNN Call Flow for interworking with SIP-T****Announcement Handling**

If all conditions for feature activation are satisfied and the Network Identification Code in the TNS parameter matches with the CARRID datafill in table CARRNAME, then the announcement recorded corresponding to the announcement CLLI is played. Samples for CNN announcement datafill in ANNS & CARRNAME are shown in [“Example datafill in table ANNS” on page 438](#) and [“Example datafill in table CARRNAME” on page 439](#). In this sample, the announcement CLLI is “ANNCLLI1” and CARRID is “111111”.

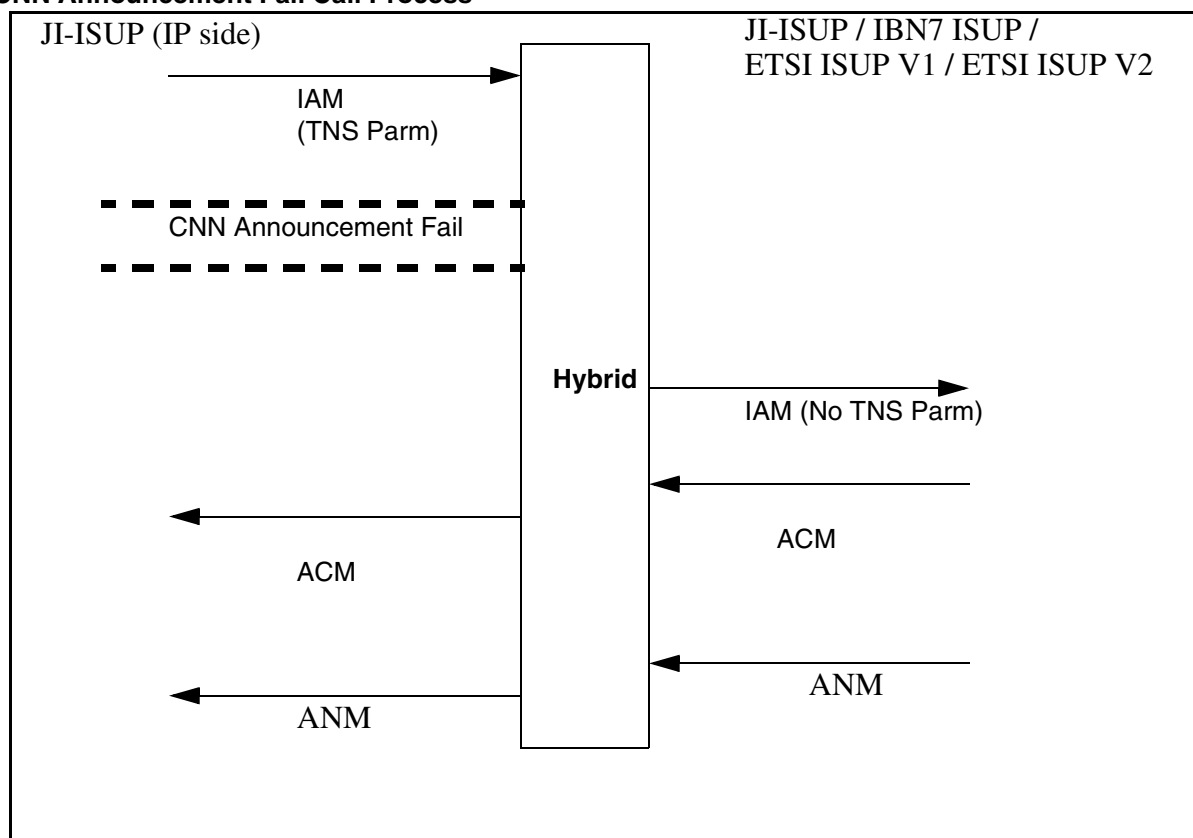
**Example datafill in table ANNS**

|                                |
|--------------------------------|
| ANNCLLI1 NETWK 0 0 1 STND Y 10 |
|--------------------------------|

**Example datafill in table CARRNAME**

|                 |
|-----------------|
| 111111 ANNCLLI1 |
|-----------------|

If CNN announces fail, e.g. all ANNCLLI1 trunks are busy, the call is tandemed as a normal tandem call and the outgoing IAM doesn't contain TNS parameter. At the same time, CNN101 log is generated. For more information about CNN log, please refer to activity A59034248 FN section "Logs". The call process of this case please refer to ["CNN Announcement Fail Call Process"](#) on page 439.

**CNN Announcement Fail Call Process****Handling of Charge Indicator in BCI of CPG**

When CNN feature is triggered, the charge indicator in the CPG is modified according to the CHGIND datafill or the CPGCGIND datafill in table XXCODE / XXHEAD.

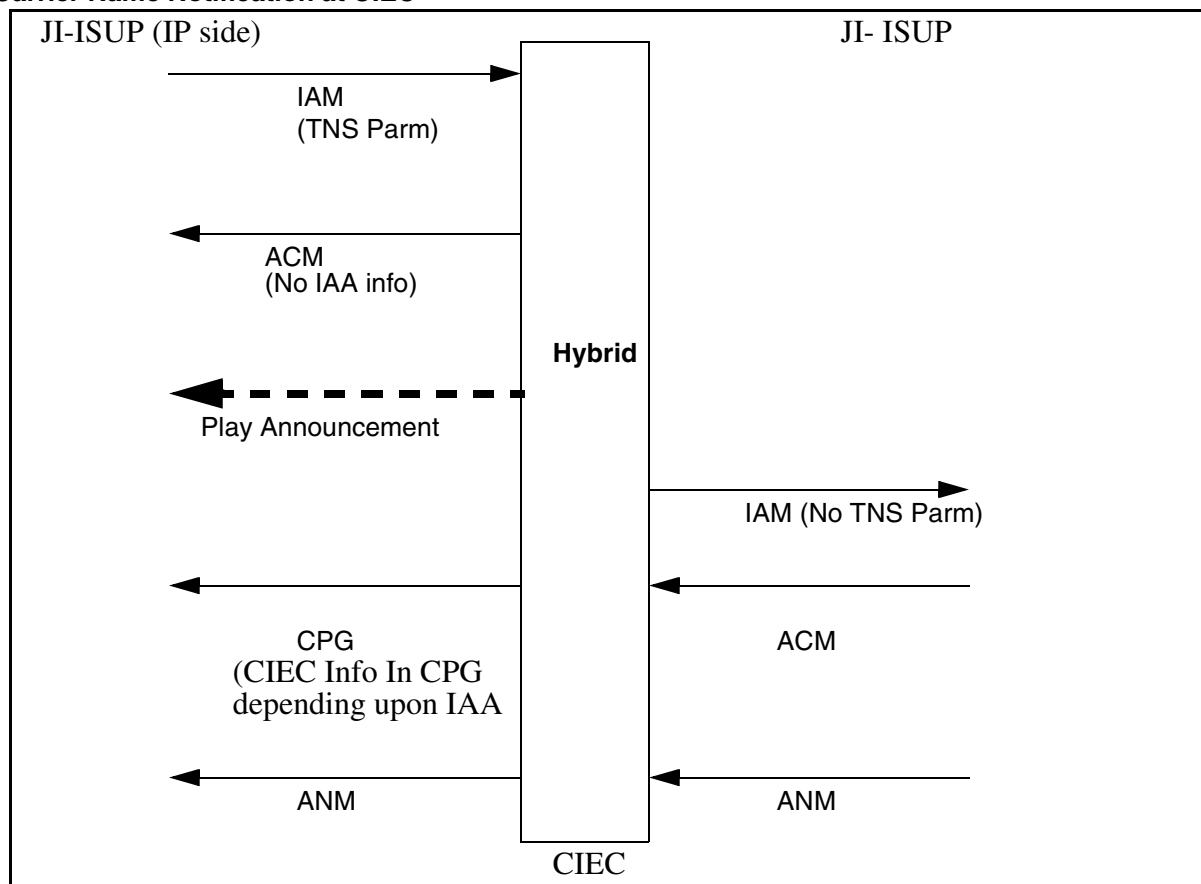
The rule of it is shown in the following figure.

**Handling of CPGCGIND in CPG**

| <b>CHGIND<br/>datafilled</b> | <b>Freedial<br/>(NOCHARGE)<br/>datafilled</b> | <b>CPGCGIND<br/>datafilled</b> | <b>Charge Indicator in CPG</b> |
|------------------------------|-----------------------------------------------|--------------------------------|--------------------------------|
| Y / N                        | N                                             | Y                              | datafilled value of CPGCGIND   |
| Y                            | N                                             | N                              | Datafilled value of CHGIND     |
| Y/N                          | N/Y                                           | Y                              | Datafilled value of CPGCGIND   |
| Y                            | N/Y                                           | N                              | Datafilled value of CHGIND     |

**Handling of IAA parameters**

IAA is the abbreviation of Inter-Administration Accounting. For more information about IAA, please refer to AU2343 FN section APPENDIX A.

**Carrier Name Notification at CIEC****Carrier Name Notification at CIEC**

Please refer to Figure , on page 440 .

At hybrid that behaves as a CIEC, if an early ACM for the feature is generated, it will not contain the IAA parameters.

The IAA parameters in the incoming ACM are mapped to the CPG. The IAA parameters of the CIEC are appended to the CPG depending on the IAA logic.

The hybrid will append the CIEC info to the CPG only if all the following conditions are met: -

- the interworking is JI-ISUP to JI-ISUP,
- CIEC datafill in table IAACtrl is encountered during translation;
- all conditions for generating CIEC in IAM are met;
- the incoming ACM must contain the Carrier Info parm (#F1).
- the received TCIT indicator in the incoming IAM must be Backwards (10) or Bothways (11)

If all the above conditions are met, then the behavior depends on which of the following two conditions are met:

**(1)** if the last sub-block inside the received Carrier Info Parameter in the ACM is CIEC, and the received CIEC Carrier ID is the same as the datafill in ofcparm TELCO\_ID or the SUB\_TELCO\_ID datafill in table IAACtrl, then the behavior is like: -

|                    |                                                                                                                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CarrierID sub-parm | no change                                                                                                                                                                                           |
| POI-CA sub-parm    | no change (even if EXIT_POI_CA is datafilled)                                                                                                                                                       |
| POI-CAT sub-parm   | if received, the ENTRY_POI_CAT, if datafilled, overwrites the received one; the received EXIT_POI_CAT is not changed;<br><br>if not received, this sub-parm is added if EXIT_POI_CAT is datafilled; |

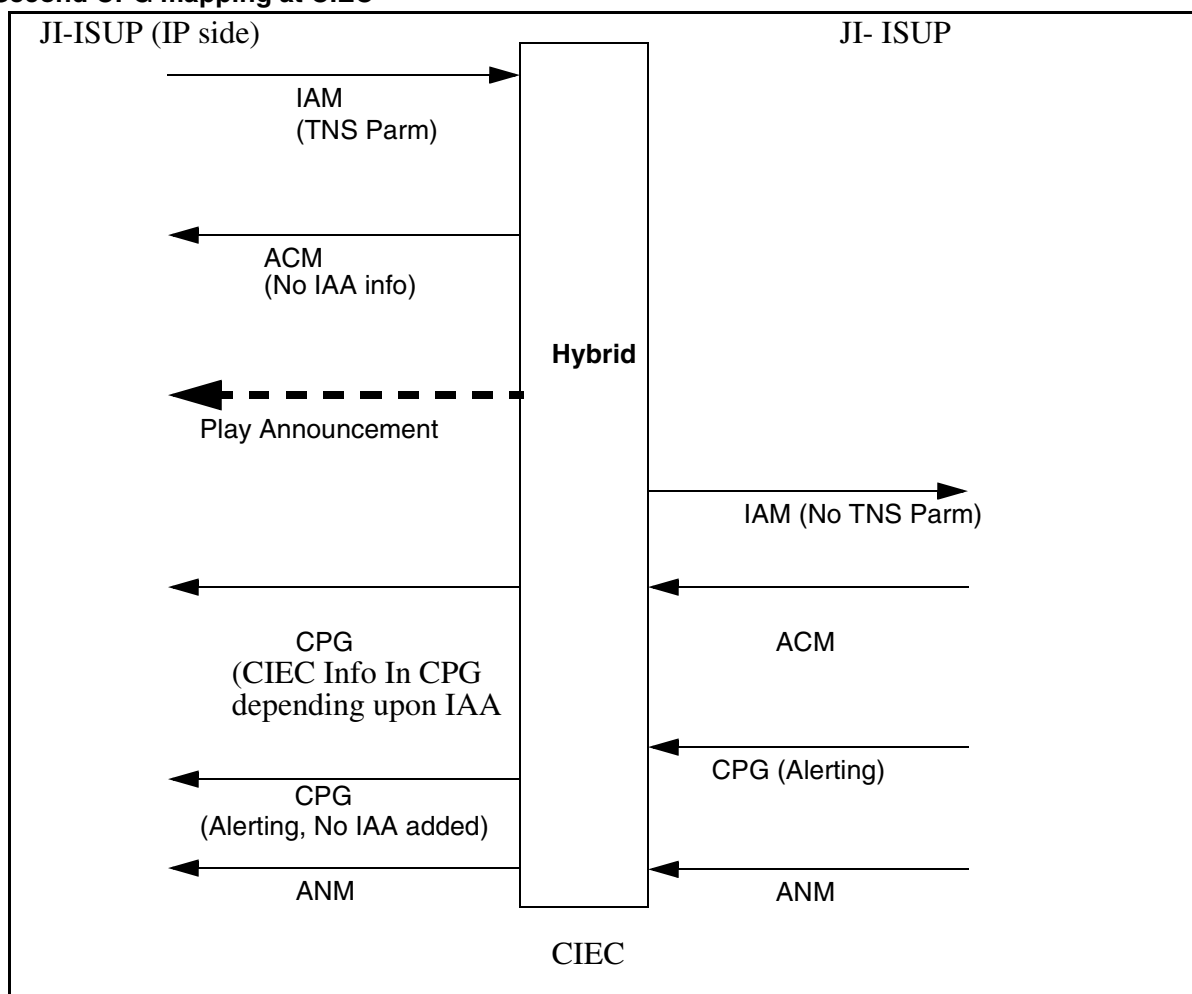
**(2)** if the last sub-block inside the received Carrier Info parameter in the ACM is not CIEC, then the Carrier ID in it is not be the same as the datafill in ofcparm TELCO\_ID or the SUB\_TELCO\_ID datafill in table IAACtrl, then the behavior is like: -

|                    |                                                                       |
|--------------------|-----------------------------------------------------------------------|
| CarrierID sub-parm | taken from ofcparm TELCO_ID or SUB_TELCO_ID datafill in table IAACtrl |
| POI-CA sub-parm    | added only if EXIT_POI_CA is datafilled                               |

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| POI-CAT sub-parm | added if (EXIT_POI_CAT) OR (EXIT_POI_CAT and ENTRY_POI_CAT) is datafilled |
|------------------|---------------------------------------------------------------------------|

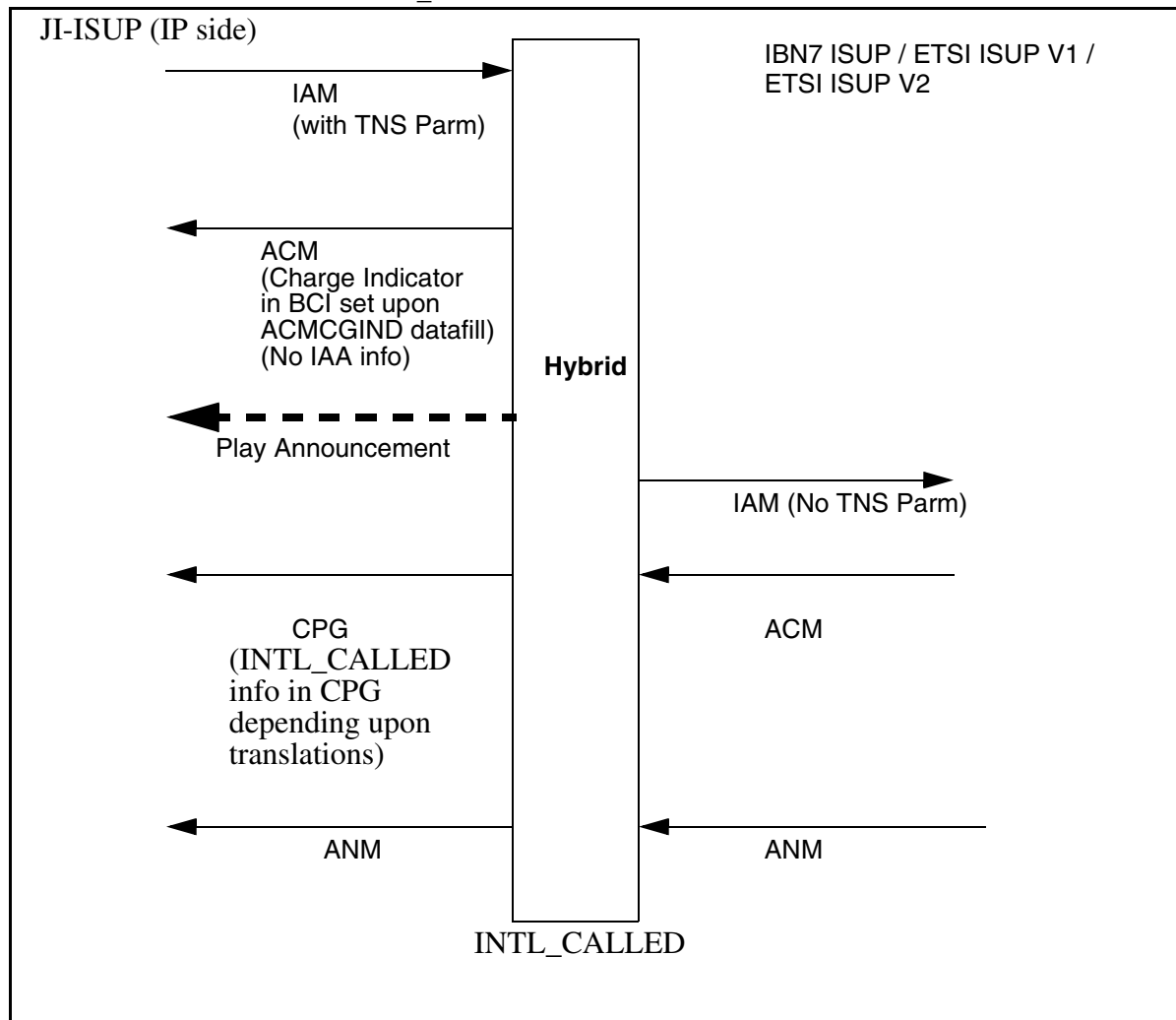
After the CPG with IAA is sent out, if there is an alerting CPG coming from outgoing JI-ISUP side, it is just tandemed out to incoming JI-ISUP side and no IAA is added. Please refer to the following figure.

### Second CPG mapping at CIEC



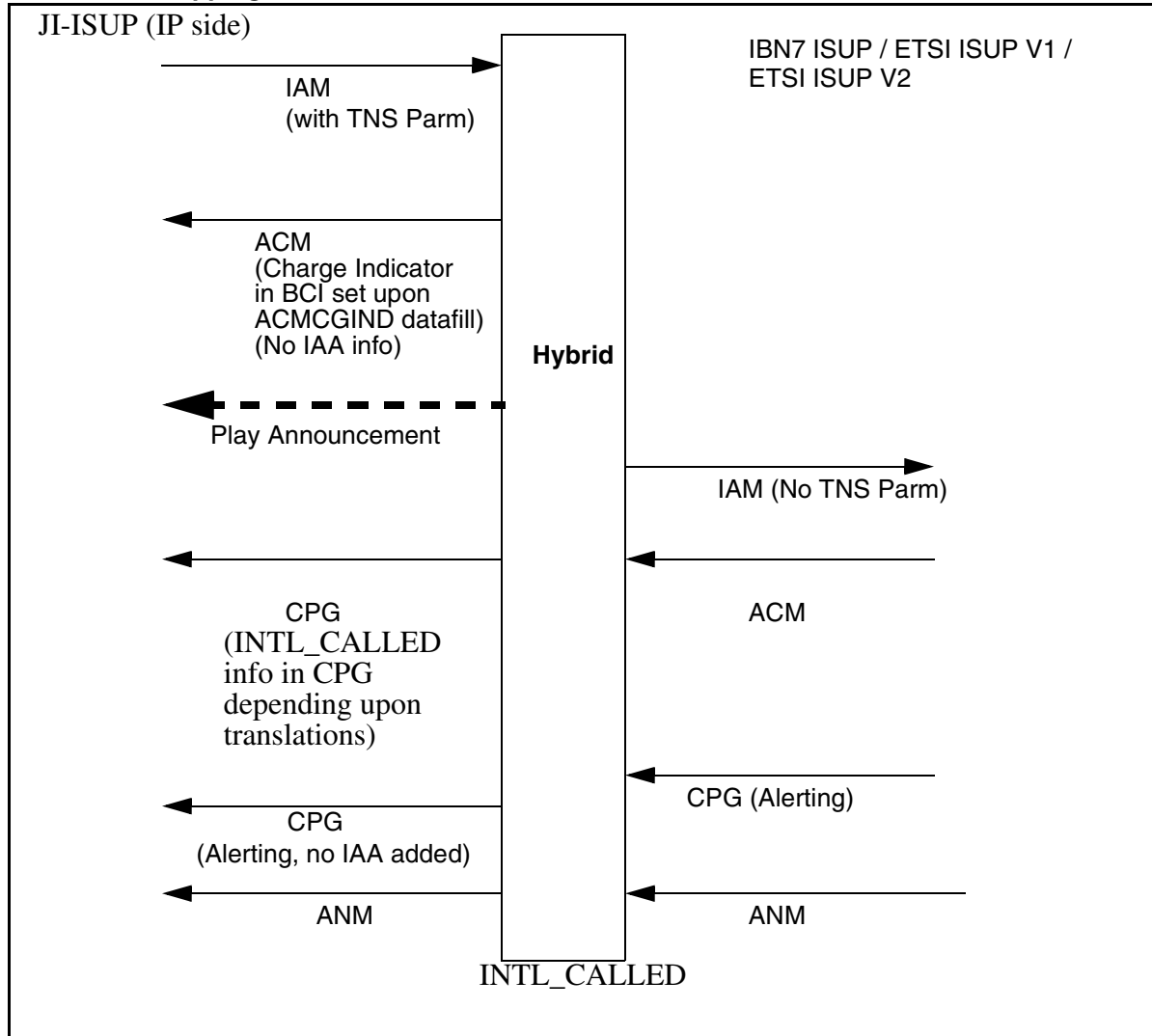
### Carrier Name Notification at INTL\_CALLED (Outbound International Calls)

Please refer to the following figure.

**Carrier Name Notification for INTL\_CALLED**

At hybrid that behaves as an **INTL\_CALLED** (for an international outbound call), if an early ACM for the feature is generated, it will not contain the IAA parameters. So the IAA parameters of the **INTL\_CALLED** will be added to the CPG, i.e. the Carrier Information Parameter containing the Carrier ID.

After the CPG with IAA is sent out, if there is an alerting CPG coming from outgoing IBN7 ISUP side, it is just tandemmed out to incoming JI-ISUP side and no IAA is added. Please refer to [“Second CPG mapping at INTL\\_CALLED”](#) on page 444.

**Second CPG mapping at INTL\_CALLED****Carrier Name Notification at IEC**

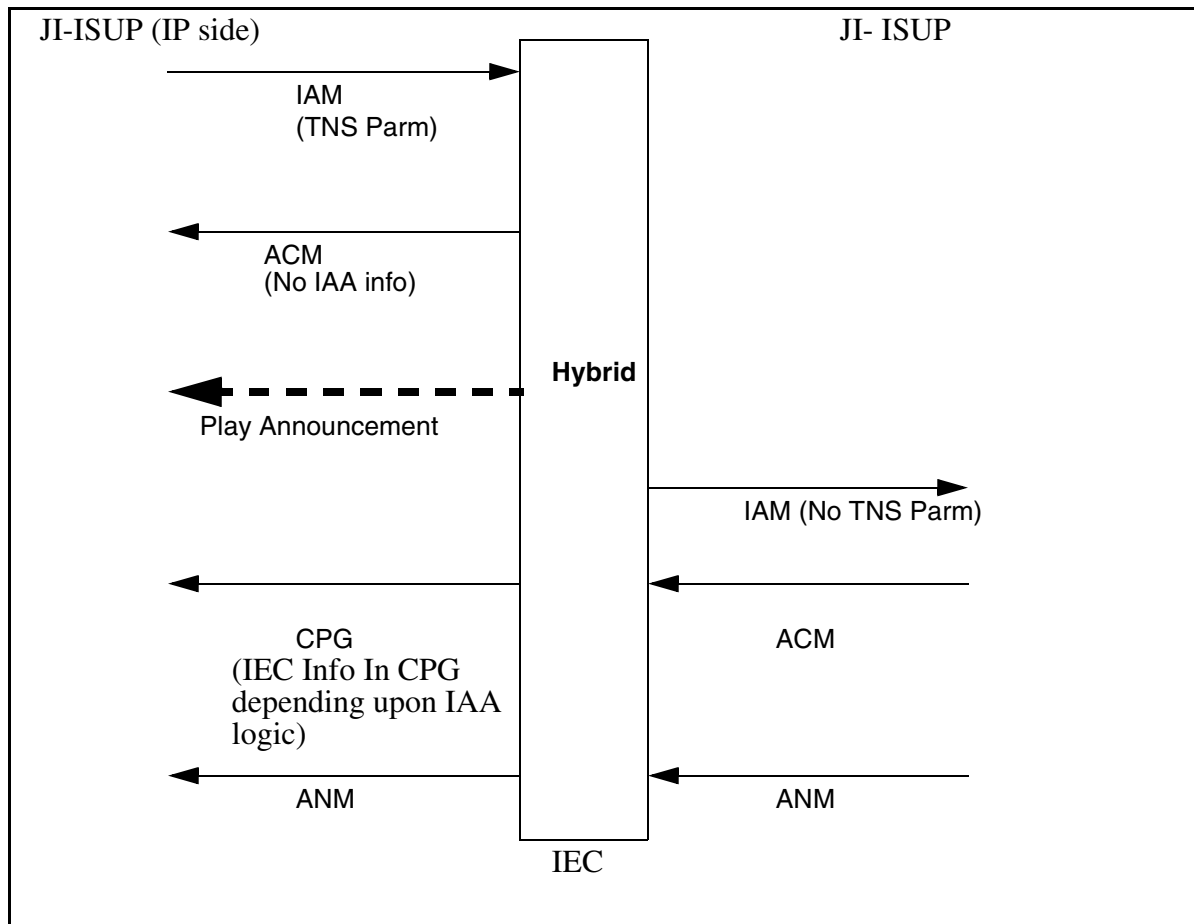
The activation of Carrier Name Notification announcement doesn't differentiate between IEC, CIEC or INTL\_CALLED.

If the announcement is played at an IEC, the early ACM generated will not contain the IAA parameters.

The IAA parameters in the incoming ACM are mapped to the CPG. The IAA parameters of the IEC are appended to the CPG depending on the IAA logic.

Please refer to the following figure.



**Carrier Name Notification at IEC**

The hybrid updates the IEC carrier info parm to the CPG only if all the following conditions are met:

- the interworking is JI-ISUP to JI-ISUP;
- IEC datafill in table IAACtrl is encountered during translation;
- all conditions for generating IEC in IAM, except the condition regarding the received TCIT value, are met;
- the incoming ACM must contain the Carrier Info parm (#F1);
- the received TCIT indicator in the incoming IAM must be Backward (10) or Bothways (11);

If all the above conditions are met, then the behavior depends on which of the following two conditions are met: -

- (1) if the last sub-block of the received #F1 parm is IEC, and this received IEC Carrier ID is the same as the datafill in ofcparm TELCO\_ID or the SUB\_TELCO\_ID datafill in table IAACtrl, then the behavior is like:

|                    |                                                                                                                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CarrierID sub-parm | No Change                                                                                                                                                                                           |
| POI-CA sub-parm    | no change (even if EXIT_POI_CA is datafilled)                                                                                                                                                       |
| POI-CAT sub-parm   | if received, the ENTRY_POI_CAT, if datafilled, overwrites the received one; the received EXIT_POI_CAT is not changed;<br><br>if not received, this sub-parm is added if EXIT_POI_CAT is datafilled; |

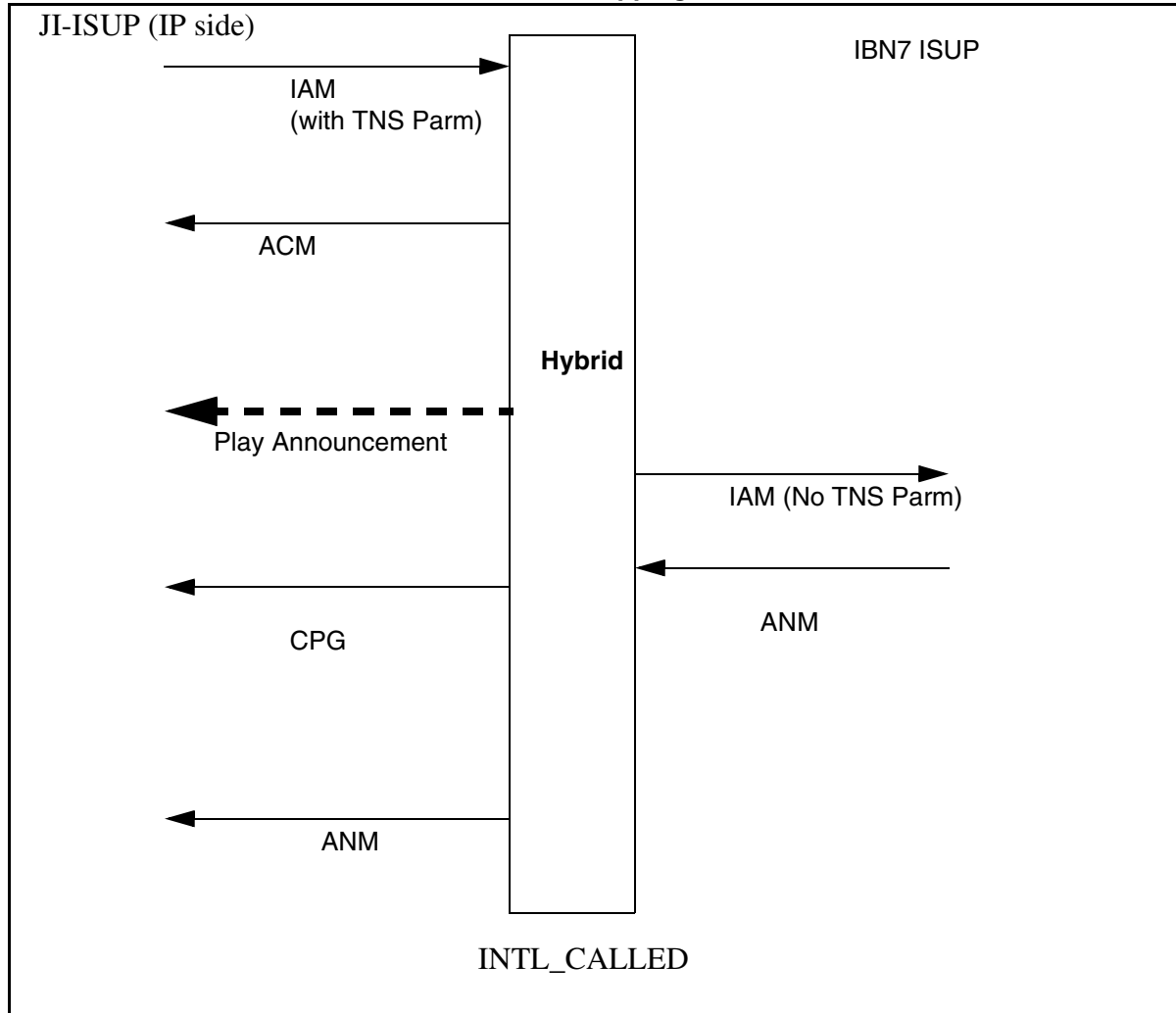
(2) if the Carrier ID in the last sub-block of the received #F1 parm is not the same as the datafill in ofcparm TELCO\_ID or the SUB\_TELCO\_ID datafill in table IAACTRL, then the behavior is like:

|                    |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| CarrierID sub-parm | taken from ofcparm TELCO_ID or SUB_TELCO_ID datafill in table IAACTRL     |
| POI-CA sub-parm    | added only if EXIT_POI_CA is datafilled                                   |
| POI-CAT sub-parm   | added if (EXIT_POI_CAT) OR (EXIT_POI_CAT and ENTRY_POI_CAT) is datafilled |

### Handling IBN7 ISUP Fast ANM

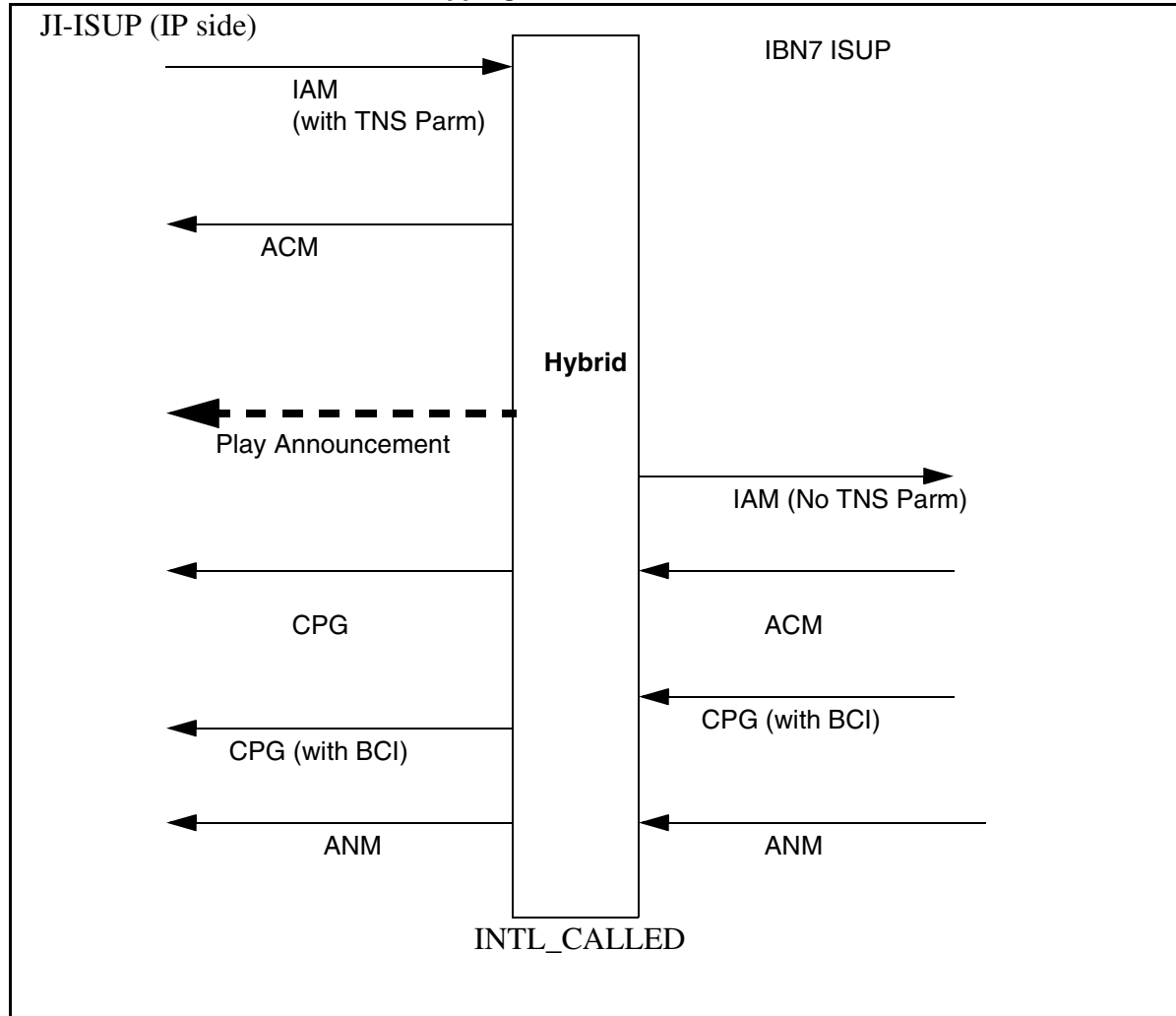
IBN7 ISUP fast ANM to JI-ISUP ACM/ANM mapping is enhanced to JI-ISUP CPG/ANM mapping. The call flow refers to [“CNN IBN7 ISUP Fast ANM to JI-ISUP CPG/ANM mapping” on page 447](#).

If the fast ANM with no charge and ANM (NOCHG) mapping feature is turned off, ANM is just mapped to CPG and no ANM is sent out. The IAA parameters of the INTL\_CALLED exchange will be added to CPG. Except this, the mapping is not impacted.

**CNN IBN7 ISUP Fast ANM to JI-ISUP CPG/ANM mapping****IBN7 ISUP to JI-ISUP BCI of CPG Mapping**

After the first CPG is sent back to JI-ISUP side, if there is a CPG with BCI is received from IBN7 ISUP side, it is mapped to CPG which has BCI in JI-ISUP side. The BCI mapping rule is the same as BCI of ACM to BCI of CPG mapping. The rule please refers to RS section of A59017299 table 52 "Parameter Mapping - ANSI7+ ISUP ACM to JI-ISUP ACM".

Please refer to the following figure.

**IBN7 ISUP to JI-ISUP BCI of CPG mapping****Account Code (ACCT)****Functional Overview**

“Account Code” service enables the subscriber to enter an account code during the call setup in order to classify the call on the customer’s bill.

The hybrid checks the customer group (CUSTGRP) and the network class of service (NCOS) to see if an account code is required on this call. If it is, the hybrid sends back second dial tone or announcement to prompt the subscriber to enter an account code. The hybrid receives the account code digits as DTMF tones over the voice path.

When entering the account code, the subscriber has the option to enter the reset digit (\*). This causes all account code digits entered by the subscriber during the present stage of dialing to be ignored. Accompanying the ‘\*’ is a reset tone,

to prompt the subscriber to begin re-entering the required digits where the first digit dialed breaks the reset tone.

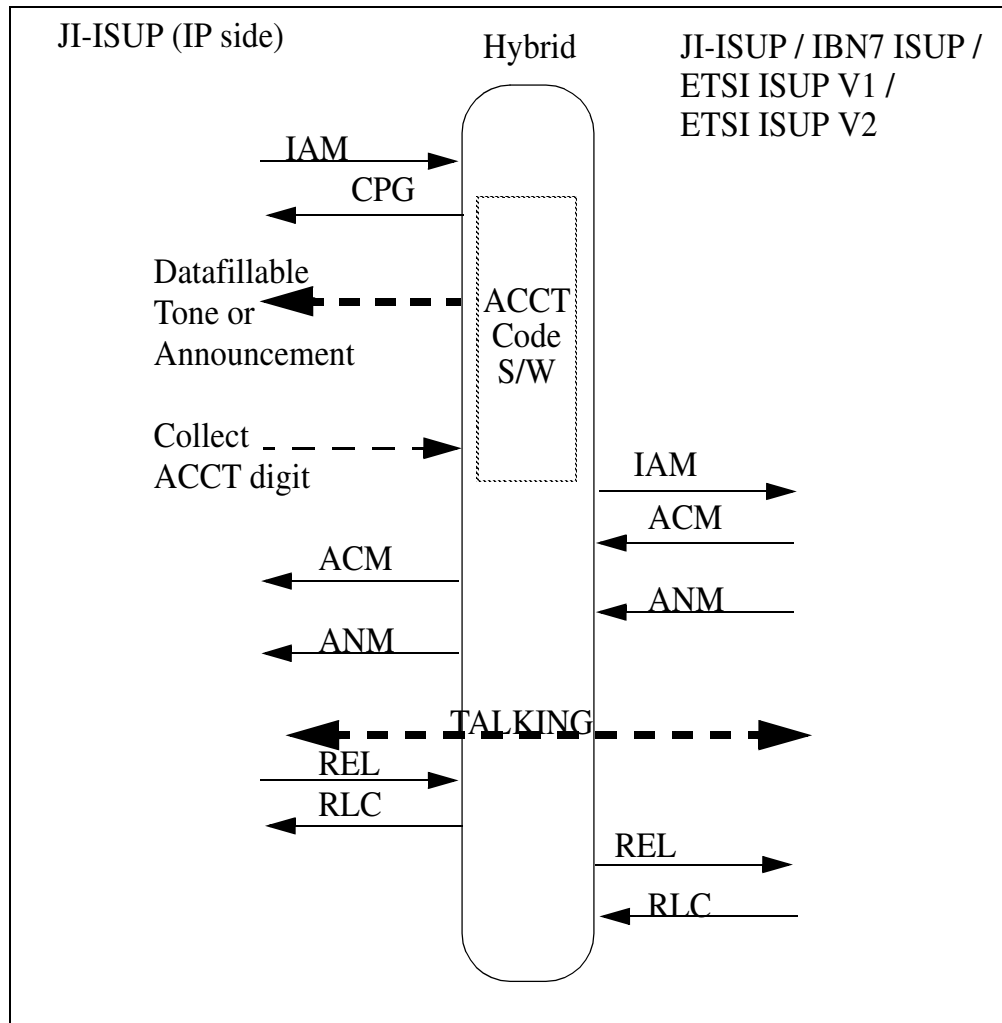
Once the account code digits are entered, the hybrid checks to see if the required number of digits has been entered and the call continues. The entered account code digits will be contained in the AMA billing record.

If the subscriber enters the hash (#) during the dialing phase it is treated as end of dialing. At this point, if the minimum required number of digits has been collected, the call proceeds to the next phase of call processing.

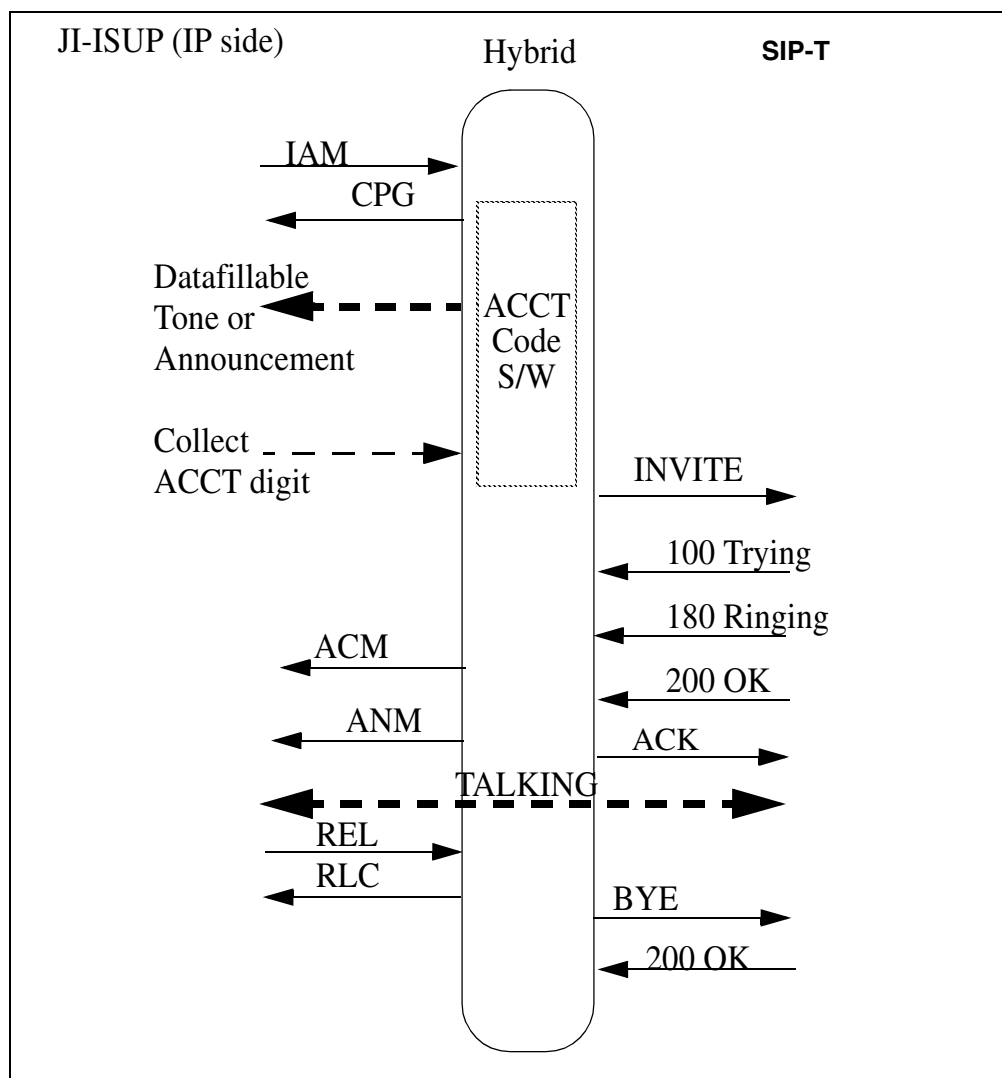
ACCT is supported in following interworking scenarios on hybrid by this activity:

- JI-ISUP -> JI-ISUP
- JI-ISUP -> IBN7 ISUP
- JI-ISUP -> ETSI ISUP V1
- JI-ISUP -> ETSI ISUP V2
- JI-ISUP -> SIP-T (JI-ISUP)
- JI-ISUP -> SIP-T (No ISUP to IMS)

Please refer to “[ACCT Interworking with ISUP Functional Behavior Diagram](#)” on page 450 and “[ACCT Interworking with SIP-T Functional Behavior Diagram](#)” on page 451.

**ACCT Interworking with ISUP Functional Behavior Diagram**

ACCT Interworking with SIP-T Functional Behavior Diagram



### Reset Tone

When entering the account code, the subscriber has the option to enter the reset digit (\*). This causes all account code digits entered by the subscriber during the present stage of dialing to be ignored and "Reset tone" is played. This tone is stopped when first digit is received or reset tone duration is time out.

The specification of reset tone is shown in the following table.

**Specification of Reset tone**

| <b>Tone</b>                                       | <b>Single Frequency</b> | <b>Cadence</b> | <b>Duration</b> | <b>Level</b>          |
|---------------------------------------------------|-------------------------|----------------|-----------------|-----------------------|
| Reset Tone<br>(for reset of the digit collection) | 400 Hz                  | Constant       | (0.5 second)    | -16 dBmO<br>+/-0.5 dB |

**Tone/Announcement Handling**

The JI-ISUP agent, on receipt of the first digit, handles the tone/announcement in the following fashion:

- 0 - 9, '\*' - Tone/Announcement stopped
- '#' - Tone stopped/Announcement continues

**Effect On Permanent Signal Timer**

If digit 0 through 9 is entered as a first digit then the permanent signal timer is stopped, and the interdigit timer is used to collect the remaining digits.

If '\*' or '#' is entered as the first digit the handling of the permanent signal timer is shown in the following table.

**Account Code Handling of First Digit**

| <b>Digit Entered</b> | <b>Perm Signal Timer</b> |
|----------------------|--------------------------|
| * (asterisk)         | restarted                |
| #(octothorpe)        | restarted                |

**Interworking between JI-ISUP and ETSI ISUP V1**

Following interworkings are provided in this feature:

- JI-ISUP (NATL) to ETSI ISUP V1 (INTL)
- ETSI ISUP V1 (INTL) to JI-ISUP (NATL)

Because ETSI ISUP V1 trunk is an international trunk which is datafilled as INTL in table TRKGRP, and JI-ISUP trunk is a national trunk which is datafilled as NATL in table TRKGRP, the gateway supporting the interworking is regarded as an international gateway.

In this feature, the message and parameter mappings for above interworkings in the international gateway is handled based on the Q.767 specification (Application of CCITT ISUP for international ISDN interconnectios). All of



messages and parameters which are not supported in Q.767 are not supported in this feature.

Detail mappings are described in Appendix B.

## Hardware Requirements or Dependencies

Announcement hardware UAS needs to be present in Hybrid.

## Software Requirements or Dependencies

N/A

## Limitations and restrictions

N/A

## Interactions

Due to this activity is a migration, we don't change any code about interaction. So all the interactions are the same as the legacy MMP features.

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema N/A

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description              |
|------|--------------------------|
| ACCT | Account Code             |
| ACM  | Address Complete Message |

| Term          | Description                               |
|---------------|-------------------------------------------|
| ANM           | Answer Message                            |
| BLO           | Blocking Message                          |
| BLA           | Blocking Acknowledgement Message          |
| CIEC          | Chosen Intermediate Exchange Carrier      |
| CNN           | Carrier Name Notification                 |
| CPG           | Call Progress Message                     |
| CSM           | Channel Supervision Message (CallP)       |
| DMS           | Digital Multiplex System                  |
| DT            | Dial Tone                                 |
| ENTRY_POI_CA  | Entry Point of Interconnect - Charge Area |
| ENTRY_POI_CAT | Entry Point of Interconnect - Category    |
| EXIT_POI_CA   | Exit Point of Interconnect - Charge Area  |
| EXIT_POI_CAT  | Exit Point of Interconnect - Category     |
| IAA           | Inter Administration Accounting           |
| IAM           | Initial Address Message                   |
| IEC           | Intermediate Exchange Carrier             |
| INTL_CALLED   | International Called Carrier              |
| JI-ISUP       | Japan Interconnect ISUP                   |
| MCMP          | Media Controller Messaging Protocol       |
| MGCP          | Media Gateway Controller Protocol         |
| MMP           | Multiple Market Platform                  |
| MTM           | Maintenance Trunk Module                  |
| NCCI ISUP     | New Common Carrier Interface ISUP         |
| NTC           | Notification of Time and Charge           |
| OLEC          | Originating Local Exchange Carrier        |
| POI           | Point of Interconnect                     |
| PVG           | Passport Voice Gateway                    |
| RBT           | Ring Back Tone                            |
| REL           | Release Message                           |

| Term  | Description                        |
|-------|------------------------------------|
| RLC   | Release Complete                   |
| TCIT  | Transit Carrier Indicator          |
| TLEC  | Terminating Local Exchange Carrier |
| TLC   | Test Line Call                     |
| TMR   | Transmission Medium Requirement    |
| TNS   | Transit Network Selection          |
| TPT   | Terminal Processing Task (CallP)   |
| UAS   | Universal Audio Server             |
| UBL   | Unblocking Message                 |
| UBA   | Unblocking Acknowledgement Message |
| UUI   | User to User Information           |
| UUInd | User to User Indicator             |

## Reference

[1] Simcoe, Chris. International Succession Japan NTC. Nov 2001.  
<http://snarch.us.nortel.com/files/Architecture%20Areas/Solutions/VToIP/Solution%20Checklist/SN05/International/Information/Japan%20NTC%20on%20CS2000%20v0.1.zip>

[2] AU2343 Inter-Administration Accounting for International Carriers

## Appendix A for A00002756: Datafill Sample

%% Notification of Time and Charge (NTC)

%% For detail datafill of NTC, firstly please refer to features AR1344, AR1599,  
 %% AR1816, A59017299 and A19013564.

%% For AMA billing

TABLE OFCENG

|                       |                |
|-----------------------|----------------|
| CDR_FORMAT            | CDR_NIL_FORMAT |
| CDR_ENABLE_LOG_ALL    | N              |
| UNIVERSAL_AMA_BILLING | Y              |
| ALLOC_UNIV_EXT_BLK    | Y              |

TABLE OFCOPT

|             |   |
|-------------|---|
| LAMA_OFFICE | Y |
| SMDR_OFFICE | N |

TABLE AMAOPTS

|        |    |
|--------|----|
| LOGAMA | ON |
|--------|----|

TABLE CRSFMT

|      |         |   |        |   |   |   |
|------|---------|---|--------|---|---|---|
| AMA  | BCFMT   | N | NIL_FM | N | N | 0 |
| SMDR | SMDRFMT | N | NIL_FM | N | N | 0 |

SOC -> select group rbil

-> assign state idle to RBIL0014

-> quit

%% For announcement

TABLE CLLI

|        |     |    |             |
|--------|-----|----|-------------|
| NTCCHN | 195 | 10 | NTC_CHINESE |
|--------|-----|----|-------------|

TABLE ANNS

|        |     |    |   |   |     |    |         |
|--------|-----|----|---|---|-----|----|---------|
| NTCCHN | ALL | 25 | 0 | 1 | NTC | 10 | NTC_CHN |
|--------|-----|----|---|---|-----|----|---------|

TABLE ANNMEMS

|        |   |                  |
|--------|---|------------------|
| NTCCHN | 0 | UAS AUD 0 AUD 11 |
|--------|---|------------------|

TABLE ANNPHLST

|        |   |              |
|--------|---|--------------|
| NTCCHN | 5 | NTCCHMAN1 \$ |
|--------|---|--------------|

TABLE ANNAUDID  
NTCCHMAN1 6000

%% For Japan Market  
TABLE OFCENG  
MARKET\_OF\_OFFICE JAPAN

%% For NTC feature triggering

TABLE OFCVAR  
NTC\_XLATIONS FA NTCFTR  
NTC\_REATTEMPTS 0  
NTC\_ANNC\_CONTROL 2 2

TABLE PXCODE  
GDNTLXLA 062 062 FEATINFO NTC DUR\_ADJ 1 \$ 3 7 17 PX GDNTLXLA

TABLE NTCLANGS  
DFLT1 5 CHINESE\_NTC\_ANNOUCEMENT

TABLE DNSCRN

TABLE AREANAME

TABLE FAHEAD  
NTCFTR SDFLT NODFOP NOCON F



TABLE CHGRATE

CHN D 30 20 50 40 60 0 \$

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%% Carrier Name Notification (CNN)

TABLE ANNS

JIANNS NETWK 0 0 1 STND Y 10

TABLE ANNMEMS

JIANNS 0 UAS AUD 0 AUD 1

TABLE ANNPHLST

CNN 0 (ANN1) \$

TABLE OFCENG

CARRNAME\_ANNC Y

TABLE OFCVAR

ACTIVATE\_OMEF N

TABLE CARRNAME

111111 JIANNS

TABLE IAACtrl

60 INTL\_CALLED \$

50 TLEC \$

40 IEC (TCIT NOTSENT) (ENTRY\_POI\_CAT LEVEL\_2) (EXIT\_POI\_CAT LEVEL\_1) (ENTRY\_POI\_CA  
VALUE 1234) (EXIT\_POI\_CA VALUE 5555) \$

30 CIEC (SUB\_TELCO\_ID 6666) \$

TABLE PXCODE

GDNTXLA2 872 872 RTE (PF 3) (MM 3 19) (DEST 870) (CARRANNC) (IAA 30) \$

TABLE PXHEAD

```
GDNTXLA2 DFLT FEATINFO CALLCHAR (CPGCGIND CI_CHARGE)$ 0 6 22 PX GDNTXLA2 NODFOP NOCON
STD
```

[illegible]

```
%% Account Code (ACCT)
```

TABLE CUSTHEAD

PRADEFAULT PRAXLA NDGT NIL (VACTRMT 0) (EXTNCOS 0) (ACCT 4 N N N N) (SUPERCNF ) (ACR  
ACCT 1) (ACRANN ACCTANNC) \$

TABLE NCOS

PRADefault 0 PRAD 0 0 (ACR N) \$

TABLE IBNXLA

PRAXLA 441 NET Y Y 0 N CSDIG N Y DOD N CSIDXA CSGRPA CS\_NIL NONE \$

TABLE ISERVOPT

ACCTCODE ACCTCODE Y

TABLE OFCVAR

DIG\_COL\_MAX\_RESETS 3

```
RESET_TONE_DURATION_160MS 3
```

TABLE: OFCENG

LN\_PERM\_SIG\_TIME 125

LN\_SHORT\_PARTIAL\_DIAL\_TIME 25



TABLE IBNTREAT

PRAEFAULT 1 N S FAILACCT

TABLE AMAOPTS

CDAR ON

TRMTID\_CAPTURE ON

## Appendix B for A00002756: Mappings between JI-ISUP and ETSI ISUP V1

### JI-ISUP to ETSI ISUP V1 Interworking

#### JI-ISUP to ETSI ISUP V1 Message Mappings

| JI-ISUP Messages | Trigger Direction<br>(Table reference) | ETSI ISUP V1 Messages |
|------------------|----------------------------------------|-----------------------|
| IAM              | =><br>(Table )                         | IAM                   |
| ACM              | <=<br>(Table )                         | ACM                   |
| ANM              | <=<br>(Table )                         | ANM                   |
| ACM<br>ANM       | <=<br>(Table )                         | CON                   |
| REL              | =><br>(Table )                         | REL                   |
| RLC              | <=<br>(Table )                         | No trigger            |
| SUS/RES          | <=<br>(Table )                         | SUS/RES               |
| REL              | <=<br>(Table )                         | REL                   |
| No trigger       | =><br>(Table )                         | RLC                   |
| CPG              | <=<br>(Table )                         | CPG                   |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                      |                               | JI-ISUP IAM                                           | dir | ETSI ISUP V1 IAM                                                                                |                                         |                      |
|----------------------|-------------------------------|-------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------|
| Parameter            | Field                         | Field Value                                           | =>  | Field Value                                                                                     | Field                                   | Parameter            |
| Nature of Connection | Satellite Indicator           | 0 0: No satellite cct. in connection                  | =>  | 0 0: No Satellite cct.                                                                          | Satellite Indicator <sup>a</sup>        | Nature of Connection |
|                      |                               | 0 1: One satellite cct. in connection.                |     | 0 1: One satellite cct.                                                                         |                                         |                      |
|                      |                               | 1 0: Two satellite cct. in connection.                |     | 1 0: Two satellite cct.                                                                         |                                         |                      |
|                      |                               | 1 1: Spare                                            |     |                                                                                                 |                                         |                      |
|                      | Continuity Check Indicator    | 00 - continuity check not required                    | =>  | 00 - continuity check not required                                                              | Continuity Check Indicator <sup>a</sup> |                      |
|                      |                               | 01 - continuity check required                        |     | 10 - continuity check performed on a previous circuit                                           |                                         |                      |
|                      |                               | 10 - continuity check performed on a previous circuit |     |                                                                                                 |                                         |                      |
|                      |                               | 11 - spare                                            |     | 00 - continuity check not required                                                              |                                         |                      |
|                      | Echo Control Device Indicator | 0 - outgoing half echo control device not included    | =>  | If TMR is set to 00 or 03, it will be mapped to 1. If TMR is set to 02, it will be mapped to 0. | Echo Control Device Indicator           |                      |
|                      |                               | 1 - outgoing half echo control device included        |     |                                                                                                 |                                         |                      |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                        |                                       | JI-ISUP IAM                                     | dir | ETSI ISUP V1 IAM                                                           |                                                  |                        |
|------------------------|---------------------------------------|-------------------------------------------------|-----|----------------------------------------------------------------------------|--------------------------------------------------|------------------------|
| Parameter              | Field                                 | Field Value                                     | =>  | Field Value                                                                | Field                                            | Parameter              |
| Forward Call Indicator | National/International Call Indicator | 0 - call to be treated as a national call       | =>  | Value based on the settings of CLASS field in translations                 | National/International Call Indicator            | Forward Call Indicator |
|                        |                                       | 1 - call to be treated as an international call | =>  | 1 - call to be treated as an international call                            |                                                  |                        |
|                        | End-to-End Method Indicator           | 00 - no end-to-end method available             | =>  | 00 - no end-to-end method available                                        | End-to-End Method Indicator                      |                        |
|                        |                                       | 01-11 spare                                     | =>  |                                                                            |                                                  |                        |
|                        | Interworking Indicator                | 0 - no interworking encountered                 | =>  | 0 - no interworking encountered                                            | Interworking Indicator                           |                        |
|                        |                                       | 1 - interworking encountered                    | =>  | 1 - interworking encountered                                               |                                                  |                        |
|                        | End-to-End Information Indicator      | 0 - no end-to-end information available         | =>  | 0 - no end-to-end information available                                    | End-to-End Information Indicator                 |                        |
|                        |                                       | 1 - spare                                       | =>  |                                                                            |                                                  |                        |
|                        | ISDN User Part Indicator              | 0 - ISDN user part not used all the way         | =>  | 0 - ISDN user part not used all the way                                    | ISDN User Part Indicator                         |                        |
|                        |                                       | 1 - ISDN user part used all the way             | =>  | 1 - ISDN user part used all the way                                        |                                                  |                        |
|                        | ISDN User Part Preference Indicator   | 00 - ISDN user part preferred all the way       | =>  | Please refer to “ ISUP Preference Indicator Parameter Coding” on page 471. | ISDN User Part Preference Indicator <sup>a</sup> |                        |
|                        |                                       | 01 - ISDN user part not required all the way    | =>  |                                                                            |                                                  |                        |
|                        |                                       | 10 - ISDN user part required all the way        | =>  |                                                                            |                                                  |                        |
|                        |                                       | 11 - spare                                      | =>  | Release the call.                                                          |                                                  |                        |
|                        | ISDN Access Indicator                 | 0 - origination access non-ISDN                 | =>  | 0 - origination access non-ISDN                                            | ISDN Access Indicator                            |                        |
|                        |                                       | 1 - origination access ISDN                     | =>  | 1 - origination access ISDN                                                |                                                  |                        |
|                        | SCCP Method Indicator                 | 00 - no indication                              | =>  | 00 - no indication                                                         | SCCP Method Indicator                            |                        |
|                        |                                       | 01-11 spare                                     | =>  |                                                                            |                                                  |                        |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                        |       | JI-ISUP IAM                                                                                                                             | dir | ETSI ISUP V1 IAM                       |                        |           |
|------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------------------|------------------------|-----------|
| Parameter              | Field | Field Value                                                                                                                             | =>  | Field Value                            | Field                  | Parameter |
| Calling Party category |       | 00000000 - CPC unknown                                                                                                                  |     | 00001010 - ordinary calling subscriber | Calling Party category |           |
|                        |       | 00000001 - spare<br>00000010 - spare<br>00000011 - spare<br>00000100 - spare<br>00000101 - spare                                        | =>  | 00000000 - CPC unknown                 |                        |           |
|                        |       | 00001110 - By mutual agreement<br>00000111 - By mutual agreement<br>00001000 - By mutual agreement<br>00001001 - national operator desk | =>  | 00001010 - ordinary calling subscriber |                        |           |
|                        |       | 00001010 - ordinary calling subscriber                                                                                                  | =>  | 00001010 - ordinary calling subscriber |                        |           |
|                        |       | 00001011 - calling subscriber with priority                                                                                             | =>  | 00000000 - CPC unknown                 |                        |           |
|                        |       | 00001100 - data call                                                                                                                    | =>  | 00000000 - CPC unknown                 |                        |           |
|                        |       | 00001101 - test call                                                                                                                    | =>  | 00001101 - test call                   |                        |           |
|                        |       | 00001111 - payphone                                                                                                                     | =>  | 00001111 - payphone                    |                        |           |
|                        |       | 00010000-11110000 spare                                                                                                                 | =>  | 00001010 - ordinary calling subscriber |                        |           |
|                        |       | 11110001-11111110 reserved for national use<br>11111111 - spare                                                                         | =>  | 00001010 - ordinary calling subscriber |                        |           |

**Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM**

|                                       |       | JI-ISUP IAM                            | dir | ETSI ISUP V1 IAM                    |                              |               |
|---------------------------------------|-------|----------------------------------------|-----|-------------------------------------|------------------------------|---------------|
| Param<br>eter                         | Field | Field Value                            | =>  | Field Value                         | Field                        | Param<br>eter |
| Transmission<br>Medium<br>Requirement |       | 00000000 - Speech                      | =>  | 00000000 - speech                   | User Services<br>Information |               |
|                                       |       | 00000001 - spare                       | =>  | Call is released.                   |                              |               |
|                                       |       | 00000010 - 64kbit/s<br>Unrestricted    | =>  | 00000010 - 64kbit/s<br>Unrestricted |                              |               |
|                                       |       | 00000011 - 3.1 kHz Audio               | =>  | 00000011 - 3.1 kHz Audio            |                              |               |
|                                       |       | 00000100 - Alt speech                  | =>  | Call is released.                   |                              |               |
|                                       |       | 00000101 - Alt 64K                     | =>  |                                     |                              |               |
|                                       |       | 00000110 - 64K pref                    | =>  |                                     |                              |               |
|                                       |       | 00000111 - spare                       | =>  |                                     |                              |               |
|                                       |       | 00001000 - 384kbit/s unre-<br>stricted | =>  |                                     |                              |               |
|                                       |       | 00001001-11111111 spare                | =>  |                                     |                              |               |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                     |                                   | JI-ISUP IAM                                           | dir | ETSI ISUP V1 IAM                                                                             |                                   |                                  |
|---------------------|-----------------------------------|-------------------------------------------------------|-----|----------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------|
| Parameter           | Field                             | Field Value                                           | =>  | Field Value                                                                                  | Field                             | Parameter                        |
| Called Party Number | Odd/Even Indicator                | 0 - even number of address signals                    | =>  | 0 - even number of address signals                                                           | Odd/Even Indicator                | Called Party Number <sup>b</sup> |
|                     |                                   | 1 - odd number of address signals                     | =>  | 1 - odd number of address signals                                                            |                                   |                                  |
|                     | Nature of Address Indicator       | 0000000 - spare                                       | =>  | Release the call                                                                             | Nature of Address Indicator       |                                  |
|                     |                                   | 0000001 - subscriber's number                         | =>  |                                                                                              |                                   |                                  |
|                     |                                   | 0000010 - reserved for national use                   | =>  |                                                                                              |                                   |                                  |
|                     |                                   | 0000011 - National number                             | =>  | 0000011 - National number                                                                    |                                   |                                  |
|                     |                                   | 0000100 - International number                        | =>  | Release the call                                                                             |                                   |                                  |
|                     |                                   | 0000101-1101111 spare                                 | =>  |                                                                                              |                                   |                                  |
|                     |                                   | 1110000-1111101 reserved for national use             | =>  |                                                                                              |                                   |                                  |
|                     |                                   | 1111110 - peculiar number of network                  | =>  | 0000011 - National number                                                                    |                                   |                                  |
|                     |                                   | 1111111 - spare                                       | =>  | Release the call                                                                             |                                   |                                  |
|                     | Internal Network Number Indicator | 0 - routing to an internal network number allowed     | =>  | 0 - routing to an internal network number allowed                                            | Internal Network Number Indicator |                                  |
|                     |                                   | 1 - routing to an internal network number not allowed | =>  |                                                                                              |                                   |                                  |
|                     | Numbering Plan Indicator          | 000 - spare                                           | =>  | 001 - ISDN numbering plan (default)<br>(datafilled as ALL_NPI in table TRKSGRP of both trks) | Numbering Plan Indicator          |                                  |
|                     |                                   | 001 - ISDN numbering plan                             | =>  |                                                                                              |                                   |                                  |
|                     |                                   | 010-111 spare                                         | =>  |                                                                                              |                                   |                                  |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                     |                 | JI-ISUP IAM    | dir | ETSI ISUP V1 IAM                                                                                            |                 |                     |
|---------------------|-----------------|----------------|-----|-------------------------------------------------------------------------------------------------------------|-----------------|---------------------|
| Parameter           | Field           | Field Value    | =>  | Field Value                                                                                                 | Field           | Parameter           |
| Called Party Number | Address Signals | 0000 - digit 0 | =>  | map as it is                                                                                                | Address Signals | Called Party Number |
|                     |                 | 0001 - digit 1 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0010 - digit 2 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0011 - digit 3 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0100 - digit 4 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0101 - digit 5 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0110 - digit 6 | =>  |                                                                                                             |                 |                     |
|                     |                 | 0111 - digit 7 | =>  |                                                                                                             |                 |                     |
|                     |                 | 1000 - digit 8 | =>  |                                                                                                             |                 |                     |
|                     |                 | 1001 - digit 9 | =>  |                                                                                                             |                 |                     |
|                     |                 | 1111 - ST      | =>  | Treatment is set and call is released if these values are received.                                         |                 |                     |
|                     |                 | 1010 - spare   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1011 - code 11 | =>  |                                                                                                             |                 |                     |
|                     |                 | 1100 - code 12 | =>  |                                                                                                             |                 |                     |
|                     |                 | 1101 - spare   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1110 - spare   | =>  |                                                                                                             |                 |                     |
|                     | Filter          |                | =>  | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filter          |                     |

**Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM**

|                      |                                           | JI-ISUP IAM                               | dir | ETSI ISUP V1 IAM          |                                           |                      |
|----------------------|-------------------------------------------|-------------------------------------------|-----|---------------------------|-------------------------------------------|----------------------|
| Parameter            | Field                                     | Field Value                               | =>  | Field Value               | Field                                     | Parameter            |
| Calling Party Number | Odd/Even Indicator                        | 0 - even number of address signals        | =>  | Set as required           | Odd/Even Indicator                        | Calling Party Number |
|                      |                                           | 1 - odd number of address signals         | =>  |                           |                                           |                      |
|                      | Nature of Address Indicator               | 0000000 - spare                           | =>  | 0000011 - National number | Nature of Address Indicator               |                      |
|                      |                                           | 0000001 - subscriber's number             | =>  |                           |                                           |                      |
|                      |                                           | 0000010 - reserved for national use       | =>  |                           |                                           |                      |
|                      |                                           | 0000011 - National number                 | =>  |                           |                                           |                      |
|                      |                                           | 0000100 - International number            | =>  |                           |                                           |                      |
|                      |                                           | 0000101-1101111 spare                     | =>  |                           |                                           |                      |
|                      |                                           | 1110000-1111101 reserved for national use | =>  |                           |                                           |                      |
|                      |                                           | 1111110 - peculiar number of network      | =>  |                           |                                           |                      |
|                      |                                           | 1111111 - spare                           | =>  |                           |                                           |                      |
|                      | Calling Party Number Incomplete Indicator | 0 - complete                              | =>  | 0 - complete              | Calling Party Number Incomplete Indicator |                      |
|                      |                                           | 1 - incomplete                            | =>  |                           |                                           |                      |



## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                       |                                           | JI-ISUP IAM                             | dir                   | ETSI ISUP V1 IAM                        |                                           |                      |
|-----------------------|-------------------------------------------|-----------------------------------------|-----------------------|-----------------------------------------|-------------------------------------------|----------------------|
| Parameter             | Field                                     | Field Value                             | =>                    | Field Value                             | Field                                     | Parameter            |
| Calling Party Number  | Numbering Plan Indicator                  | 000 - spare                             | =>                    | CGPN is discarded                       | Numbering Plan Indicator                  | Calling Party Number |
|                       |                                           | 001 - ISDN numbering plan               | =>                    | 001 - ISDN numbering plan               |                                           |                      |
|                       |                                           | 010-111 spare                           | =>                    | CGPN is discarded                       |                                           |                      |
|                       | Address Presentation Restricted Indicator | 00 - presentation allowed               | =>                    | 00 - presentation allowed               | Address Presentation Restricted Indicator |                      |
|                       |                                           | 01 - presentation restricted            | =>                    | 01 - presentation restricted            |                                           |                      |
|                       |                                           | 10 - address not available              | =>                    | 00 - presentation allowed               |                                           |                      |
|                       |                                           | 11 - spare                              | =>                    |                                         |                                           |                      |
|                       | Screening Indicator                       | 00 - spare                              | =>                    | 01 - user provided, verified and passed | Screening Indicator                       |                      |
|                       |                                           | 01 - user provided, verified and passed | =>                    |                                         |                                           |                      |
|                       |                                           | 10 - reserved                           | =>                    |                                         |                                           |                      |
| 11 - network provided |                                           | =>                                      | 11 - network provided |                                         |                                           |                      |

## Parameter Mapping - JI-ISUP IAM to ETSI ISUP V1 IAM

|                      |                 | JI-ISUP IAM    | dir | ETSI ISUP V1 IAM                                                                                            |                 |                                   |
|----------------------|-----------------|----------------|-----|-------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------|
| Parameter            | Field           | Field Value    | =>  | Field Value                                                                                                 | Field           | Parameter                         |
| Calling Party Number | Address Signals | 0000 - digit 0 | =>  | map as it is                                                                                                | Address Signals | Calling Party Number <sup>b</sup> |
|                      |                 | 0001 - digit 1 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0010 - digit 2 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0011 - digit 3 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0100 - digit 4 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0101 - digit 5 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0110 - digit 6 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 0111 - digit 7 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1000 - digit 8 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1001 - digit 9 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1010 - spare   | =>  | Treatment is set and call is released if these values are received.                                         |                 |                                   |
|                      |                 | 1011 - code 11 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1100 - code 12 | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1101 - spare   | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1110 - spare   | =>  |                                                                                                             |                 |                                   |
|                      |                 | 1111 - spare   | =>  |                                                                                                             |                 |                                   |
|                      | Filter          |                | =>  | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filter          |                                   |
| Access Transport     |                 |                | =>  | Access Transport                                                                                            |                 |                                   |
| Generic Number       |                 |                | =>  | Discarded                                                                                                   |                 |                                   |
| All other parameters |                 |                | =>  | Discarded                                                                                                   |                 |                                   |

a. This value is encoded based on incoming information and existing datafill. Datafill may result in values other than those shown.

b. Fields within this parameter will be set based on translations unless there is only one possible value for that field.

**ISUP Preference Indicator Parameter Coding**

| Information Field                    | JI-ISUP -->                                          | ETSI ISUP V1 | JI-ISUP -->                                          | ETSI ISUP V1 |
|--------------------------------------|------------------------------------------------------|--------------|------------------------------------------------------|--------------|
| <b>Supplementary Service</b>         | <b>None (No UII, ATP or CLIP present in the IAM)</b> |              | <b>Any (UII, ATP and/or CLIP present in the IAM)</b> |              |
| <b>(Applies to messages: IAM)</b>    | <b>Bits</b>                                          | <b>Bits</b>  | <b>Bits</b>                                          | <b>Bits</b>  |
| <u>ISUP Preferred</u>                | <u>HG</u>                                            | <u>HG</u>    | <u>HG</u>                                            | <u>HG</u>    |
| For Bearer Service = Speech          | 00                                                   | 01           | 00                                                   | 00           |
| For Bearer Service = 3.1 kHz Aud.    | 00                                                   | 01           | 00                                                   | 00           |
| For Bearer Service = 64k Unres.      | 00                                                   | 00           | 00                                                   | 00           |
| <u>ISUP Not Required All The Way</u> | <u>HG</u>                                            | <u>HG</u>    | <u>HG</u>                                            | <u>HG</u>    |
| For Bearer Service = Speech          | 01                                                   | 01           | 01                                                   | 00           |
| For Bearer Service = 3.1 kHz Aud.    | 01                                                   | 01           | 01                                                   | 00           |
| For Bearer Service = 64k Unres.      | 01                                                   | 00           | 01                                                   | 00           |
| <u>ISUP Required All The Way</u>     | <u>HG</u>                                            | <u>HG</u>    | <u>HG</u>                                            | <u>HG</u>    |
| For Bearer Service = Speech          | 10                                                   | 01           | 10                                                   | 00           |
| For Bearer Service = 3.1 kHz Aud.    | 10                                                   | 01           | 10                                                   | 00           |
| For Bearer Service = 64k Unres.      | 10                                                   | 00           | 10                                                   | 00           |

## Parameter Mapping - ETSI ISUP V1 ACM to JI-ISUP ACM

|                           |                                         | JI-ISUP ACM                         | dir                                     | ETSI ISUP V1 ACM                           |                                   |                          |
|---------------------------|-----------------------------------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------------|--------------------------|
| Parameter                 | Field                                   | Field Value                         | <=                                      | Field Value                                | Field                             | Parameter                |
| Backward Call Indicators  | Charge Indicator                        | 00 - No Indication                  | <=                                      | 00 - No Indication                         | Charge Indicator                  | Backward Call Indicators |
|                           |                                         | 01 - No Charge                      | <=                                      | 01 - No Charge                             |                                   |                          |
|                           |                                         | 10 - Charge                         | <=                                      | 10 - Charge                                |                                   |                          |
|                           |                                         | 10 - Charge                         | <=                                      | 11 - Spare                                 |                                   |                          |
|                           | Called Party's Status Indicator         | 00 - no Indication                  | <=                                      | 00 - no Indication                         | Called Party's Status Indicator   |                          |
|                           |                                         | 01 - subscriber free                | <=                                      | 01 - subscriber free                       |                                   |                          |
|                           |                                         | 00 - no indication                  | <=                                      | 10 - connect when free                     |                                   |                          |
|                           |                                         | 00 - no indication (default)        | <=                                      | 11 - spare                                 |                                   |                          |
|                           | Called Party's Category Indicator       | 00 - no indication                  | <=                                      | 00 - no indication                         | Called Party's Category Indicator |                          |
|                           |                                         | 01 - ordinary subscriber            | <=                                      | 01 - ordinary subscriber                   |                                   |                          |
|                           |                                         | 10 - payphone                       | <=                                      | 10 - payphone                              |                                   |                          |
|                           |                                         | 00 - no indication (default)        | <=                                      | 11 - spare                                 |                                   |                          |
|                           | End-to-End Method Indicator             | 00 - no end-to-end method available | <=                                      | 00 - no end-to-end method available        | End-to-End Method Indicator       |                          |
|                           |                                         |                                     |                                         | 01 - pass along method available           |                                   |                          |
|                           |                                         |                                     |                                         | 10 - SCCP method available                 |                                   |                          |
|                           |                                         |                                     |                                         | 11 - SCCP and Pass along methods available |                                   |                          |
| Inter-working Indicator   | 0 - no interworking encountered         | <=                                  | 0 - no interworking encountered         | Inter-working Indicator                    |                                   |                          |
|                           | 1 - interworking encountered            | <=                                  | 1 - interworking encountered            |                                            |                                   |                          |
| End-to-End Info Indicator | 0 - no end-to-end information available | <=                                  | 0 - no end-to-end information available | End-to-End Info Indicator                  |                                   |                          |
|                           |                                         | <=                                  | 1 - end-to-end information available    |                                            |                                   |                          |

**Parameter Mapping - ETSI ISUP V1 ACM to JI-ISUP ACM**

|                                        |                                        | JI-ISUP ACM                                                                                     | dir | ETSI ISUP V1 ACM                                   |                                        |                                        |
|----------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------|-----|----------------------------------------------------|----------------------------------------|----------------------------------------|
| Para<br>meter                          | Field                                  | Field Value                                                                                     | <=  | Field Value                                        | Field                                  | Para<br>meter                          |
| Back<br>ward<br>Call<br>Indica<br>tors | ISDN User<br>Part Indi-<br>cator       | 0 - ISDN user part not used all the way                                                         | <=  | 0 - ISDN user part not used all the way            | ISDN User<br>Part Indi-<br>cator       | Back<br>ward<br>Call<br>Indica<br>tors |
|                                        |                                        | 1 - ISDN user part used all the way                                                             | <=  | 1 - ISDN user part used all the way                |                                        |                                        |
|                                        | Holding<br>Indicator                   | 0 - holding not requested                                                                       | <=  | 0 - holding not required                           | Holding<br>Indicator                   |                                        |
|                                        |                                        |                                                                                                 |     | 1 - holding required                               |                                        |                                        |
|                                        | SCCP<br>Method<br>Indicator            | 00 - no indication                                                                              | <=  | 00 to 11 - any value                               | SCCP<br>Method<br>Indicator            |                                        |
|                                        | ISDN<br>Access<br>Indicator            | 0 - terminating access non-ISDN                                                                 | <=  | 0 - terminating access non-ISDN                    | ISDN<br>Access<br>Indicator            |                                        |
|                                        |                                        | 1 - terminating access ISDN                                                                     | <=  | 1 - terminating access ISDN                        |                                        |                                        |
|                                        | Echo<br>Control<br>Device<br>Indicator | If TMR is set to 00 or 03, it will be mapped to 1. If TMR is set to 02, it will be mapped to 0. | <=  | 0 - incoming half echo control device not included | Echo<br>Control<br>Device<br>Indicator |                                        |
|                                        |                                        |                                                                                                 | <=  | 1 - incoming half echo control device included     |                                        |                                        |

## Parameter Mapping - ETSI ISUP V1 ACM to JI-ISUP ACM

|                  |                           | JI-ISUP ACM                                                  | dir | ETSI ISUP V1 ACM                               |                           |                  |
|------------------|---------------------------|--------------------------------------------------------------|-----|------------------------------------------------|---------------------------|------------------|
| Parameter        | Field                     | Field Value                                                  | <=  | Field Value                                    | Field                     | Parameter        |
| Cause Indicators | Coding Standard           | 00 - CCITT                                                   | <=  | 00 - CCITT                                     | Coding Standard           | Cause Indicators |
|                  |                           |                                                              | <=  | All other values                               |                           |                  |
|                  | Location                  | 0000 - user                                                  | <=  | 0000 - user                                    | Location                  |                  |
|                  |                           | 0101 - private network serving the remote user               | <=  | 0001 - private network serving the local user  |                           |                  |
|                  |                           | 0100 - public network serving the remote user                | <=  | 0010 - public network serving the local user   |                           |                  |
|                  |                           | 0011 - transit network                                       | <=  | 0011 - transit network                         |                           |                  |
|                  |                           | 0100 - public network serving the remote user                | <=  | 0100 - public network serving the remote user  |                           |                  |
|                  |                           | 0101 - private network serving the remote user               | <=  | 0101 - private network serving the remote user |                           |                  |
|                  |                           | 0111 - international network                                 | <=  | 0111 - international network                   |                           |                  |
|                  |                           | 1010 - network beyond interworking point                     | <=  | 1010 - network beyond interworking point       |                           |                  |
|                  |                           | 0111 - international network                                 | <=  | All other values                               |                           |                  |
|                  | Cause Value               | Please refer to “ Cause Value Parameter Coding” on page 476. | <=  | value                                          | Cause Value               |                  |
|                  | Extension Indicator       | 1 - Last Octet                                               | <=  | 0 - octet continues thru the next octet        | Extension Indicator       |                  |
|                  |                           |                                                              | <=  | 1 - Last Octet                                 |                           |                  |
|                  | Recommendation( Octet 1a) | Octet Discarded                                              | <=  | All Values                                     | Recommendation( Octet 1a) |                  |
| Access Transport |                           | transit without alteration                                   | <=  | Access Transport                               |                           |                  |
| discarded        |                           |                                                              | <=  | User to User Information                       |                           |                  |

## Parameter Mapping - ETSI ISUP V1 ACM to JI-ISUP ACM

|                                   |                                     | JI-ISUP ACM                                                        | dir | ETSI ISUP V1 ACM                                                    |                                     |                                   |
|-----------------------------------|-------------------------------------|--------------------------------------------------------------------|-----|---------------------------------------------------------------------|-------------------------------------|-----------------------------------|
| Parameter                         | Field                               | Field Value                                                        | <=  | Field Value                                                         | Field                               | Parameter                         |
| Optional Backward Call Indicators | In-band Information indicator       | 1 - in band information or an appropriate pattern is now available | <=  | 0 - no indication                                                   | In-band Information indicator       | Optional Backward Call Indicators |
|                                   |                                     |                                                                    | <=  | 1 - in band information or an appropriate pattern is now available  |                                     |                                   |
|                                   | Call Forwarding May Occur indicator | 0 - no indication                                                  | <=  | 0 - no indication                                                   | Call Forwarding May Occur indicator |                                   |
|                                   |                                     |                                                                    | <=  | 1 - call diversion may occur                                        |                                     |                                   |
|                                   | Simple Segmentation Indicator       | 0 - No Additional Information will be sent                         | <=  | 0 - No Additional Information will be sent                          | Simple Segmentation Indicator       |                                   |
|                                   |                                     |                                                                    | <=  | 1 - Additional Information will be sent in the segmentation message |                                     |                                   |
| discarded                         |                                     |                                                                    | <=  | Call Reference                                                      |                                     |                                   |
| discarded                         |                                     |                                                                    | <=  | Connection Request                                                  |                                     |                                   |
| discarded                         |                                     |                                                                    | <=  | Information Indicator                                               |                                     |                                   |
| discarded                         |                                     |                                                                    | <=  | Redirection Information                                             |                                     |                                   |
| Carrier Information Transport     |                                     |                                                                    | <=  | No equivalent                                                       |                                     |                                   |
| Charge Area Information           |                                     |                                                                    | <=  | No equivalent                                                       |                                     |                                   |
| Charge Information Type           |                                     |                                                                    | <=  | No equivalent                                                       |                                     |                                   |
| Charge Information                |                                     |                                                                    | <=  | No equivalent                                                       |                                     |                                   |

## Cause Value Parameter Coding

| Information Field                 | JI-ISUP -> ETSI V1 |                 | ETSI V1 -> JI-ISUP |                 |
|-----------------------------------|--------------------|-----------------|--------------------|-----------------|
| (Applies to ACM, REL)             | Bits               | Bits            | Bits               | Bits            |
| <u>Cause Values</u>               | <u>G-A</u>         | <u>G-A</u>      | <u>G-A</u>         | <u>G-A</u>      |
| <b>Normal Event</b>               | <b>00X XXXX</b>    | <b>00X XXXX</b> | <b>00X XXXX</b>    | <b>00X XXXX</b> |
| Unallocated Number                | 000 0001           | 000 0001        | 000 0001           | 000 0001        |
| No route to destination           | 000 0011           | 000 0011        | 000 0011           | 000 0011        |
| Send Special Information Tone     | 000 0100           | 000 0100        | 000 0100           | 000 0100        |
| Qor ported                        | 000 1110           | 0001110         | 000 1110           | 000 1110        |
| Normal Call Clearing              | 001 0000           | 001 0000        | 001 0000           | 001 0000        |
| User Busy                         | 001 0001           | 001 0001        | 001 0001           | 001 0001        |
| No Response From Called User      | 001 0010           | 001 0010        | 001 0010           | 001 0010        |
| No ans. from user (user alerted)  | 001 0011           | 001 0011        | 001 0011           | 001 0011        |
| Subscriber Absent                 | 001 0100           | 001 0100        | 0010100            | 001 0100        |
| Call Rejected                     | 001 0101           | 001 0101        | 001 0101           | 001 0101        |
| Number changed                    | 001 0110           | 001 0110        | 001 0110           | 001 0110        |
| Destination out of order          | 001 1011           | 001 1011        | 001 1011           | 001 1011        |
| Address Incomplete                | 001 1100           | 001 1100        | 001 1100           | 001 1100        |
| Facility Reject                   | 001 1101           | 001 1101        | 001 1101           | 001 1101        |
| Apply locally                     |                    |                 | 001 1110           | 001 1111        |
| Normal, Unspecified               | 001 1111           | 001 1111        | 001 1111           | 001 1111        |
| All other values in this category | Other values       | 001 1111        | Other Values       | Tandem          |



## Cause Value Parameter Coding

| Information Field                      | JI-ISUP -> ETSI V1 |                 | ETSI V1 -> JI-ISUP |                 |
|----------------------------------------|--------------------|-----------------|--------------------|-----------------|
| (Applies to ACM, REL)                  | Bits               | Bits            | Bits               | Bits            |
| <u>Cause Values</u>                    | <u>G-A</u>         | <u>G-A</u>      | <u>G-A</u>         | <u>G-A</u>      |
| <b>Resource unavailable</b>            | <b>010 XXXX</b>    | <b>010 XXXX</b> | <b>010 XXXX</b>    | <b>010 XXXX</b> |
| Circuit Congestion                     | 010 0010           | 010 0010        | 010 0010           | 010 0010        |
| Network out of order                   | 010 0110           | 010 0110        | 010 0110           | 010 0110        |
| Temporary Failure                      | 010 1001           | 010 1001        | 010 1001           | 010 1001        |
| Switching Equipment Failure            | 010 1010           | 010 1010        | 010 1010           | 010 1010        |
| Requested channel not avail.           | 010 1100           | 010 1100        | 010 1100           | 010 1100        |
| Preemption                             |                    |                 | 010 1101           | 111 1111        |
| No preemption ckt avail                |                    |                 | 010 1110           | 111 1111        |
| Resource unavailable                   | 010 1111           | 010 1111        | 010 1111           | 010 1111        |
| All Other values in this category      | Other Values       | 010 1111        | Other values       | Tandem          |
| <b>Service or option not available</b> | <b>011 XXXX</b>    | <b>011 XXXX</b> | <b>011 XXXX</b>    | <b>011 XXXX</b> |
| Req'sted facility, not subscribed      | 011 0010           | 011 1111        |                    |                 |
| Bearer capability not authorized       | 011 1001           | 011 1001        | 011 1001           | 011 1001        |
| Bearer Cap. not presently avail.       | 011 1010           | 011 1010        | 011 1010           | 011 1010        |
| Serv./opt. not avail - unspec          | 011 1111           | 011 1111        | 011 1111           | 011 1111        |
| All Other values in this category      | Other Values       | 011 1111        | Other Values       | Tandem          |
| <b>Service option not implemented</b>  | <b>100 XXXX</b>    | <b>100 XXXX</b> | <b>100 XXXX</b>    | <b>100 XXXX</b> |
| Bearer Capability Not Implmtd          | 100 0001           | 100 0001        | 100 0001           | 100 0001        |
| Chnl type not impl                     |                    |                 | 100 0010           | 100 1111        |
| Svc./opt. not avail - unspec'd         | 100 1111           | 100 1111        | 100 1111           | 100 1111        |
| All Other values in this category      | Other Values       | 100 1111        | Other Values       | Tandem          |

## Cause Value Parameter Coding

| Information Field                 | JI-ISUP -> ETSI V1 |                 | ETSI V1 -> JI-ISUP |                 |
|-----------------------------------|--------------------|-----------------|--------------------|-----------------|
| (Applies to ACM, REL)             | Bits               | Bits            | Bits               | Bits            |
| <u>Cause Values</u>               | <u>G-A</u>         | <u>G-A</u>      | <u>G-A</u>         | <u>G-A</u>      |
| <b>Invalid message</b>            | <b>101 XXXX</b>    | <b>101 XXXX</b> | <b>101 XXXX</b>    | <b>101 XXXX</b> |
| Inv call ref value                |                    |                 | 101 0001           | 101 1111        |
| Bearer capability not authorized  | 101 0111           | 101 0111        |                    |                 |
| Incompatible destination          | 101 1000           | 101 1000        | 101 1000           | 101 1000        |
| Invalid message - unspecified     | 101 1111           | 101 1111        | 101 1111           | 101 1111        |
| All Other values in this category | Other Values       | 101 1111        | Other Values       | Tandem          |
| <b>Protocol error</b>             | <b>110 XXXX</b>    | <b>110 XXXX</b> | <b>110 XXXX</b>    | <b>110 XXXX</b> |
| Inv parm contents                 |                    |                 | 110 0100           | 110 1111        |
| Recovery on Timer Expiry          | 110 0110           | 110 0110        | 110 0110           | 110 0110        |
| Protocol error - unspecified      | 110 1111           | 110 1111        | 110 1111           | 110 1111        |
| All Other values in this category | Other Values       | 110 1111        | Other Values       | Tandem          |
| <b>Interworking</b>               | <b>111 XXXX</b>    | <b>111 XXXX</b> | <b>111 XXXX</b>    | <b>111 XXXX</b> |
| Interworking Unspecified          | 111 1111           | 111 1111        | 111 1111           | 111 1111        |
| All Other values in this category | Other Values       | 111 1111        | Other Values       | Tandem          |

Parameter Mapping - ETSI ISUP V1 ANM/CON<sup>a</sup> to JI-ISUP ANM

|                                        |                                            | JI-ISUP ANM                                | dir | ETSI ISUP V1 ANM/CON                          |                                            |                                        |
|----------------------------------------|--------------------------------------------|--------------------------------------------|-----|-----------------------------------------------|--------------------------------------------|----------------------------------------|
| Para<br>meter                          | Field                                      | Field Value                                | <=  | Field Value                                   | Field                                      | Para<br>meter                          |
| Back<br>ward<br>Call<br>Indica<br>tors | Charge<br>Indicator                        | 10 - Charge                                | <=  | 00 - No Indication                            | Charge<br>Indicator                        | Back<br>ward<br>Call<br>Indic<br>ators |
|                                        |                                            | 01 - No Charge                             | <=  | 01 - No Charge                                |                                            |                                        |
|                                        |                                            | 10 - Charge                                | <=  | 10 - Charge                                   |                                            |                                        |
|                                        |                                            | 10 - Charge                                | <=  | 11 - Spare                                    |                                            |                                        |
|                                        | Called<br>Party's<br>Status<br>Indicator   | 00 - no Indication                         | <=  | 00 - no Indication                            | Called<br>Party's<br>Status<br>Indicator   |                                        |
|                                        |                                            | 01 - subscriber free                       | <=  | 01 - subscriber free                          |                                            |                                        |
|                                        |                                            | 00 - no indication                         | <=  | other values                                  |                                            |                                        |
|                                        | Called<br>Party's<br>Category<br>Indicator | 01 - ordinary subscriber                   | <=  | 00 - no indication                            | Called<br>Party's<br>Category<br>Indicator |                                        |
|                                        |                                            | 01 - ordinary subscriber                   | <=  | 01 - ordinary subscriber                      |                                            |                                        |
|                                        |                                            | 10 - payphone                              | <=  | 10 - payphone                                 |                                            |                                        |
|                                        |                                            | 01 - ordinary subscriber                   | <=  | 11 - spare                                    |                                            |                                        |
|                                        | End-to-<br>End<br>Method<br>Indicator      | 00 - no end-to-end method<br>available     | <=  | 00 - no end-to-end method<br>available        | End-to-<br>End<br>Method<br>Indicator      |                                        |
|                                        |                                            |                                            |     | 01 - pass along method<br>available           |                                            |                                        |
|                                        |                                            |                                            |     | 10 - SCCP method available                    |                                            |                                        |
|                                        |                                            |                                            |     | 11 - SCCP and Pass along<br>methods available |                                            |                                        |
|                                        | Inter-<br>working<br>Indicator             | 0 - no interworking<br>encountered         | <=  | 0 - no interworking<br>encountered            | Inter-<br>working<br>Indicator             |                                        |
|                                        |                                            | 1 - interworking<br>encountered            | <=  | 1 - interworking encountered                  |                                            |                                        |
|                                        | End-to-<br>End Info<br>Indicator           | 0 - no end-to-end<br>information available | <=  | 0 - no end-to-end<br>information available    | End-to-<br>End Info<br>Indicator           |                                        |
|                                        |                                            |                                            | <=  | 1 - end-to-end information<br>available       |                                            |                                        |

**Parameter Mapping - ETSI ISUP V1 ANM/CON<sup>a</sup> to JI-ISUP ANM**

|                                        |                                        | JI-ISUP ANM                                                                                     | dir                                            | ETSI ISUP V1 ANM/CON                               |                                        |                                        |
|----------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------|----------------------------------------|----------------------------------------|
| Para<br>meter                          | Field                                  | Field Value                                                                                     | <=                                             | Field Value                                        | Field                                  | Para<br>meter                          |
| Back<br>ward<br>Call<br>Indica<br>tors | ISDN User<br>Part Indi-<br>cator       | 0 - ISDN user part not used all the way                                                         | <=                                             | 0 - ISDN user part not used all the way            | ISDN User<br>Part Indi-<br>cator       | Back<br>ward<br>Call<br>Indic<br>ators |
|                                        |                                        | 1 - ISDN user part used all the way                                                             | <=                                             | 1 - ISDN user part used all the way                |                                        |                                        |
|                                        | Holding<br>Indicator                   | 0 - holding not requested                                                                       | <=                                             | 0 - holding not required                           | Holding<br>Indicator                   |                                        |
|                                        |                                        |                                                                                                 |                                                | 1 - holding required                               |                                        |                                        |
|                                        | SCCP<br>Method<br>Indicator            | 00 - no indication                                                                              | <=                                             | 00 to 11 - any value                               | SCCP<br>Method<br>Indicator            |                                        |
|                                        | ISDN<br>Access<br>Indicator            | 0 - terminating access non-ISDN                                                                 | <=                                             | 0 - terminating access non-ISDN                    | ISDN<br>Access<br>Indicator            |                                        |
|                                        |                                        | 1 - terminating access ISDN                                                                     | <=                                             | 1 - terminating access ISDN                        |                                        |                                        |
|                                        | Echo<br>Control<br>Device<br>Indicator | If TMR is set to 00 or 03, it will be mapped to 1. If TMR is set to 02, it will be mapped to 0. | <=                                             | 0 - incoming half echo control device not included | Echo<br>Control<br>Device<br>Indicator |                                        |
| <=                                     |                                        |                                                                                                 | 1 - incoming half echo control device included |                                                    |                                        |                                        |
| Access<br>Transport                    |                                        | transit without alteration                                                                      | <=                                             | Access Transport                                   |                                        |                                        |
| discarded                              |                                        |                                                                                                 | <=                                             | User to User Information                           |                                        |                                        |
| discarded                              |                                        |                                                                                                 | <=                                             | Call Reference                                     |                                        |                                        |
| discarded                              |                                        |                                                                                                 | <=                                             | Connection Request                                 |                                        |                                        |
| discarded                              |                                        |                                                                                                 | <=                                             | Information Indicator                              |                                        |                                        |
| discarded                              |                                        |                                                                                                 | <=                                             | all other parameters                               |                                        |                                        |

a. CON is mapped to a ACM and a ANM message. The ACM has the same BCI parameter as ANM.

## Parameter Mapping - JI-ISUP REL to ETSI ISUP V1 REL

|                             |                               | JI-ISUP REL                                    | dir | ETSI ISUP V1 REL                                             |                               |                  |
|-----------------------------|-------------------------------|------------------------------------------------|-----|--------------------------------------------------------------|-------------------------------|------------------|
| Parameter                   | Field                         | Field Value                                    | =>  | Field Value                                                  | Field                         | Parameter        |
| Cause Indicators            | Coding Standard               | All values                                     | =>  | 00 - CCITT                                                   | Coding Standard               | Cause Indicators |
|                             | Location                      | 0000 - user                                    | =>  | 0000 - user                                                  | Location                      |                  |
|                             |                               | 0001 - private network serving the local user  | =>  | 0101 - private network serving the remote user               |                               |                  |
|                             |                               | 0010 - public network serving the local user   | =>  | 0111 - international network                                 |                               |                  |
|                             |                               | 0011 - transit network                         | =>  | 0011 - transit network                                       |                               |                  |
|                             |                               | 0100 - public network serving the remote user  | =>  | 0100 - public network serving the remote user                |                               |                  |
|                             |                               | 0101 - private network serving the remote user | =>  | 0101 - private network serving the remote user               |                               |                  |
|                             |                               | 0111 - international network                   | =>  | 0111 - international network                                 |                               |                  |
|                             |                               | 1010 - network beyond interworking point       | =>  | 1010 - network beyond interworking point                     |                               |                  |
|                             |                               | All other values                               | =>  | 1010 - network beyond interworking point                     |                               |                  |
|                             | Cause Value                   | value                                          | =>  | Please refer to “ Cause Value Parameter Coding” on page 476. | Cause Value                   |                  |
|                             | Extension Indicator           | All Values                                     | =>  | 1 - Last Octet                                               | Extension Indicator           |                  |
|                             | Recommendation(Octet 1a)      | All Values                                     | =>  | Octet Discarded                                              | Recommendation(Octet 1a)      |                  |
|                             | Extension Indicator(Octet 1a) | All Values                                     | =>  | Octet Discarded                                              | Extension Indicator(Octet 1a) |                  |
| User to User Information    |                               |                                                | =>  | No mapping                                                   |                               |                  |
| Redirection Number          |                               |                                                | =>  | No mapping                                                   |                               |                  |
| Domestic Redirection Reason |                               |                                                | =>  | No mapping                                                   |                               |                  |



## Parameter Mapping - ETSI ISUP V1 REL to JI-ISUP REL

|                  |                               | JI-ISUP REL                                                  | dir | ETSI ISUP V1 REL                               |                               |                  |
|------------------|-------------------------------|--------------------------------------------------------------|-----|------------------------------------------------|-------------------------------|------------------|
| Parameter        | Field                         | Field Value                                                  | <=  | Field Value                                    | Field                         | Parameter        |
| Cause Indicators | Coding Standard               | 00 - CCITT                                                   | <=  | All Values                                     | Coding Standard               | Cause Indicators |
|                  | Location                      | 0000 - user                                                  | <=  | 0000 - user                                    | Location                      |                  |
|                  |                               | 0101 - private network serving the remote user               | <=  | 0001 - private network serving the local user  |                               |                  |
|                  |                               | 0100 - public network serving the remote user                | <=  | 0010 - public network serving the local user   |                               |                  |
|                  |                               | 0011 - transit network                                       | <=  | 0011 - transit network                         |                               |                  |
|                  |                               | 0100 - public network serving the remote user                | <=  | 0100 - public network serving the remote user  |                               |                  |
|                  |                               | 0101 - private network serving the remote user               | <=  | 0101 - private network serving the remote user |                               |                  |
|                  |                               | 0111 - international network                                 | <=  | 0111 - international network                   |                               |                  |
|                  |                               | 0111 - international network                                 | <=  | all other values                               |                               |                  |
|                  | Cause Value                   | Please refer to “ Cause Value Parameter Coding” on page 476. | <=  | value                                          | Cause Value                   |                  |
|                  | Extension Indicator           | 1 - Last Octet                                               | <=  | All Values                                     | Extension Indicator           |                  |
|                  | Recommendation(Octet 1a)      | Octet Discarded                                              | <=  | All Values                                     | Recommendation(Octet 1a)      |                  |
|                  | Extension Indicator(Octet 1a) | Octet Discarded                                              | <=  | All Values                                     | Extension Indicator(Octet 1a) |                  |
| Discarded        |                               |                                                              | <=  | Access Transport                               |                               |                  |
| no mapping       |                               |                                                              | <=  | User to User Information                       |                               |                  |
| no mapping       |                               |                                                              | <=  | Automatic congestion level                     |                               |                  |
| no mapping       |                               |                                                              | <=  | All other parameters                           |                               |                  |

## Parameter Mapping - JI-ISUP CPG to ETSI ISUP V1 CPG

|                          |                                         | JI-ISUP CPG                                                           | dir | ETSI ISUP V1 CPG                                                      |                                         |                   |
|--------------------------|-----------------------------------------|-----------------------------------------------------------------------|-----|-----------------------------------------------------------------------|-----------------------------------------|-------------------|
| Parameter                | Field                                   | Field Value                                                           | <=  | Field Value                                                           | Field                                   | Parameter         |
| Event Information        | Event Indication                        | 0000010 - PROGRess                                                    | <=  | 0000000 - spare                                                       | Event Indication                        | Event Information |
|                          |                                         | 0000001 - ALERTing                                                    |     | 0000001 - ALERTing                                                    |                                         |                   |
|                          |                                         | 0000010 - PROGRess                                                    |     | 0000010 - PROGRess                                                    |                                         |                   |
|                          |                                         | 0000011 - In-band information or appropriate pattern is now available |     | 0000011 - In-band information or appropriate pattern is now available |                                         |                   |
|                          |                                         | 0000100 - call forwarded on busy                                      |     | 0000100 - call forwarded on busy                                      |                                         |                   |
|                          |                                         | 0000101 - call forwarded on no reply                                  |     | 0000101 - call forwarded on no reply                                  |                                         |                   |
|                          |                                         | 0000110 - call forwarded unconditional                                |     | 0000110 - call forwarded unconditional                                |                                         |                   |
|                          |                                         | 0000010 - PROGRess                                                    |     | 0000111 to 1111111 - spare                                            |                                         |                   |
|                          | Event presentation restricted indicator | 0 - no indication                                                     | <=  | 0 - no indication                                                     | Event presentation restricted indicator |                   |
|                          |                                         |                                                                       |     | 1 - presentation restricted                                           |                                         |                   |
| Access Transport         |                                         |                                                                       | <=  | Access Transport                                                      |                                         |                   |
| User to User Information |                                         |                                                                       | <=  | User to User Information                                              |                                         |                   |



## ETSI ISUP V1 to JI-ISUP Interworking

### ETSI ISUP V1 to JI-ISUP Message Mappings

| ETSI ISUP V1 Messages | Trigger<br>Direction (Ref<br>Table) | JI-ISUP Messages |
|-----------------------|-------------------------------------|------------------|
| IAM                   | =><br>(Table )                      | IAM              |
| ACM                   | <=<br>(Table )                      | ACM              |
| ANM                   | <=<br>(Table )                      | ANM              |
| REL                   | =><br>(Table 1)                     | REL              |
| RLC                   | <=<br>(Table )                      | No trigger       |
| REL                   | <=<br>(Table )                      | REL              |
| No trigger            | =><br>(Table )                      | RLC              |
| SUS/RES               | <=<br>(Table )                      | SUS/RES          |
| CPG                   | <=<br>(Table )                      | CPG              |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                                     |                                        | ETSI ISUP V1 IAM                                      | dir | JI-ISUP IAM                                                                                     |                                               |                                     |
|-------------------------------------|----------------------------------------|-------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------|
| Para<br>meter                       | Field                                  | Field Value                                           | =>  | Field Value                                                                                     | Field                                         | Para<br>meter                       |
| Natur<br>e of<br>Conn<br>ectio<br>n | Satellite<br>Indicator                 | 0 0: No satellite cct. in connection                  | =>  | 0 0: No Satellite cct.                                                                          | Satellite<br>Indicator <sup>a</sup>           | Natur<br>e of<br>Conn<br>ectio<br>n |
|                                     |                                        | 0 1: One satellite cct. in connection.                | =>  | 0 1: One satellite cct.                                                                         |                                               |                                     |
|                                     |                                        | 1 0: Two satellite cct. in connection.                | =>  | 0 1: One satellite cct.                                                                         |                                               |                                     |
|                                     |                                        | 1 1: Spare                                            | =>  | 0 1: One satellite cct.                                                                         |                                               |                                     |
|                                     | Continuity<br>Check<br>Indicator       | 00 - continuity check not required                    | =>  | 00 - continuity check not required                                                              | Continuity<br>Check<br>Indicator <sup>a</sup> |                                     |
|                                     |                                        | 01 - continuity check required                        | =>  |                                                                                                 |                                               |                                     |
|                                     |                                        | 10 - continuity check performed on a previous circuit | =>  |                                                                                                 |                                               |                                     |
|                                     |                                        | 11 - spare                                            | =>  |                                                                                                 |                                               |                                     |
|                                     | Echo<br>Control<br>Device<br>Indicator | 0 outgoing half echo control device not included      | =>  | If TMR is set to 00 or 03, it will be mapped to 1. If TMR is set to 02, it will be mapped to 0. | Echo<br>Control<br>Device<br>Indicator        |                                     |
|                                     |                                        | 1 outgoing half echo control device included          | =>  |                                                                                                 |                                               |                                     |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                           |                                       | ETSI ISUP V1 IAM                                | dir | JI-ISUP IAM                                                 |                                       |                        |
|---------------------------|---------------------------------------|-------------------------------------------------|-----|-------------------------------------------------------------|---------------------------------------|------------------------|
| Para<br>meter             | Field                                 | Field Value                                     | =>  | Field Value                                                 | Field                                 | Para<br>meter          |
| Forward Call<br>Indicator | National/International Call Indicator | 0 - call to be treated as a national call       | =>  | change based on the settings of CLASS field in translations | National/International Call Indicator | Forward Call Indicator |
|                           |                                       | 1 - call to be treated as an international call | =>  |                                                             |                                       |                        |
|                           | End-to-End Method Indicator           | 00 - no end-to-end method available             | =>  | 00 - no end-to-end method available                         | End-to-End Method Indicator           |                        |
|                           |                                       | 01-11 spare                                     | =>  |                                                             |                                       |                        |
|                           | Interworking Indicator                | 0 - no interworking encountered                 | =>  | 0 - no interworking encountered                             | Interworking Indicator                |                        |
|                           |                                       | 1 - interworking encountered                    | =>  | 1 - interworking encountered                                |                                       |                        |
|                           | End-to-End Information Indicator      | 0 - no end-to-end information available         | =>  | 0 - no end-to-end information available                     | End-to-End Information Indicator      |                        |
|                           |                                       | 1 - spare                                       | =>  |                                                             |                                       |                        |
|                           | ISDN User Part Indicator              | 0 - ISDN user part not used all the way         | =>  | 0 - ISDN user part not used all the way                     | ISDN User Part Indicator              |                        |
|                           |                                       | 1 - ISDN user part used all the way             | =>  | 1 - ISDN user part used all the way                         |                                       |                        |
|                           | ISDN User Part Preference Indicator   | 00 - ISDN user part preferred all the way       | =>  | 00 - ISDN user part preferred all the way                   | ISDN User Part Preference Indicator   |                        |
|                           |                                       | 01 - ISDN user part not required all the way    | =>  | 01 - ISDN user part not required all the way                |                                       |                        |
|                           |                                       | 10 - ISDN user part required all the way        | =>  | 10 - ISDN user part required all the way                    |                                       |                        |
|                           |                                       | 11 - spare                                      | =>  | Release the call                                            |                                       |                        |
|                           | ISDN Access Indicator                 | 0 - origination access non-ISDN                 | =>  | 0 - origination access non-ISDN                             | ISDN Access Indicator                 |                        |
|                           |                                       | 1 - origination access ISDN                     | =>  | 1 - origination access ISDN                                 |                                       |                        |
|                           | SCCP Method Indicator                 | 00 - no indication                              | =>  | 00 - no indication                                          | SCCP Method Indicator                 |                        |
|                           |                                       | 01-11 spare                                     | =>  |                                                             |                                       |                        |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                                       |       | ETSI ISUP V1 IAM                                 | dir | JI-ISUP IAM                                 |                                       |               |
|---------------------------------------|-------|--------------------------------------------------|-----|---------------------------------------------|---------------------------------------|---------------|
| Para<br>meter                         | Field | Field Value                                      | =>  | Field Value                                 | Field                                 | Para<br>meter |
| Calling Party<br>category             |       | 00001010 - ordinary call-<br>ing subscriber      | =>  | 00001010 - ordinary call-<br>ing subscriber | Calling Party<br>category             |               |
|                                       |       | 00001011 - calling sub-<br>scriber with priority | =>  | 00001010 - ordinary call-<br>ing subscriber |                                       |               |
|                                       |       | 00001101 - test call                             | =>  | 00001101 - test call                        |                                       |               |
|                                       |       | 00001111 - payphone                              | =>  | 00001111 - payphone                         |                                       |               |
|                                       |       | All other values                                 | =>  | 00001010 - ordinary call-<br>ing subscriber |                                       |               |
| Transmission<br>Medium<br>Requirement |       | 00000000 - Speech                                | =>  | 00000 - speech                              | Transmission<br>Medium<br>Requirement |               |
|                                       |       | 00000010 - 64kbit/s<br>Unrestricted              | =>  | 00000010 - 64kbit/s<br>Unrestricted         |                                       |               |
|                                       |       | 00000011 - 3.1 kHz Audio                         | =>  | 00000011 - 3.1 kHz<br>Audio                 |                                       |               |
|                                       |       | 00000100 - Alt speech                            | =>  | Release the call                            |                                       |               |
|                                       |       | 00000101 - Alt 64K                               | =>  |                                             |                                       |               |
|                                       |       | 00000110 - 64K pref                              | =>  |                                             |                                       |               |
|                                       |       | All other values                                 | =>  |                                             |                                       |               |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                                   |                                            | ETSI ISUP V1 IAM                                            | dir | JI-ISUP IAM                                          |                                            |                                                                          |
|-----------------------------------|--------------------------------------------|-------------------------------------------------------------|-----|------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------|
| Para<br>meter                     | Field                                      | Field Value                                                 | =>  | Field Value                                          | Field                                      | Para<br>meter                                                            |
| Calle<br>d<br>Party<br>Num<br>ber | Odd/Even<br>Indicator                      | 0 - even number of address<br>signals                       | =>  | set as required                                      | Odd/Even<br>Indicator                      | (set<br>accor<br>ding<br>to<br>table<br>CDN<br>CHA<br>R<br>datafi<br>ll) |
|                                   |                                            | 1 - odd number of address<br>signals                        | =>  |                                                      |                                            |                                                                          |
|                                   | Nature of<br>Address<br>Indicator          | 0000011 - National num-<br>ber                              | =>  | 0000011 - National<br>number                         | Nature of<br>Address<br>Indicator          |                                                                          |
|                                   |                                            | 1111110 - peculiar number<br>of network                     | =>  |                                                      |                                            |                                                                          |
|                                   |                                            | all other values                                            | =>  |                                                      |                                            |                                                                          |
|                                   | Internal<br>Network<br>Number<br>Indicator | 0 - routing to an internal<br>network number allowed        | =>  | 0 - routing to an internal<br>network number allowed | Internal<br>Network<br>Number<br>Indicator |                                                                          |
|                                   |                                            | 1 - routing to an internal<br>network number not<br>allowed | =>  |                                                      |                                            |                                                                          |
|                                   | Numberin<br>g Plan<br>Indicator            | 000 - spare                                                 | =>  | 001 - ISDN numbering<br>plan (default)               | Numberin<br>g Plan<br>Indicator            |                                                                          |
|                                   |                                            | 001 - ISDN numbering plan                                   | =>  |                                                      |                                            |                                                                          |
|                                   |                                            | 010-111 spare                                               | =>  |                                                      |                                            |                                                                          |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                     |                 | ETSI ISUP V1 IAM | dir | JI-ISUP IAM                                                                                                 |                 |                     |
|---------------------|-----------------|------------------|-----|-------------------------------------------------------------------------------------------------------------|-----------------|---------------------|
| Parameter           | Field           | Field Value      | =>  | Field Value                                                                                                 | Field           | Parameter           |
| Called Party Number | Address Signals | 0000 - digit 0   | =>  | map as it is                                                                                                | Address Signals | Called Party Number |
|                     |                 | 0001 - digit 1   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0010 - digit 2   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0011 - digit 3   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0100 - digit 4   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0101 - digit 5   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0110 - digit 6   | =>  |                                                                                                             |                 |                     |
|                     |                 | 0111 - digit 7   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1000 - digit 8   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1001 - digit 9   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1111 - ST        | =>  | Treatment is set and call is released if these values are received.                                         |                 |                     |
|                     |                 | 1010 - spare     | =>  |                                                                                                             |                 |                     |
|                     |                 | 1011 - code 11   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1100 - code 12   | =>  |                                                                                                             |                 |                     |
|                     |                 | 1101 - spare     | =>  |                                                                                                             |                 |                     |
|                     |                 | 1110 - spare     | =>  |                                                                                                             |                 |                     |
|                     | Filter          |                  | =>  | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filter          |                     |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                                    |                                                        | ETSI ISUP V1 IAM                        | dir | JI-ISUP IAM                                                                                                                                                                                                                              |                                                        |                                    |
|------------------------------------|--------------------------------------------------------|-----------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------|
| Para<br>meter                      | Field                                                  | Field Value                             | =>  | Field Value                                                                                                                                                                                                                              | Field                                                  | Para<br>meter                      |
| Callin<br>g<br>Party<br>Num<br>ber | Odd/Even<br>Indicator                                  | 0 - even number of address<br>signals   | =>  | Set as required                                                                                                                                                                                                                          | Odd/Even<br>Indicator                                  | Callin<br>g<br>Party<br>Num<br>ber |
|                                    |                                                        | 1 - odd number of address<br>signals    | =>  |                                                                                                                                                                                                                                          |                                                        |                                    |
|                                    | Nature of<br>Address<br>Indicator                      | 0000011 - national number               | =>  | Set by hard-coded default<br>logic (if CLASS selector<br>during translation is set to<br>INTL, then NOA is set to<br>Peculiar; otherwise, NOA<br>is set to National. This<br>setting can be overwritten<br>by table TRKCGPN<br>datafill) | Nature of<br>Address<br>Indicator                      |                                    |
|                                    |                                                        | 1111110 - peculiar number<br>of network | =>  |                                                                                                                                                                                                                                          |                                                        |                                    |
|                                    |                                                        | any other value                         | =>  |                                                                                                                                                                                                                                          |                                                        |                                    |
|                                    | Calling<br>Party<br>Number<br>Incomplet<br>e Indicator | 0 - complete                            | =>  | 0 - complete                                                                                                                                                                                                                             | Calling<br>Party<br>Number<br>Incomplet<br>e Indicator |                                    |
|                                    |                                                        | 1 - incomplete                          | =>  |                                                                                                                                                                                                                                          |                                                        |                                    |
|                                    | Numberin<br>g Plan<br>Indicator                        | 000 - spare                             | =>  | CGPN is discarded                                                                                                                                                                                                                        | Numberin<br>g Plan<br>Indicator                        |                                    |
|                                    |                                                        | 001 - ISDN numbering plan               | =>  | 001 - ISDN numbering<br>plan                                                                                                                                                                                                             |                                                        |                                    |
|                                    |                                                        | 010-111 spare                           | =>  | CGPN is discarded                                                                                                                                                                                                                        |                                                        |                                    |
|                                    | Address<br>Presentati<br>on<br>Restricted<br>Indicator | 00 - presentation allowed               | =>  | 00 - presentation allowed                                                                                                                                                                                                                | Address<br>Presentati<br>on<br>Restricted<br>Indicator |                                    |
|                                    |                                                        | 01 - presentation restricted            | =>  | 01 - presentation restricted                                                                                                                                                                                                             |                                                        |                                    |
|                                    |                                                        | 10 - address not available              | =>  | 01 - presentation restricted                                                                                                                                                                                                             |                                                        |                                    |
|                                    |                                                        | 11 - spare                              | =>  |                                                                                                                                                                                                                                          |                                                        |                                    |

## Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM

|                          |                     | ETSI ISUP V1 IAM                        | dir | JI-ISUP IAM                                                                                                 |                     |                      |
|--------------------------|---------------------|-----------------------------------------|-----|-------------------------------------------------------------------------------------------------------------|---------------------|----------------------|
| Parameter                | Field               | Field Value                             | =>  | Field Value                                                                                                 | Field               | Parameter            |
| Calling Party Number     | Screening Indicator | 00 - spare                              | =>  | Discard CGPN                                                                                                | Screening Indicator | Calling Party Number |
|                          |                     | 01 - user provided, verified and passed | =>  | 01 - user provided, verified and passed                                                                     |                     |                      |
|                          |                     | 10 - reserved                           | =>  | Discard CGPN                                                                                                |                     |                      |
|                          |                     | 11 - network provided                   | =>  | 11 - network provided                                                                                       |                     |                      |
|                          | Address Signals     | 0000 - digit 0                          | =>  | map as it is                                                                                                | Address Signals     |                      |
|                          |                     | 0001 - digit 1                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0010 - digit 2                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0011 - digit 3                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0100 - digit 4                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0101 - digit 5                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0110 - digit 6                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 0111 - digit 7                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 1000 - digit 8                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 1001 - digit 9                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 1010 - spare                            | =>  | Treatment is set and call is released if these values are received.                                         |                     |                      |
|                          |                     | 1011 - code 11                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 1100 - code 12                          | =>  |                                                                                                             |                     |                      |
|                          |                     | 1101 - spare                            | =>  |                                                                                                             |                     |                      |
|                          |                     | 1110 - spare                            | =>  |                                                                                                             |                     |                      |
|                          |                     | 1111 - spare                            | =>  |                                                                                                             |                     |                      |
|                          | Filter              |                                         | =>  | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filter              |                      |
| Access Transport         |                     |                                         | =>  | Access Transport                                                                                            |                     |                      |
| User Service Information |                     |                                         | =>  | User Service Information                                                                                    |                     |                      |
| All other parameters     |                     |                                         | =>  | discarded                                                                                                   |                     |                      |



**Parameter Mapping - ETSI ISUP V1 IAM to JI-ISUP IAM**

|                       |              | <b>ETSI ISUP V1 IAM</b> | <b>dir</b>   | <b>JI-ISUP IAM</b>                   |              |                       |
|-----------------------|--------------|-------------------------|--------------|--------------------------------------|--------------|-----------------------|
| <b>Para<br/>meter</b> | <b>Field</b> | <b>Field Value</b>      | <b>=&gt;</b> | <b>Field Value</b>                   | <b>Field</b> | <b>Para<br/>meter</b> |
| <b>No equivalent</b>  |              |                         | <b>=&gt;</b> | <b>Carrier Information Transport</b> |              |                       |
| <b>No equivalent</b>  |              |                         | <b>=&gt;</b> | <b>Charge Area Information</b>       |              |                       |

a. This value is encoded based on incoming information and existing datafill. Datafill may result in values other than those shown.

## Parameter Mapping JI-ISUP ACM to ETSI ISUP V1 ACM

|                                        |                                            | ETSI ISUP V1 ACM                                 | dir | JI-ISUP ACM                                   |                                            |                                        |
|----------------------------------------|--------------------------------------------|--------------------------------------------------|-----|-----------------------------------------------|--------------------------------------------|----------------------------------------|
| Para<br>meter                          | Field                                      | Field Value                                      | <=  | Field Value                                   | Field                                      | Para<br>meter                          |
| Back<br>ward<br>Call<br>Indica<br>tors | Charge<br>Indicator                        | 00 - No Indication                               | <=  | 00 - No Indication                            | Charge<br>Indicator                        | Back<br>ward<br>Call<br>Indic<br>ators |
|                                        |                                            | 01 - No Charge                                   | <=  | 01 - No Charge                                |                                            |                                        |
|                                        |                                            | 10 - Charge                                      | <=  | 10 - Charge                                   |                                            |                                        |
|                                        |                                            | 10 - Charge (default)                            | <=  | 11 - Spare                                    |                                            |                                        |
|                                        | Called<br>Party's<br>Status<br>Indicator   | 00 - no Indication                               | <=  | 00 - no Indication                            | Called<br>Party's<br>Status<br>Indicator   |                                        |
|                                        |                                            | 01 - subscriber free                             | <=  | 01 - subscriber free                          |                                            |                                        |
|                                        |                                            | 00 - no indication                               | <=  | 10 - connect when free                        |                                            |                                        |
|                                        |                                            | 00 - no indication (default)                     | <=  | 11 - spare                                    |                                            |                                        |
|                                        | Called<br>Party's<br>Category<br>Indicator | 00 - no indication                               | <=  | 00 - no indication                            | Called<br>Party's<br>Category<br>Indicator |                                        |
|                                        |                                            | 01 - ordinary subscriber                         | <=  | 01 - ordinary subscriber                      |                                            |                                        |
|                                        |                                            | 10 - payphone                                    | <=  | 10 - payphone                                 |                                            |                                        |
|                                        |                                            | 00 - no indication (default)                     | <=  | 11 - spare                                    |                                            |                                        |
|                                        | End-to-<br>End<br>Method<br>Indicator      | 00 - no end-to-end method<br>available (default) | <=  | 00 - no end-to-end method<br>available        | End-to-<br>End<br>Method<br>Indicator      |                                        |
|                                        |                                            |                                                  | <=  | 01 - pass along method<br>available           |                                            |                                        |
|                                        |                                            |                                                  | <=  | 10 - SCCP method available                    |                                            |                                        |
|                                        |                                            |                                                  | <=  | 11 - SCCP and Pass along<br>methods available |                                            |                                        |
|                                        | Inter-<br>working<br>Indicator             | 0 - no interworking<br>encountered               | <=  | 0 - no interworking<br>encountered            | Inter-<br>working<br>Indicator             |                                        |
|                                        |                                            | 1 - interworking<br>encountered                  | <=  | 1 - interworking<br>encountered               |                                            |                                        |
|                                        | End-to-<br>End Info<br>Indicator           | 0 - no end-to-end<br>information available       | <=  | 0 - no end-to-end<br>information available    | End-to-<br>End Info<br>Indicator           |                                        |
|                                        |                                            |                                                  | <=  | 1 - end-to-end information<br>available       |                                            |                                        |
|                                        | ISDN User<br>Part Indi-<br>cator           | 0 - ISDN user part not used<br>all the way       | <=  | 0 - ISDN user part not used<br>all the way    | ISDN User<br>Part Indi-<br>cator           |                                        |
|                                        |                                            | 1 - ISDN user part used all<br>the way           | <=  | 1 - ISDN user part used all<br>the way        |                                            |                                        |

## Parameter Mapping JI-ISUP ACM to ETSI ISUP V1 ACM

|                                        |                                                                                                 | ETSI ISUP V1 ACM                                             | dir                                                | JI-ISUP ACM                                    |                             |                                        |
|----------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------|------------------------------------------------|-----------------------------|----------------------------------------|
| Para<br>meter                          | Field                                                                                           | Field Value                                                  | <=                                                 | Field Value                                    | Field                       | Para<br>meter                          |
| Back<br>ward<br>Call<br>Indica<br>tors | Holding<br>Indicator                                                                            | 0 - holding not requested                                    | <=                                                 | 0 - holding not required                       | Holding<br>Indicator        | Back<br>ward<br>Call<br>Indic<br>ators |
|                                        |                                                                                                 |                                                              | <=                                                 | 1 - holding required                           |                             |                                        |
|                                        | SCCP<br>Method<br>Indicator                                                                     | 00 - no indication                                           | <=                                                 | 00 to 11 - any value                           | SCCP<br>Method<br>Indicator |                                        |
|                                        |                                                                                                 |                                                              | <=                                                 |                                                |                             |                                        |
|                                        | ISDN<br>Access<br>Indicator                                                                     | 0 - terminating access non-ISDN                              | <=                                                 | 0 - terminating access non-ISDN                | ISDN<br>Access<br>Indicator |                                        |
|                                        |                                                                                                 | 1 - terminating access ISDN                                  | <=                                                 | 1 - terminating access ISDN                    |                             |                                        |
| Echo<br>Control<br>Device<br>Indicator | If TMR is set to 00 or 03, it will be mapped to 1. If TMR is set to 02, it will be mapped to 0. | <=                                                           | 0 - incoming half echo control device not included | Echo<br>Control<br>Device<br>Indicator         |                             |                                        |
|                                        |                                                                                                 | <=                                                           | 1 - incoming half echo control device included     |                                                |                             |                                        |
| Caus<br>e<br>Indica<br>tors            | Coding<br>Standard                                                                              | 00 - CCITT                                                   | <=                                                 | 00 - CCITT                                     | Coding<br>Standard          | Caus<br>e<br>Indic<br>ators            |
|                                        |                                                                                                 |                                                              | <=                                                 | All other values                               |                             |                                        |
|                                        | Location                                                                                        | 0000 - user                                                  | <=                                                 | 0000 - user                                    | Location                    |                                        |
|                                        |                                                                                                 | 0101 - private network serving the remote user               | <=                                                 | 0001 - private network serving the local user  |                             |                                        |
|                                        |                                                                                                 | 0111 - international network                                 | <=                                                 | 0010 - public network serving the local user   |                             |                                        |
|                                        |                                                                                                 | 0011 - transit network                                       | <=                                                 | 0011 - transit network                         |                             |                                        |
|                                        |                                                                                                 | 0100 - public network serving the remote user                | <=                                                 | 0100 - public network serving the remote user  |                             |                                        |
|                                        |                                                                                                 | 0101 - private network serving the remote user               | <=                                                 | 0101 - private network serving the remote user |                             |                                        |
|                                        |                                                                                                 | 0111 - international network                                 | <=                                                 | 0111 - international network                   |                             |                                        |
|                                        |                                                                                                 | 1010 - network beyond interworking point                     | <=                                                 | 1010 - network beyond interworking point       |                             |                                        |
|                                        |                                                                                                 | 0111 - international network                                 | <=                                                 | All other values                               |                             |                                        |
|                                        | Cause<br>Value                                                                                  | Please refer to “ Cause Value Parameter Coding” on page 476. | <=                                                 | value                                          | Cause<br>Value              |                                        |

## Parameter Mapping JI-ISUP ACM to ETSI ISUP V1 ACM

|                                                        |                                                  | ETSI ISUP V1 ACM                                                   | dir | JI-ISUP ACM                                                        |                                                  |                                                        |
|--------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------|-----|--------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------|
| Para<br>meter                                          | Field                                            | Field Value                                                        | <=  | Field Value                                                        | Field                                            | Para<br>meter                                          |
| Access Transport                                       |                                                  | transit without alteration                                         | <=  | Access Transport                                                   |                                                  |                                                        |
| Optio<br>nal<br>Back<br>ward<br>Call<br>Indica<br>tors | In-band<br>Informati<br>on<br>indicator          | 1 - in band information or an appropriate pattern is now available | <=  | 0 - no indication                                                  | In-band<br>Informati<br>on<br>indicator          | Optio<br>nal<br>Back<br>ward<br>Call<br>Indica<br>tors |
|                                                        |                                                  |                                                                    | <=  | 1 - in band information or an appropriate pattern is now available |                                                  |                                                        |
|                                                        | Call For<br>warding<br>May<br>Occur<br>indicator | 0 - no indication                                                  | <=  | 0 - no indication                                                  | Call For<br>warding<br>May<br>Occur<br>indicator |                                                        |
|                                                        |                                                  |                                                                    | <=  | 1 - call diversion may occur                                       |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | User to User Information                                           |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | User-to-User Indicator                                             |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Charge Information                                                 |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Charge Information Identification                                  |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Charge Information Delay Indicator                                 |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Additional Party's Category                                        |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Carrier Information Transport                                      |                                                  |                                                        |
| discarded                                              |                                                  |                                                                    | <=  | Charge Area Information                                            |                                                  |                                                        |

## Parameter Mapping - JI-ISUP ANM to ETSI ISUP V1 ANM

|                                        |                                                                                                          | ETSI ISUP V1 ANM                       | dir                  | JI-ISUP ANM                            |                                            |                                        |  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------|----------------------------------------|--------------------------------------------|----------------------------------------|--|
| Para<br>meter                          | Field                                                                                                    | Field Value                            | <=                   | Field Value                            | Field                                      | Para<br>meter                          |  |
| Back<br>ward<br>Call<br>Indica<br>tors | Charge<br>Indicator                                                                                      | 00 - No Indication                     | <=                   | 00 - No Indication                     | Charge<br>Indicator                        | Back<br>ward<br>Call<br>Indic<br>ators |  |
|                                        |                                                                                                          | 01 - No Charge                         | <=                   | 01 - No Charge                         |                                            |                                        |  |
|                                        |                                                                                                          | 10 - Charge                            | <=                   | 10 - Charge                            |                                            |                                        |  |
|                                        |                                                                                                          | 10 - Charge                            | <=                   | 11 - Spare                             |                                            |                                        |  |
|                                        | Called<br>Party's<br>Status<br>Indicator                                                                 | 00 - no Indication                     | <=                   | 00 - no Indication                     | Called<br>Party's<br>Status<br>Indicator   |                                        |  |
|                                        |                                                                                                          | 01 - subscriber free                   | <=                   | 01 - subscriber free                   |                                            |                                        |  |
|                                        |                                                                                                          | 00                                     | <=                   | 10                                     |                                            |                                        |  |
|                                        |                                                                                                          | 00                                     | <=                   | 11                                     |                                            |                                        |  |
|                                        | Called<br>Party's<br>Category<br>Indicator                                                               | 00 - no indication                     | <=                   | 00 - no indication                     | Called<br>Party's<br>Category<br>Indicator |                                        |  |
|                                        |                                                                                                          | 01 - ordinary subscriber               | <=                   | 01 - ordinary subscriber               |                                            |                                        |  |
|                                        |                                                                                                          | 10 - payphone                          | <=                   | 10 - payphone                          |                                            |                                        |  |
|                                        |                                                                                                          | 00 - no indication                     | <=                   | 11 - spare                             |                                            |                                        |  |
|                                        | End to<br>End<br>Method<br>Indicator                                                                     | 00 - No end to end method<br>available | <=                   | all values                             | End to<br>End<br>Method<br>Indicator       |                                        |  |
|                                        | Interworking Indicator                                                                                   |                                        |                      | <=                                     | Interworking Indicator                     |                                        |  |
|                                        | End to<br>End Info<br>available                                                                          | 0 - No end to end info<br>available    | <=                   | all values                             | End to<br>End Info<br>available            |                                        |  |
|                                        | ISDN User Part Indicator                                                                                 |                                        |                      | <=                                     | ISDN User Part Indicator                   |                                        |  |
|                                        | Holding<br>Indicator                                                                                     | 0 - holding not requested              |                      | 0 - holding not required               | Holding<br>Indicator                       |                                        |  |
|                                        |                                                                                                          |                                        | 1 - holding required |                                        |                                            |                                        |  |
| ISDN Access Indicator                  |                                                                                                          |                                        | <=                   | ISDN Access Indicator                  |                                            |                                        |  |
| Echo<br>Control<br>Device<br>Indicator | If TMR is set to 00 or 03, it<br>will be mapped to 1. If TMR<br>is set to 02, it will be<br>mapped to 0. | <=                                     | all values           | Echo<br>Control<br>Device<br>Indicator |                                            |                                        |  |
| SCCP<br>Method<br>Available            | 00 - No Indicator                                                                                        | <=                                     | All values           | SCCP<br>Method<br>Available            |                                            |                                        |  |

**Parameter Mapping - JI-ISUP ANM to ETSI ISUP V1 ANM**

|                         |              | <b>ETSI ISUP V1 ANM</b> | <b>dir</b>   | <b>JI-ISUP ANM</b>                 |              |                       |
|-------------------------|--------------|-------------------------|--------------|------------------------------------|--------------|-----------------------|
| <b>Para<br/>meter</b>   | <b>Field</b> | <b>Field Value</b>      | <b>&lt;=</b> | <b>Field Value</b>                 | <b>Field</b> | <b>Para<br/>meter</b> |
| <b>Access Transport</b> |              |                         | <b>&lt;=</b> | <b>Access Transport</b>            |              |                       |
| discarded               |              |                         | <b>&lt;=</b> | <b>User to User Information</b>    |              |                       |
| discarded               |              |                         | <b>&lt;=</b> | <b>Charge Area Information</b>     |              |                       |
| discarded               |              |                         | <b>&lt;=</b> | <b>Additional Party's Category</b> |              |                       |

**Table 1 Parameter Mapping - ETSI ISUP V1 REL to JI-ISUP REL**

|                             |                                          | ETSI ISUP V1 REL                                  | dir | JI-ISUP REL                                                        |                                          |                             |
|-----------------------------|------------------------------------------|---------------------------------------------------|-----|--------------------------------------------------------------------|------------------------------------------|-----------------------------|
| Para<br>meter               | Field                                    | Field Value                                       | =>  | Field Value                                                        | Field                                    | Para<br>meter               |
| Caus<br>e<br>Indica<br>tors | Coding<br>Standard                       | All values                                        | =>  | 00 - CCITT                                                         | Coding<br>Standard                       | Caus<br>e<br>Indic<br>ators |
|                             |                                          |                                                   | =>  |                                                                    |                                          |                             |
|                             | Location                                 | 0000 - user                                       | =>  | 0000 - user                                                        | Location                                 |                             |
|                             |                                          | 0001 - private network<br>serving the local user  | =>  | 0101 - private network<br>serving the remote user                  |                                          |                             |
|                             |                                          | 0010 - public network<br>serving the local user   | =>  | 0100 - public network<br>serving the remote user                   |                                          |                             |
|                             |                                          | 0011 - transit network                            | =>  | 0011 - transit network                                             |                                          |                             |
|                             |                                          | 0100 - public network<br>serving the remote user  | =>  | 0100 - public network<br>serving the remote user                   |                                          |                             |
|                             |                                          | 0101 - private network<br>serving the remote user | =>  | 0101 - private network<br>serving the remote user                  |                                          |                             |
|                             |                                          | 0111 - international network                      | =>  | 0111 - international network                                       |                                          |                             |
|                             |                                          | 1010 - network beyond<br>interworking point       | =>  | 1010 - network beyond<br>interworking point                        |                                          |                             |
|                             |                                          | All other values                                  | =>  | 0111 - international network                                       |                                          |                             |
|                             | Cause<br>Value                           | value                                             | =>  | Please refer to “ Cause<br>Value Parameter Coding”<br>on page 476. | Cause<br>Value                           |                             |
|                             | Extensio<br>n<br>Indicator               | All Values                                        | =>  | 1 - Last Octet                                                     | Extensio<br>n<br>Indicator               |                             |
|                             | Recomm<br>edation(<br>Octet 1a)          | All Values                                        | =>  | Octet Discarded                                                    | Recomm<br>edation(<br>Octet 1a)          |                             |
|                             | Extensio<br>n<br>Indicator(<br>Octet 1a) | All Values                                        | =>  | Octet Discarded                                                    | Extensio<br>n<br>Indicator(<br>Octet 1a) |                             |
| Access Transport            |                                          |                                                   | =>  | discarded                                                          |                                          |                             |
| User to User Information    |                                          |                                                   | =>  | discarded                                                          |                                          |                             |

**Table 1 Parameter Mapping - ETSI ISUP V1 REL to JI-ISUP REL**

|                            |       | ETSI ISUP V1 REL | dir | JI-ISUP REL |       |               |
|----------------------------|-------|------------------|-----|-------------|-------|---------------|
| Para<br>meter              | Field | Field Value      | =>  | Field Value | Field | Para<br>meter |
| Automatic congestion level |       |                  | =>  | discarded   |       |               |



## Parameter Mapping - JI-ISUP REL to ETSI ISUP V1 REL

|                  |                               | ETSI ISUP V1 REL                                             | dir | JI-ISUP REL                                    |                               |                  |
|------------------|-------------------------------|--------------------------------------------------------------|-----|------------------------------------------------|-------------------------------|------------------|
| Parameter        | Field                         | Field Value                                                  | <=  | Field Value                                    | Field                         | Parameter        |
| Cause Indicators | Coding Standard               | 00 - CCITT                                                   | <=  | All Values                                     | Coding Standard               | Cause Indicators |
|                  | Location                      | 0000 - user                                                  | <=  | 0000 - user                                    | Location                      |                  |
|                  |                               | 0101 - private network serving the remote user               | <=  | 0001 - private network serving the local user  |                               |                  |
|                  |                               | 0111 - international network                                 | <=  | 0010 - public network serving the local user   |                               |                  |
|                  |                               | 0011 - transit network                                       | <=  | 0011 - transit network                         |                               |                  |
|                  |                               | 0100 - public network serving the remote user                | <=  | 0100 - public network serving the remote user  |                               |                  |
|                  |                               | 0101 - private network serving the remote user               | <=  | 0101 - private network serving the remote user |                               |                  |
|                  |                               | 0111 - international network                                 | <=  | 0111 - international network                   |                               |                  |
|                  |                               | 1010 - Beyond an interworking point                          | <=  | 1010 - Beyond an interworking point            |                               |                  |
|                  |                               | 1010 - Beyond an interworking point                          | <=  | all other values                               |                               |                  |
|                  | Cause Value                   | Please refer to “ Cause Value Parameter Coding” on page 476. | <=  | value                                          | Cause Value                   |                  |
|                  | Extension Indicator           | 1 - Last Octet                                               | <=  | All Values                                     | Extension Indicator           |                  |
|                  | Recommendation(Octet 1a)      | Octet Discarded                                              | <=  | All Values                                     | Recommendation(Octet 1a)      |                  |
|                  | Extension Indicator(Octet 1a) | Octet Discarded                                              | <=  | All Values                                     | Extension Indicator(Octet 1a) |                  |
| discarded        |                               |                                                              | <=  | User to User Information                       |                               |                  |
| discarded        |                               |                                                              | <=  | Redirection Number                             |                               |                  |
| discarded        |                               |                                                              | <=  | Domestic Redirecting Reason                    |                               |                  |

**Parameter Mapping - JI-ISUP SUS/RES to ETSI ISUP V1 SUS/RES**

|                                                          |                                          | <b>ETSI ISUP V1 SUS/RES</b> | <b>dir</b>   | <b>JI-ISUP SUS/RES</b>   |                                          |                                                          |
|----------------------------------------------------------|------------------------------------------|-----------------------------|--------------|--------------------------|------------------------------------------|----------------------------------------------------------|
| <b>Para<br/>meter</b>                                    | <b>Field</b>                             | <b>Field Value</b>          | <b>&lt;=</b> | <b>Field Value</b>       | <b>Field</b>                             | <b>Para<br/>meter</b>                                    |
| <b>Susp<br/>end/R<br/>esum<br/>e<br/>Indica<br/>tors</b> | <b>Suspend/<br/>Resume<br/>Indicator</b> | 0 - subscriber initiated    | <b>&lt;=</b> | 0 - subscriber initiated | <b>Suspend/<br/>Resume<br/>Indicator</b> | <b>Susp<br/>end/R<br/>esum<br/>e<br/>Indic<br/>ators</b> |
|                                                          |                                          | 1 - network initiated       | <b>&lt;=</b> | 1 - network initiated    |                                          |                                                          |
|                                                          | <b>spare</b>                             | 0000000 - Hard code         | <b>&lt;=</b> | 0000000 - Hard code      | <b>spare</b>                             |                                                          |

## Parameter Mapping - JI-ISUP CPG to ETSI ISUP V1 CPG

|                              |                                                      | ETSI ISUP V1 CPG                                                            | dir | JI-ISUP CPG                                                                 |                                                      |                              |
|------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------|------------------------------------------------------|------------------------------|
| Para<br>meter                | Field                                                | Field Value                                                                 | <=  | Field Value                                                                 | Field                                                | Para<br>meter                |
| Event<br>Infor<br>matio<br>n | Event<br>Indication                                  | Discard CPG                                                                 | <=  | 0000000 - spare                                                             | Event<br>Indication                                  | Event<br>Infor<br>matio<br>n |
|                              |                                                      | 0000001 - ALERTing                                                          |     | 0000001 - ALERTing                                                          |                                                      |                              |
|                              |                                                      | 0000010 - PROGress                                                          |     | 0000010 - PROGress                                                          |                                                      |                              |
|                              |                                                      | 0000011 - In-band<br>information or appropriate<br>pattern is now available |     | 0000011 - In-band<br>information or appropriate<br>pattern is now available |                                                      |                              |
|                              |                                                      | Discard CPG                                                                 |     | 0000100 - call forwarded on<br>busy                                         |                                                      |                              |
|                              |                                                      |                                                                             |     | 0000101 - call forwarded on<br>reply                                        |                                                      |                              |
|                              |                                                      |                                                                             |     | 0000110 - call forwarded<br>unconditional                                   |                                                      |                              |
|                              |                                                      |                                                                             |     | 0000111 - generic<br>notification to terminating<br>user                    |                                                      |                              |
|                              |                                                      |                                                                             |     | 0001000 to 1111111 -<br>spare                                               |                                                      |                              |
|                              | Event<br>presentati<br>on<br>restricted<br>indicator | 0 - no indication                                                           | <=  | 0 - no indication                                                           | Event<br>presentati<br>on<br>restricted<br>indicator |                              |
|                              |                                                      |                                                                             |     | 1 - presentation restricted                                                 |                                                      |                              |
|                              | Discarded                                            |                                                                             |     | <=                                                                          | Cause Indicator                                      |                              |
| Access Transport             |                                                      |                                                                             | <=  | Access Transport                                                            |                                                      |                              |
| Discarded                    |                                                      |                                                                             | <=  | User to User Information                                                    |                                                      |                              |

***Product = CS 2000***

**A00002884 -- ETSI BRI Preset Conference Service Interactions (Succession on DMS)**

## ***Functional Description***

The activity “ETSI BRI Preset conference service interactions” allows the interworking for preset conference on BRI with the supplementary services indicated in “Preset Conference for BRI Supplementary Services” specification document.

Activity A00002884 is a continuation of activity A00002367 “BRI Preset conference base” which is based on the existing IBN Preset Conference and uses the same datafill requirements and restrictions for IBN Preset conference.

The implementation of this activity has no impact on the supplementary services current working behavior.

### **Provisioning of BRI Preset Conference**

BRI Preset Conference allows an ETSI BRI (point-to-multipoint) station or ETSI ISUP V2 trunk to set up a preset conference with up to 35 conferees by dialling a specific directory number. This invokes simultaneous ringing of preselected conference members. To be able to activate this activity, PRECONF, CUSTENG tables should be datafilled.

In table CUSTENG, the customer group of the originator should have ‘CONF6C’ option to allow the conference to be activatable. CUSTENG table datafill example is given in the following table.

#### **CUSTENG table datafill example**

| <b>CUSTNAME</b> | <b>ADNUM</b> | <b>NONCOS</b> | <b>NOIBNTMT</b> | <b>CONSOLES</b> | <b>DOMAIN</b>   | <b>GROUPID</b> |
|-----------------|--------------|---------------|-----------------|-----------------|-----------------|----------------|
| CUST783A        | 22           | 256           | 63              | Y PRIVATE       | 105 (CONF6C 12) | \$             |

Table PRECONF contains a predefined preset conference DN and the conferees for this DN.

Preset conference DN should be datafilled to be allowed for a customer group, it is possible to datafill up to 64 preset conference DNs in this table.

The conferees are specified in advance in this table. 35 conferee numbers can be assigned to each preset conference DN. This includes the originator, all preset conferees and all add on conferees. The preset conference originator is a member of the preset conference’s customer group. Conferees do not need to belong to the same customer group. The conferees can have an alternate address. The time outs interval is 15 seconds for both conferees and its alternate address.

PRECONF table datafill example with a predefined preset conference DN, a conferee with alternate address and another without alternate address is given in the following table:

**PRECONF Datafill example**

| <b>PCNFKEY CONFADDR PCNFVAR OPTIONS</b> |   |            |   |         |          |    |   |   |   |   |   |   |    |  |  |
|-----------------------------------------|---|------------|---|---------|----------|----|---|---|---|---|---|---|----|--|--|
| 0                                       | 0 | 1027835599 | D | IBN     | CUST783A | 0  | Y | N | Y | N | N | N | \$ |  |  |
| 0                                       | 1 | 7831016    | A | 7831003 | 15       | \$ |   |   |   |   |   |   |    |  |  |
| 0                                       | 2 | 7831002    | C | 15      | \$       |    |   |   |   |   |   |   |    |  |  |

A served user initiates one preset conference (PRECONF) by dialling a predefined DN, which is associated with conference. The directory number is recognized as a request for a preset conference. A check is made if required number of six-port conference bridges can be seized for the conference and the conference is not already in use. If call is valid and the conference ports are available, the originator will hear audible ringing (ring back tone). The status of conferees is not important at this moment for the originator to be able to hear ring back tone. If call is invalid (Translations checks for the originator's data against the data of preset conference and required number of six-port conference bridges can not be seized for the conference or the conference is already in use), the originator will be routed to treatment. Use of Notification for call valid scenarios is not required. No notification will be sent to served user even if some/all datafilled conferees are busy.

**Call Flows**

Conference originator initiates one preset conference by dialling a specific DN. Dialling the DN invokes simultaneous ringing of the preselected conference members. The directory number is recognized as a request for a preset conference. A check is made if the required number of six-port conference bridges can be seized for the conference and the conference is not already in use. An IMMSTART option can be set in table PRECONF so that the conference starts as soon as the first conferee answers.

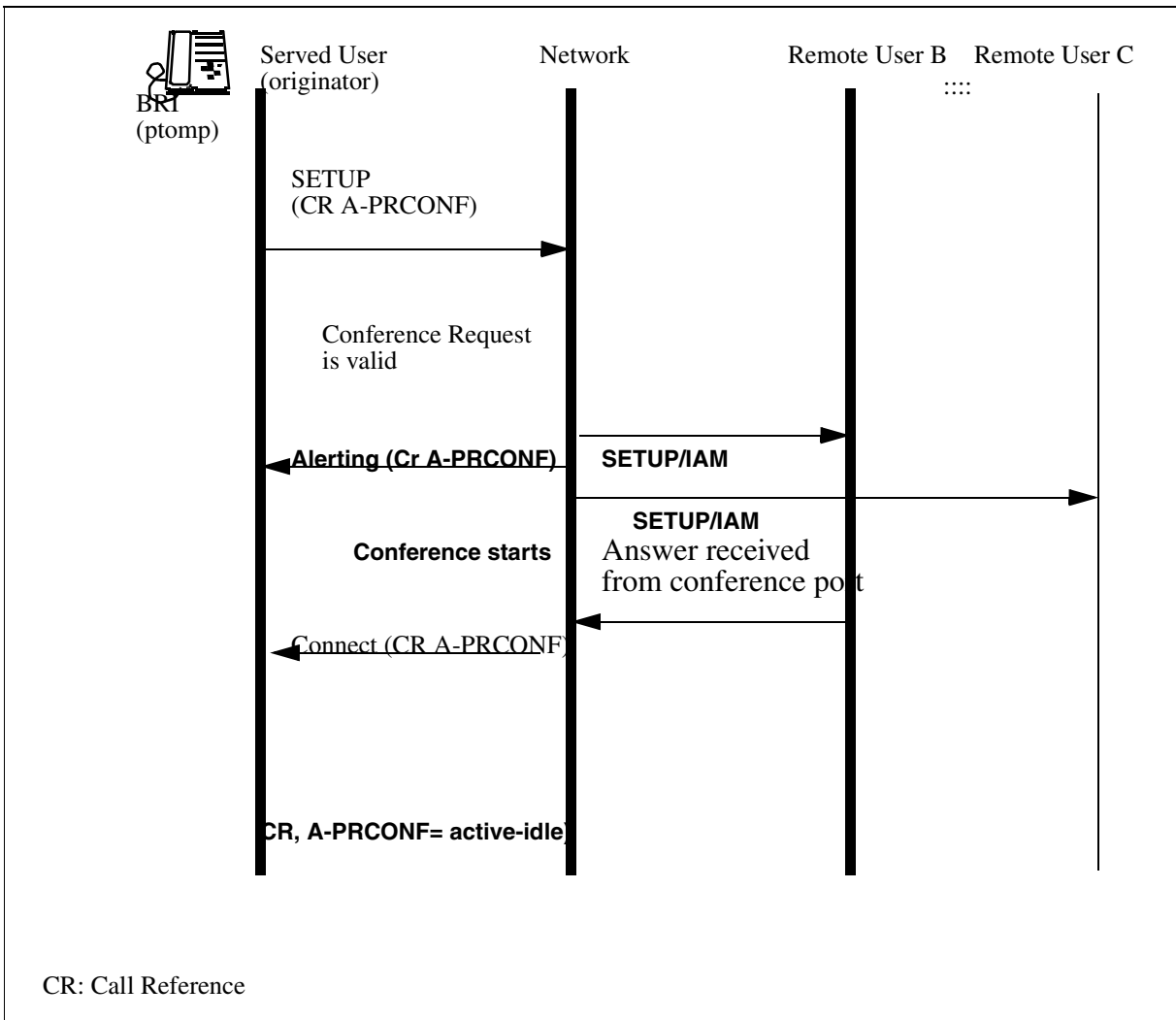
The originator of a preset conference can add on conferees as local call, once the preset conference is established. In order to provide this functionality, the field ADDON of the table PRECONF should be set to 'yes' and line options AFC and HOLD. Once the maximum number of conferees is reached, no more conferees may be added. To add a new party, the connection to the conference bridge can be either in the (Active Idle) state or in the (Active Held) state and the connection to the party to be added can either be in (Active, Idle) state.

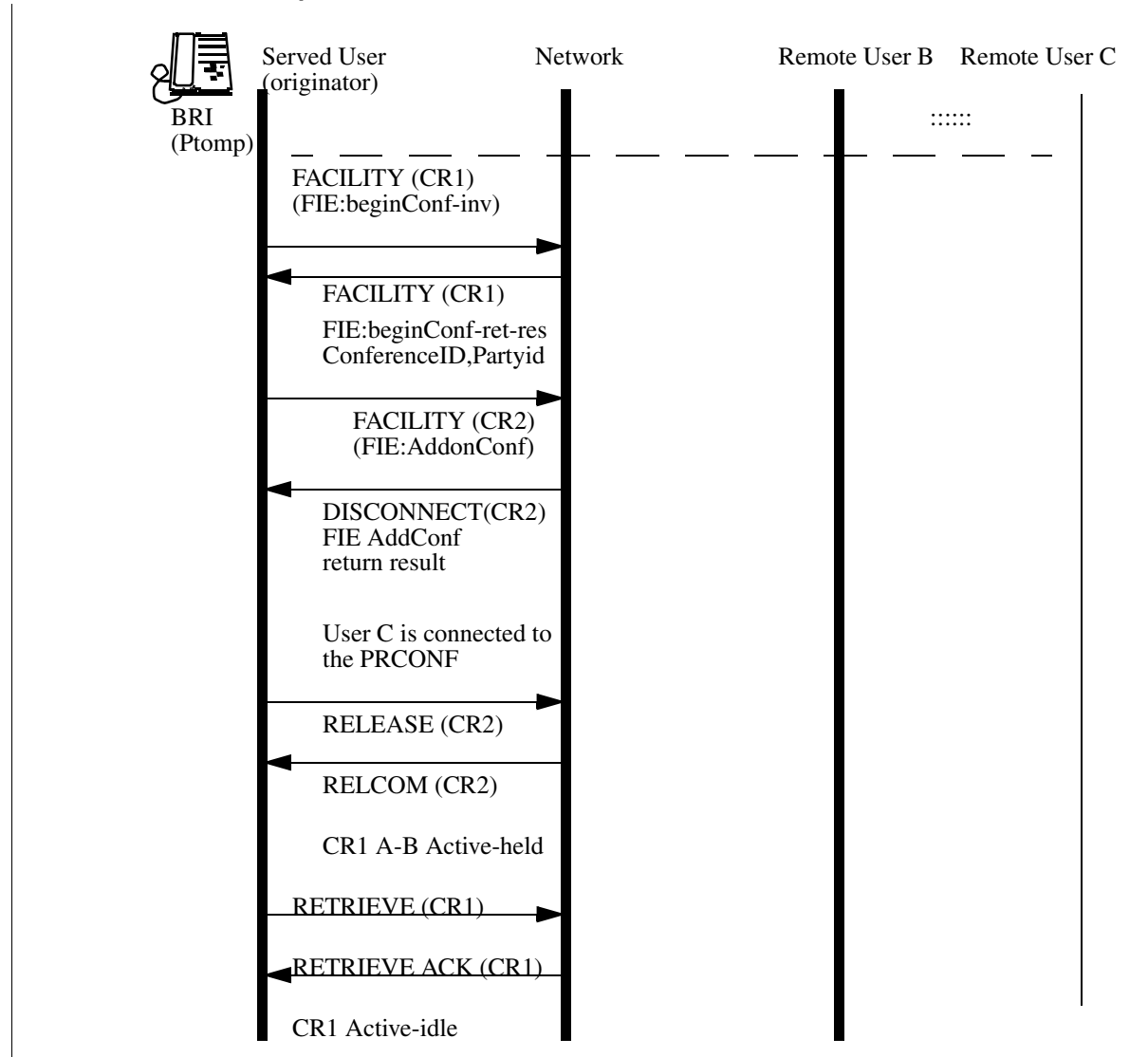
If ORIGCONT field set to "Yes" in table PRECONF, the originator is in control of conference. In this case when he goes on-hook, the conference is taken down, even if there are conferees are still on the bridge.

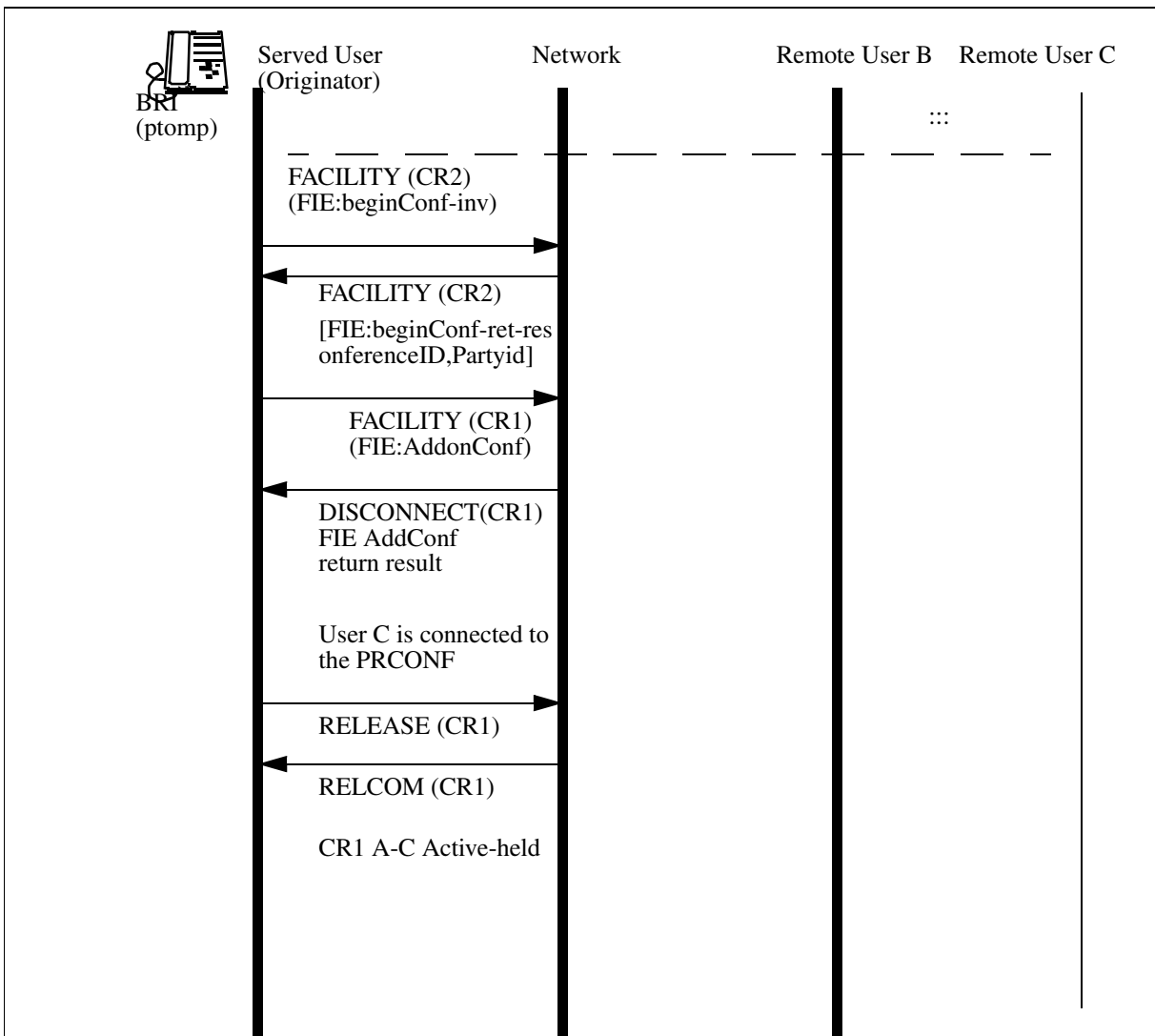
Basic call flow will be supported by "Preset Conference Base" feature (A00002367). For detailed information please refer to FN section of A00002367, available elsewhere in this document.

## Successful Case

### Preset Conference Initialization

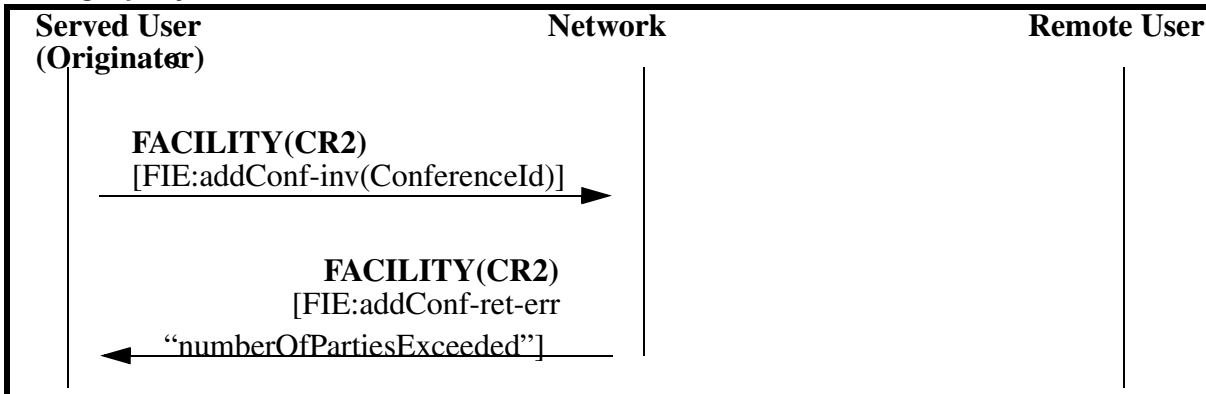


**Add-on conferee, when preset conference is in held state**

**Add-on conferee, when preset conference is active-idle**





**Adding a party when the maximum conference size is reached**

Abbreviations used in section “Successful Case” on page 506 and section “Unsuccessful Case” on page 509 are described below:

CRx, CRy: Call Reference used

A-B: Call between user A and PRCONF

A-C: Call between user A and user C

FIE: Facility information element.

**Supplementary Services Interworkings****Interaction of Preset Conference with Advice Of Charge****General Information about AOC**

AOC on BRI is a feature which allows ISDN subscribers to get the number of charge units that the calls they originate consumes. AOC can provide the actual charge unit count on a regular basis during a call or only at the end of a call, or both. The AOC functionality can be controlled/provisioned in the following ways:

- BRI loop (customer) basis, through table KSETFEAT via SERVORD. BRI lines provisioned via SERVORD can have a new option called AOC.
- XPM basis, through table LTCINV for PLGCs, in this table option attribute METER has to be present for all the XPMs that need to provide the AOC functionality.
- The zone (MZONE) and logical network (LNET) options are taken from the xxCODE translation table and the MDI index (MDI) is taken from table LINEATTR. With these 3 values, call processing is able to access the tariff database and to determine the tariff to be used for this call.

**Test Considerations**

Current behavior.

AOC will be provided for basic call and for add-on phase of preset conference and no AOC information will be generated for the use of PRCONF equipment and for the calls to the remote users with no additional code changes. AOC interaction with ETSI BRI preset conference will be supported for ETSI BRI origination test cases.

**Interaction of Preset Conference with Call Waiting****General Information about CWT**

CWT is a feature, which gives subscriber X (talking to subscriber Y) attention to a call from subscriber A. Subscriber X gets a special Call Waiting Tone as sign of the waiting call. Subscriber A gets audible ringing. CWT functionality can be provisioned via Servord.

**Test Considerations**

Current behavior.

**Interaction of Preset Conference with Call Hold/Retrieve****General Information about HOLD**

HOLD is a feature, which enables subscriber A, talking to subscriber B, to hold B and make or receive a new call. HOLD functionality can be provisioned via Servord.

**Test Considerations**

Current behavior. Hold Indications including ISUP, hold announcement and silence will be supported.

**Interaction of Preset Conference with Connected Line Identification Presentation****General Information about COLP**

The COLP supplementary service provides the connected user's ISDN number to the calling user. COLP functionality can be provisioned via Servord.

**Test Considerations**

Current behavior.

COLP request is currently restricted in preset conference.

## **Interaction of Preset Conference with Completion of Call to Busy Subscriber**

### **General Information about CCBS**

The CCBS supplementary service enables user A, encountering a busy destination B to have the call completed without having to make a new call attempt when the destination B becomes not busy. When user A accepts the recall, the network will automatically generate a CCBS call to destination B. CCBS functionality can be provisioned via Servord.

### **Test Considerations**

Current behavior.

CCBS to busy preset conference is currently prevented.

## **Interaction of Preset Conference with Three Party Service**

### **General Information about 3PTY**

The 3PTY supplementary service enables the user to establish, participate in and control, a three-way conversation, i.e. a simultaneous communication involving the served user and two remote parties. This feature requires HOLD functionality, it can be provisioned via Servord and table CONF3PR should be datafilled to activate 3PTY.

### **Test Considerations**

Current behavior.

3PTY is not currently available for preset conference call.

## **Interaction of Preset Conference with Meet-me Conference**

### **General Information about MMC**

MMC provides a user with the ability to arrange for a call between more than two participants with all participants accessing a conference bridge. It is activated for a specified period booked in advance by the served user. MMC does not use SERVORD. In order for MMC to work properly, tables CUSTENG and MMCONF must be properly datafilled.

### **Test Considerations**

Current behavior.

A dialing to a local MMC if a local PRCONF is active on the loop, is currently prevented.

## **Interaction of Preset Conference with Conference Call, Add-on**

### **General Information about ECOF**

This feature enables a user A to simultaneously with more than three parties. add any member to a conference, split a conference to have private conversation, isolate a remote user, reattach an isolated user, drop a conferee or disconnect the conference. This service is supported only in point to multipoint configurations. ETSI HOLD must be present for the conference to function. Table CONF6PR should be datafilled to activate 3PTY.

### **Test Considerations**

Current behavior.

Preset conference activity is based on ETSI BRI Six party conference.

## **Interaction of Preset Conference with Direct Dialing In**

### **General Information about DDI**

DDI enables a user to directly call another user on ana integrated services private branch exchange or other private system without attendant intervention. The service shall be based on the use of the ISDN number and shall be provided after pre-arrangement with the service provider.

### **Test Considerations**

Current behavior.

## **Interaction of Preset Conference with Multiple Subscriber Number**

### **General Information about MSN**

MSN provides the possibility for assigning multiple integrated services digital network numbers to a single interface. This enables the selection of one or multiple distinct terminals attached to the same interface. The service provider shall fix the length of the numbers to be transmitted to the user's installation.

### **Test Considerations**

Current behavior.

## **Interaction of Preset Conference with Diversion Services**

### **General Information about Diversion Services**

CFF, CFFA, CFGD, CFGDA, CFI, CFIND, CFK, CFMDN, CFO, CFRA, CFS, CFTANN, CFTB, CFTD, CFU, CFW, CFWANN, CFX, CFXDNCT, CFXVAL are different kind of diversion services. These functionalities allows the called number to be diverted to an other number under different circumstances.

**Test Considerations**

Current behavior.

**Interaction of Preset Conference with Closed User Group****General Information about CUG**

CUG provides a mechanism for forming groups to and from which access is restricted. A specific user may be member of one or more Closed User Groups. Members of a specific CUG can communicate among each other but not, in general, with users outside of the group. CUG can be provisioned via Servord and table ETSIFEAT should be datafilled to activate this functionality.

**Test Considerations**

Current behavior.

It is required that CUG shall be assigned against the PRCONF DN which is in virtual DN type, and handle from the served user to the PRCONF DN according to CUG settings.

**Interaction of Preset Conference with Malicious Call Identification****General Information about MCID**

Malicious Call Identification is a supplementary service offered to the called party which enables the called party to request that the calling party be identified to the network and be registered in the network. The data to be registered will be the called party number, calling party number, local time and date of the invocation in the network serving the called user; and as a service provider option: calling party sub-address (if provided by the calling user). MCID can be provisioned via Servord.

**Test Considerations**

Current behavior.

**Interaction of Preset Conference with Subaddressing****General Information about SUB**

The sub-addressing supplementary service allows the called (served) user to expand his addressing capacity beyond the one given by the ISDN number. SUB allows one party in a call to provide a network address extension to supplement the party's own network address or that of the other party. SUB can be provisioned via Servord.

**Test Considerations**

Current behavior.

SUB information is currently restricted during preset conference.

## **Interaction of Preset Conference with Explicit Call Transfer**

### **General Information about ECT**

Explicit Call Transfer is an ISDN supplementary service which enables a user who has two calls, each of which can be an incoming or an outgoing call, to connect the other parties in the two calls. ECT can be provisioned via Servord.

### **Test Considerations**

Current behavior.

The served user can not currently transfer the call to the preset conference but remote users can currently use ECT. Use of ECT by the remote user is currently denied, if this would result in chaining of conferences. No addition to the existing code.

## **Interaction of Preset Conference with User to User Signalling**

### **General Information about UUS**

The UUS supplementary service allows the user to send/receive a limited amount of user-generated information to/from another user-network interface. UUS can be provisioned via Servord.

### **Test Considerations**

If the served user provides UUS information in the SETUP message to the PRCONF DN, the same UUS information shall be included into the call setup to the conferees. This part of feature interaction will be provided by “BRI Preset conference base” feature (A00002367).

If UUS explicit request exist in SETUP message and service request is Required, the call will be released. Any other UUS information shall be discarded.

## **Interaction of Preset Conference with Multi Level Precedence and Preemption**

### **General Information about MLPP**

The Multi-level Precedence and Preemption (MLPP) supplementary service provides prioritized call handling service. This supplementary service has two parts precedence and preemption. Precedence involves assigning a priority level to a call. Preemption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher level precedence call in the absence of idle resources. MLPP can be provisioned via Servord.

### **Test Considerations**

If the served user provides MLPP information during call setup to the PRCONF DN, the same MLPP information shall be included into the call

setup to the conferees. This part of feature interaction will be provided by “BRI Preset conference base” feature (A00002367).

The PRCONF service shall ensure, that the call from the served users is established as MLPP call, if this was requested.

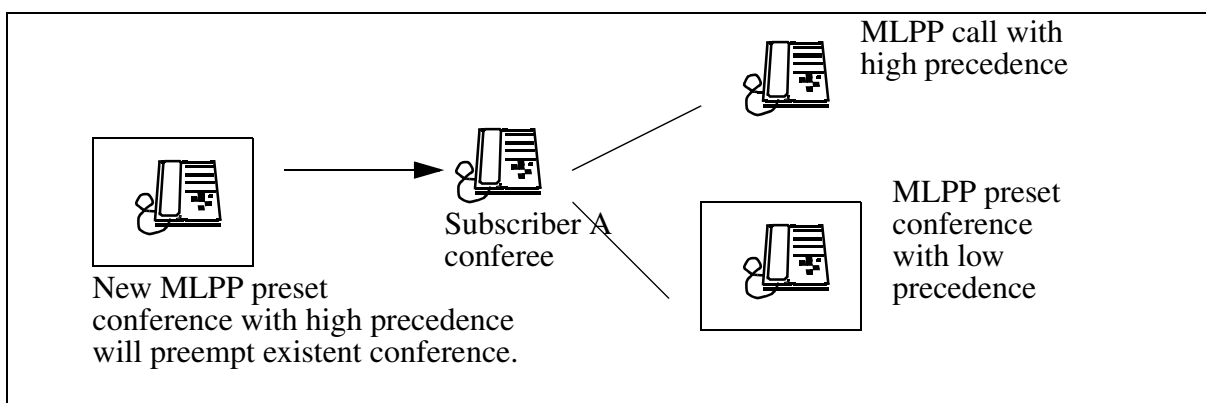
If a PRCONF has been initiated and is still active any other call to this PRCONF DN shall NOT result in the preemption of the existing PRCONF. The second call to the active PRCONF shall result in busy treatment for the caller. Current behavior for this part.

A PRCONF shall not be preempt able by an attempt to initiate the same PRCONF from a served user with higher precedence level, that the served user who initiated the existing PRCONF. The second call to the active PRCONF shall result in busy treatment for the caller.

If a PRCONF, established as MLPP call, has been initiated from subscriber A and if the conferee’s channels are occupied with MLPP calls with low precedence, preemption shall be prevented.

If a new MLPP call comes to a subscriber “A” whose both channels are occupied even one of them is involved in preset conference, (it is the case where subscriber “A” is a conferee of the preset conference) if the precedence of the new call is higher than preset conference call precedence, conference call shall be preempted by the new MLPP call. The figure below is a representation of this scenario.

**First scenario representation for MLPP - BRI preset conference interaction.**



It shall be supported that a PRCONF DN can be used as a valid Alternate Party for the MLPP service. This requirement will be supported if q955\_compliant bool in MLPP\_PARMS parameter in table OFCENG is set to “N”. If q955\_compliant bool is set to “Y”, connect message will be waiting before routing the call to alternate number, and this timer can erase preset conference route time-out value, to prevent this event, preset conference route timer will



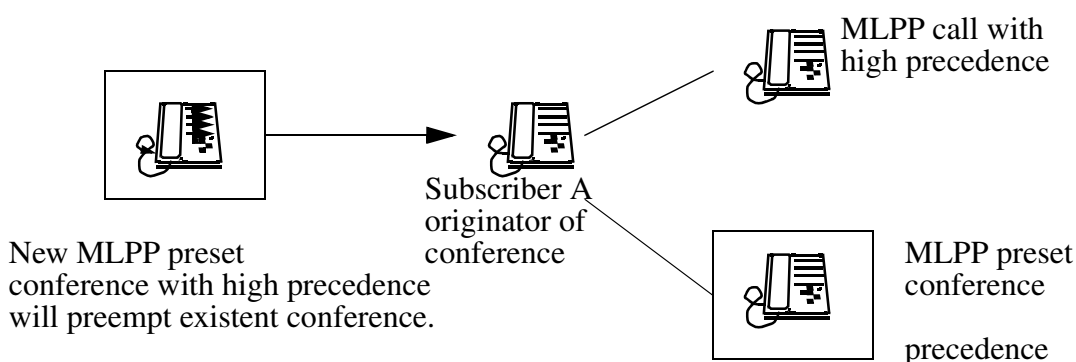
be stopped and the call will be routed to MLPP alternate number. During an MLPP call if the conferee of preset conference has an alternate number, preset conference tries once to reach the conferee. If the conferee does not answer, the call is routed to MLPP alternate number.

If a new MLPP call comes to served user whose both channels are occupied even one of them is involved in ETSI BRI preset conference, established as MLPP call with low precedence, the new MLPP call shall preempt and drop ETSI BRI preset conference. The figure below is a representation of this scenario.

---

**Second scenario representation for MLPP - BRI preset conference interaction.**

---



After preemption, no notification indicator information element will be sent to served user or conferees.

If some of the calls making up the preset conference are non-MLPP (add-on functionality),

- Non-MLPP calls are assigned precedence level given by MLPP\_DEFAULT\_PRECEDENCE office parameter
- Highest precedence level of the legs is assigned as the precedence level of controller's conference leg. Conferees' legs are preserved their original precedence levels.

If all of the calls making up the conference are non-MLPP,

- Datafilled level on office parameter MLPP\_DEFAULT\_PRECEDENCE is assigned as the precedence level of both calls.

PRCONF shall ignore all other MLPP related signalling.

## **Interaction of Preset Conference with Calling Line Identification Presentation / Presentation Restriction**

### **General Information about CLIP/CLIR**

Calling Line Identification Presentation is a supplementary service offered to the called party which provides the calling party's ISDN-number, possibly with sub-address information, to the called party. When CLIP is applicable and activated, the network provides the called party with the number of the calling party at call set-up on all incoming calls. The calling party number may be accompanied by a sub-address.

Calling Line Identification Restriction is a supplementary service offered to the calling party to restrict presentation of the calling party's ISDN-number and sub-address to the called party. When CLIR is applicable and activated, the originating node provides the destination node with a notification that the calling party's ISDN number and any sub-address information are not allowed to be presented to the called party. In this case no calling party number is included in the call offering to the called party's installation.

### **Test Considerations**

The CLIP/CLIR information sent to the remote users during PRCONF establishing, shall be the same as being provided by the served user to the conference equipment. If the served user provides Generic Address Parameters and additional calling number identifications information in the SETUP message to the PRCONF DN, the same information shall be included into the call setup to the conferees (provided the respective protocol is supporting this). This part of feature interaction will be provided by "BRI Preset conference base" feature (A00002367).

For BRI-BRI, BRI-ISUP and ISUP-BRI interworkings, current working behavior of noscreening will be kept. For Ex. BRI terminal with special arrangement triggers PRCONF, the unscreened CLI should also be sent to the terminators).

## **Interaction of Preset Conference with Conference Chaining**

### **General Information about Conference Chaining**

Conference chaining shall be prohibited, if the conference equipment for both conferences resides on the same local exchange. But it is not possible to prevent conference chaining over remote connections since sent/received notifications are not permitted.

### **Test Considerations**

No Impact.

### **OM class for Preset Conference**

Since this activity is based on the existing IBN preset conference, the existing OM class PCNF is used.

OM class will be supported by “Preset Conference Base” feature (A00002367). For detailed information please refer to FN document of A00002367.

### **Billing**

No AMA/Billing changes for this activity.

### **Hardware Requirements or Dependencies**

The NT3X67 six-party conference card provides conference facilities on a single card for use with DMS-100 switches. This activity uses same hardware as IBN Preset Conference.

Since the feature is based on BRI Preset Conference Base, hardware requirements or dependencies of BRI Preset Conference are also valid for this activity.

### **Software Requirements or Dependencies**

The existing IBN preset Conference is used by this activity.

### **Limitations and restrictions**

1. Since the feature is based on the existing IBN Preset Conference, and a continuation of BRI Preset Conference Base, the restrictions of IBN preset conference and BRI Preset Conference are also valid for this activity.
2. Since section 4 of Preset Conference for BRI Supplementary Services” specification document which specifies the required interworking for PRCONF on BRI lines, does not contain any information about IBN lines CEPT and CENTREX features interactions, it is assumed in the development of this activity that any changes on the existing interworking which should be supported by the “IBN Preset Conference “feature.
3. If any of the conferees are connected to the DMS switch where the preset conference is being originated and has any of the diversion feature these feature will remain active for incoming preset conference call. If the primary address does not answer call forwarding will be attended if it is activated. On origination to a conference, diversion features will be deactivated. In other words, a direct access user cannot forward incoming calls to a preset conference.

## Interactions

### IBN Preset Conference

No Impact

### BRI Preset Conference Base

No Impact

### 10 AFC Keys for BRI Directory Number

“10 AFC Keys for BRI Directory Number” feature (A00002377) allows up to 10 AFC keys on one DN and allows also, 11 call HOLDS on one DN and 8 call waitings per loop if the customer is subscribed to these services. To be able to support more than one HOLD, it is permitted to make more than two calls on one TEI. This can cause a problem if there are two different preset conferences on one TEI and if this TEI tries to send ADDCONF FAC for a new call. Since there is no way to decide to which conference the new call will be added, one of the restrictions below will be followed:

- Two preset Conferences will not be allowed on one TEI.
- Add-on conference will be restricted if there are two preset Conferences on one TEI.
- The new call will be added on a random conference.

According to the information given above, please refer to A00002367 “BRI Preset Conference Base” and A00002377 “10 AFC Keys for BRI Directory Number” features.

## Applicable customer facing sections

### Fault Management

|        |    |
|--------|----|
| Logs   | No |
| Alarms | No |

### Configuration

|                    |     |
|--------------------|-----|
| Data Schema        | N/A |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

|                                   |     |
|-----------------------------------|-----|
| Accounting (includes AMA billing) | N/A |
|-----------------------------------|-----|

Performance (includes operational measurements) N/A

## Glossary

| Term   | Description                                    |
|--------|------------------------------------------------|
| ETSI   | European Telecommunications Standard Institute |
| BRI    | Basic Rate Interface                           |
| DN     | Directory Number                               |
| IE     | Information Element                            |
| AOC    | Advice Of Charge                               |
| CWT    | Call Waiting                                   |
| PRCONF | Preset Conference                              |
| COLP   | Connected Line Identification Presentation     |
| CCBS   | Completion of Call to Busy Subscriber          |
| 3PTY   | Three Party Service                            |
| MMC    | Meet-me Conference                             |
| DDI    | Direct Dialing In                              |
| MSN    | Multiple Subscriber Number                     |
| CUG    | Closed User Group                              |
| SUB    | Subaddressing                                  |
| ECT    | Explicit Call Transfer                         |
| MCID   | Malicious Call Identification                  |
| UUS    | User to User Signalling                        |
| MLPP   | Multi Level Precedence and Preemption          |

## Appendix A for A00002884- IBN Preset Conference Interactions Background

“IBN Preset Conference (large)” feature (AF2014) enables the maximum number of conferees for a Meridian Digital Centrex (MDC) preset conference to be increased to 50.

The feature interactions required for this feature are described below:

1) If any of the conferees are connected to the DMS switch where the preset conference is being originated and has any of the following features:

- Call forwarding don't answer
- Call forwarding busy
- Call forwarding intragroup

These features will remain active for the incoming preset conference call (if the primary address does not answer call forwarding will be attempted if it is activated).

2) If the originator is active in any conference, flashes, or depresses a CONF key and dials a preset conference DN busy treatment is given. Two preset conferences can not be in conference together.

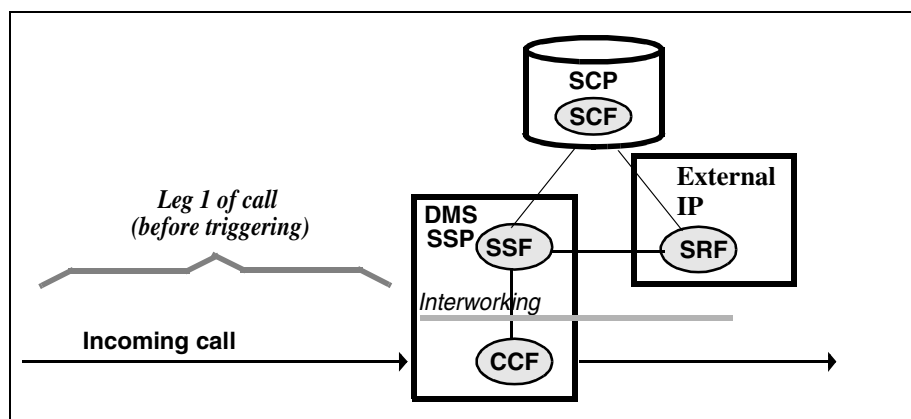
3) If the preset conference call has been originated in the switch, SMDR may apply to one or more legs. Each leg will be a separate record with conference identification in the SMDR report.

## ***Product = CS 2000***

### **A00002900 -- China INAP Compliance Enhancement Part 2 (Succession on DMS)**

#### ***Functional Description***

This feature will enhance the external IP capabilities and support multiple ApplyChargings on ISN07 TDM and CS2Kc platform for China market. The external IP supported in this feature has direct connection through China ISUP to SCP (as the following figure), SSP would not provide assisting SSP functionality.

**Network diagram**

This feature is based on feature A89008388: China IN SSP capabilities and feature AG5145: External IP.

Two main functionalities are implemented in this feature:

- External IP enhancement

For China INAP, several enhancements are made to fully support external IP:

- Enhance operation EstablishTemporaryConnection
- Enhance operation InitialDP

Parameter iPAvailable and iPSSPCapabilities are required in IDP operation. SSP is able to set these two parameters by datafill.

- Charging the temporary connection to external IP using ApplyCharging operation

According to China requirement, charging to the temporary connection to external IP is required. Charging per duration and time are both supported in this feature.

- Unsuccessful connection to external IP handling enhancement

Several scenarios of unsuccessful connection to external IP are enhanced to comply with China requirement.

- CISUP: Map the post answer ANM(CON) to CPG

- Multiple ApplyChargings support

- Support up to 3 ACs

Now up to 3 ACs can be accepted and handled simultaneously during an INAP call. For multiple ACs, corresponding ACRs can be sent to SCP if required.

Function 'CISUP: Map the post answer ANM(CON) to CPG' is for China ISUP originator only. The other functions are agent independent, i.e. they are supported on the originating agents with the condition: the originating agent <-> INAP interworking is ALREADY supported. For example, China ISUP, IBN lines, SIP-T (no ISUP), China PRI.

These functions are detailed in the sections that follow.

### Functional Requirements

The functions to enhance China IN SSP capabilities are based on the following specification:

- China INAP specification (See reference 1)
- China INAP test specification (See reference 2)
- Supplementary Specification of China IN CS-1 INAP (See reference 3)
- Test specification of Supplementary Specification of China IN CS-1 INAP (See reference 4)

### Data Requirement

The datafill is the same as that for normal IN call.

### External IP enhancement

#### EstablishTemporaryConnection enhancement

The ETC is defined as below in China INAP specification:

```
EstablishTemporaryConnection OPERATION
ARGUMENT
SEQUENCE {
    assistingSSIPRoutingaddress [0] IMPLICIT OCTET STRING;
    correlationID[1] IMPLICIT OCTET STRING OPTIONAL;
    legID [2] CHOICE{
        sendingSideID[0] IMPLICIT OCTET STRING( SIZE(1) )} OP-
        TIONAL;
    scfID [3] IMPLICIT OCTET STRING(SIZE (3)OPTIONAL;
    ....}
```

Parameters scfID and legID are supported in this feature. legID indicates which leg of a call is connected to the SRF for user interaction. Currently, external IP can only be connected to calling party. This feature will only support the decode of parameter legID.

Parameter correlationID has fixed length 3 bytes.

Parameter assistingSSIPRoutingAddress is checked according to China INAP requirement:



- the format is Generic number
- If scfID and correlationID are not contained in assistingSSPIPRoutingaddress, the NOA of assistingSSPIPRoutingaddress should be national number(0000011) or Subscriber number(0000001). For national number, it consists of the prefix 0, Area code and office code, the length of the number is 4~8. For Subscriber number, it consists of office code, the length of the number is 4~5.

For the outgoing IAM to external IP, the format of CDPN within IAM is different considering that the number of CDPN is even or odd. Examples are shown in table 1 and 2:

**CDPN with 8 digits assistingSSPIPRoutingAddress**

|    | 8                            | 7                        | 6 | 5 | 4                            | 3 | 2 | 1 |
|----|------------------------------|--------------------------|---|---|------------------------------|---|---|---|
| 1  | Even                         | Nature of Address        |   |   |                              |   |   |   |
| 2  | INN<br>indica-<br>tor        | Numbering Plan Indicator |   |   | Spare                        |   |   |   |
| 3  | 2nd Assisting Address Signal |                          |   |   | 1st Assisting Address Signal |   |   |   |
| 4  | 4th Assisting Address Signal |                          |   |   | 3rd Assisting Address Signal |   |   |   |
| 5  | 6th Assisting Address Signal |                          |   |   | 5th Assisting Address Signal |   |   |   |
| 6  | 8th Assisting Address Signal |                          |   |   | 7th Assisting Address Signal |   |   |   |
| 7  | 2nd SCF ID                   |                          |   |   | 1st SCF ID                   |   |   |   |
| 8  | 4th SCF ID                   |                          |   |   | 3rd SCF ID                   |   |   |   |
| 9  | 6th SCF ID                   |                          |   |   | 5th SCF ID                   |   |   |   |
| 10 | 2nd Correlation ID           |                          |   |   | 1st Correlation ID           |   |   |   |
| 11 | 4th Correlation ID           |                          |   |   | 3rd Correlation ID           |   |   |   |
| 12 | 6th Correlation ID           |                          |   |   | 5th Correlation ID           |   |   |   |

**CDPN with 7 digits assistingSSPIPRoutingAddress**

|   | 8                     | 7                        | 6 | 5 | 4     | 3 | 2 | 1 |
|---|-----------------------|--------------------------|---|---|-------|---|---|---|
| 1 | Odd                   | Nature of Address        |   |   |       |   |   |   |
| 2 | INN<br>indica-<br>tor | Numbering Plan Indicator |   |   | Spare |   |   |   |

|    |                              |                              |
|----|------------------------------|------------------------------|
| 3  | 2nd Assisting Address Signal | 1st Assisting Address Signal |
| 4  | 4th Assisting Address Signal | 3rd Assisting Address Signal |
| 5  | 6th Assisting Address Signal | 5th Assisting Address Signal |
| 6  | 1st SCF ID                   | 7th Assisting Address Signal |
| 7  | 3rd SCF ID                   | 2nd SCF ID                   |
| 8  | 5th SCF ID                   | 4th SCF ID                   |
| 9  | 1st Correlation ID           | 6th SCF ID                   |
| 10 | 3rd Correlation ID           | 2nd Correlation ID           |
| 11 | 5th Correlation ID           | 4th Correlation ID           |
| 12 | Filler (0)                   | 6th Correlation ID           |

### InitialDP enhancement

According to China INAP, IPAvailable and IPSSPCapabilities should be supported in IDP operation, SSP should fill these two parameters according to its abilities.

In order to build iPAvailable and iPSSPCapabilities into IDP, option INITDP\_PARM of table SERVINFO is extended to add two new fields **IP\_AVA** and **IPSSP\_CAP** to indicate whether parameters IPAvailable and IPSSPCapabilities will be carried in IDP. These two fields should be datafilled at the same time. These two fields can also be datafilled for those variant other than China.

Meanwhile, option SRF\_INFO is extended to add new field **IP\_INFO** to provide detailed information of the IP capability within SSP.

For China market, if IP\_AVA and IPSSP\_CAP are datafilled and IP\_INFO is not datafilled, parameters iPAvailable and iPSSPCapabilities are set to default value according to China INAP, the default value of iPAvailable is '01'H (which indicates that the IP is available), the default value of iPSSPCapabilities is '#0C00' (which indicates that DTMF digit collection and tone & announcement is supported). If IP\_INFO is datafilled, then iPAvailable and iPSSPCapabilities are set according to this datafill. That means IP\_INFO will take effect only if IP\_AVA and IPSSP\_CAP are datafilled, otherwise, the information of this datafill will not be carried in IDP.

IP\_INFO contains two subfields: IP\_AVAILABLE and IPSSP\_CAPABILITIES, which contains values for parameter IPAvailable and IPSSPCapabilities respectively.

According to China INAP, there are 14 kinds of IP capabilities which are indicated by parameter iSSPCapabilities. These capabilities can be datafilled in IPSSP\_CAPABILITIES as shown in table 3:

#### IP Capabilities defined in China INAP

| IPSSPCapabilities parameter | Value          | Meaning                                                                | IPSSP_CAPABILITIES selections |
|-----------------------------|----------------|------------------------------------------------------------------------|-------------------------------|
| 1st byte, bit 0             | 0/1            | Not support/Support IPRoutingAddress                                   | IPRA                          |
| 1st byte, bit 1             | 0/1            | Not support/Support VoiceBack                                          | VOICE_BACK                    |
| 1st byte, bit 2             | 0/1            | Not support/Support VoiceInformation, recognize through voice, speech. | VOICE_INFO_SPEECH             |
| 1st byte, bit 3             | 0/1            | Not support/Support VoiceInformation, recognize through voice, voice.  | VOICE_INFO_VOICE              |
| 1st byte, bit 4             | 0/1            | Not support /SupportText to Voice conversion.                          | TEXT_TO_VOICE                 |
| 1st byte, bit 5             | 0/1            | Not support/Support fax.                                               | FAX                           |
| 1st byte, bit 6             | 0/1            | Not support/Support recorder.                                          | RECORDER                      |
| 1st byte, bit 7             | 0/1            | Not support/Support script.                                            | SCRIPT                        |
| 2nd byte, bit 0             | 0/1            | Not support/Support manual operator.                                   | MAN_OPERATOR                  |
| 2nd byte, bit 1             | 0/1            | Not support/Support conference.                                        | CONFERENCE                    |
| 2nd byte, bit 2             | 0/1            | Not support/Support tone & announcement.                               | TONE_ANNC                     |
| 2nd byte, bit 3             | 0/1            | Not support/Support DTMF digit collection.                             | DTMF_DIGCOL                   |
| 2nd byte, bit 4             | 0/1            | Not support/Support sending DTMF signal.                               | SEND_DTMF_SIG                 |
| 2nd byte, bit 5             | 0/1            | Not support/Support sending FSK signal.                                | SEND_FSK_SIG                  |
| 2nd byte, bit 6,7           | To be defined. |                                                                        |                               |
| 3rd, 4th bytes              | To be defined. |                                                                        |                               |

Below is an example of datafill:

**SERVINFO datafill example****Example of datafill:**

TABLE SERVINFO

```

200  (INITDP_PARMs (SERVKEY) (CDPA) (IP_AVA) (IPSSP_CAP) $)
      (SRF_INFO (EARLY_ANS ANS_ON_ANNS)
      (IP_INFO Y (IPRA) (VOICE_INFO_SPEECH)
      (TONE_ANNC)(DTMF_DIGCOL)$)$)$

```

**Charging the temporary connection to external IP using ApplyCharging operation**

Currently, DMS SSP does not charge the temporary connection to external IP. According to China INAP:

If the charging is based on duration:

- SCP should send AC before ETC, and the startChargePattern is 'AnswerReceived'
- When SSP receives AC and ETC, SSP begin to prepare for charging. SSP start charging after receiving answer message from external IP. When originator abandon, SSP releases the connection to external IP or SSP receives release message, the charging is stopped, and ACR is sent to SCP.
- The other requirement of processing AC parameters are not changed.

If the charging is based on time:

- SCP can send AC before ETC or during the speech phase. If AC is sent before ETC, then the startChargePattern can be 'Immediately' or 'AnswerReceived'. Otherwise, if AC is received during the speech phase, the startChargePattern should be 'Immediately'.
- The fee is carried in surCharge parameter of AC, meanwhile AC does not carry chargeClass parameter.
- SSP can send ACR immediately or after the connection to external IP is released.

**Unsuccessful connection to external IP handling enhancement**

If the ETC is received between PA and SRR, SSP should report unexpected component sequence error.

**CISUP: Map the post answer ANM(CON) to CPG**

There are two conditions under which the mapping will occur:

- Condition 1: SSP has received an answer message from external IP or called party and transmitted it to the originating office, when the SSP connect to the external IP or the called party (if the first connection is to external IP) again, SSP will receive another answer message.
- Condition 2: SSP has received CTR and PCUI, SSP sent ACM and ANM to the originating office, when the called party answer, SSP will receive another answer message.

This functionality will implement that: if the second or later answer message is CISUP ANM containing BCI or CISUP CON, then it will be mapped to CPG and transmitted to the originating office.

## **Multiple ApplyChargings support**

### **Support up to 3 ACs**

In this feature, up to 3 ACs can be accepted and handled simultaneously during an INAP call. The number 3 is the maximum number of in-effect ACs, it does not include the number of expired (that is, a final ACR has been sent) ACs.

The chargeRecordIdentifier parameter is used to identify the AC operation, different ACs should have unique chargeRecordIdentifier. If two ACs have an identical chargeRecordIdentifier, then the newly received one will be rejected with ReturnError (UnexpectedDataValue).

If an AC with chargeUserIndicator equaling 1 (calling party) or 2 (called party) had been received, then any subsequent ACs with the same chargeUserIndicator will be rejected with ReturnError (TaskRefused(generic)). In other words, on a call at most 1 AC is allowed for the calling/called party. However, this restriction does not apply to the specified charge number (chargeUserIndicator = 127).

If there are already 3 ACs in effect on the call, then all subsequent ACs will be rejected with ReturnError (TaskRefused(generic)).

For multiple ACs, corresponding ACR(s) can be sent respectively for each AC. ACR will be sent to SCP in three conditions:

1. If the calling/called party hangs up, the following actions are taken:
  - The call (or only the called party, depending on the on-hook party and armed EDPs) is taken down
  - ACR for each AC is sent respectively
2. If the cost/time limit for one of the ApplyChargings is reached, the following actions are taken:
  - The call (or only the called party, depending on armed EDPs) is taken down
  - The forceReleaseCause in the ApplyCharging whose charge/time limit is reached is stored in the backward release message
  - ACR for each AC is sent respectively. If the supervisionMethod in the AC for which we are sending ACR is costGranted, the reasonForReport parameter in the ACR is ChargeLimitReached; if the supervisionMethod is timeGranted, the reasonForReport is TimeLimitReached.
3. If the heartbeat timer for one of the ApplyChargings expires, the following action is taken:
  - An ACR for the AC is sent

Multiple treatments can be played if more than one ACs require warning tone/announcement to be played at a desired time before the charge/time limit is reached, provided the restrictions below:

- All tones/announcements are only played to the calling party
- If multiple treatments are required to play at almost the same time, DMS SSP will play the 1st started treatment and suppress other treatments which try to start at the time when the 1st treatment is playing.

### **Hardware Requirements or Dependencies**

N/A.

### **Software Requirements or Dependencies**

N/A.

### **Limitations and restrictions**

N/A.

### **Interactions**

N/A.

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

Realtime X

Engineering Information X

## Glossary

| Term     | Description                    |
|----------|--------------------------------|
| ACH / AC | Apply Charging                 |
| ACR      | Apply Charging Report          |
| ACM      | Address Complete Message       |
| ANM      | Answer Message                 |
| CDPN     | Called Party Number            |
| CISUP    | China ISDN User Part           |
| CODEC    | Coder/Decoder                  |
| CON      | Connect                        |
| DMS      | Digital Multiplex System       |
| ETC      | Establish Temporary Connection |
| IAM      | Initial Address Message        |

| Term | Description                          |
|------|--------------------------------------|
| IDP  | initial DP                           |
| IN   | Intelligent Network                  |
| INAP | Intelligent Network Application Part |
| IP   | Intelligent Peripheral               |
| ISUP | ISDN User Part                       |
| SCP  | Service Control Point                |
| SSP  | Service Switching Point              |

## References

1. GF017-1995 China INAP Specification
2. YDN107.2-1999, INAP test spec - SSP part
3. Supplementary Specification of China IN CS-1 INAP (draft)
4. Test specification of Supplementary Specification of China IN CS-1 INAP (draft)
5. Requirement of China Telecom Intelligent Network Intelligent IP Establishment. China Telecom, 2002, January
6. SSP (IP related) INAP Specifications and Signalling cooperation test specification of China Telecom Intelligent Network. China Telecom, 2001, January

## *Configuration for A00002900*

### Hardware and Software Requirements

N/A.

### Initial Configuration

N/A.

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A.

### Upgrade Impact

N/A.



## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| SERVINFO       | CHANGED                  | Unchanged                          |

### Table/MIB/Remote Database Schema information

**Name:** SERVINFO

#### Functional description

Option INITDP\_PARMs of table SERVINFO is extended to add two new fields **IP\_AVA** and **IPSSP\_CAP** to indicate whether parameters IPAvailable and IPSSPCapabilities will be carried in IDP. These two fields should be datafilled at the same time.

Meanwhile, option SRF\_INFO is extended to add new field **IP\_INFO** to provide detailed information of the IP capability within SSP.

If **IP\_AVA** and **IPSSP\_CAP** are datafilled and **IP\_INFO** is not datafilled, parameters **iPAvailable** and **iPSSPCapabilities** are set to default value according to China INAP, the default value of **iPAvailable** is '01'H (which indicates that the IP is available), the default value of **iPSSPCapabilities** is '#0C00' (which indicates that DTMF digit collection and tone & announcement is supported). If **IP\_INFO** is datafilled, then **iPAvailable** and **iPSSPCapabilities** are set according to this datafill. That means **IP\_INFO** will take effect only if **IP\_AVA** and **IPSSP\_CAP** are datafilled, otherwise, the information of this datafill will not be carried in IDP.

**IP\_INFO** contains two subfields: **IP\_AVA** and **IP\_SSP\_CAPABILITIES**, which are for parameter **iPAvailable** and **iPSSPCapabilities** respectively.

#### Usage sequence and implications (CM Only)

Current datafill order unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | no change      | no change      | N/A                   |

**Fields/OIDs**

The following table lists fields/OIDs for SERVINFO.

**Table field descriptions**

| Field               | New or Changed | Subfield or refinement | Entry         | Explanation and action                                                         |
|---------------------|----------------|------------------------|---------------|--------------------------------------------------------------------------------|
| INITDP_PARAMETERS   | Changed        | refinement             | Boolean Value | Add new selections: IP_AVA and IPSSP_CAP.                                      |
| SRF_INFO            | Changed        | refinement             | Boolean Value | Add new sub-option: IP_INFO                                                    |
| IP_INFO             | New            | Subfield               | Boolean Value | Add new sub-options: IP_AVA and IP_SSP_CAPABILITIES                            |
| IP_AVA              | New            | Subfield               | Boolean Value | Indicate whether the IP is available.                                          |
| IP_SSP_CAPABILITIES | New            | Subfield               | Boolean       | Provide the detailed information of IP capabilities. (See table 4 for details) |

According to China INAP, there are 14 kinds of IP capabilities which are indicated by parameter iPSSPCapabilities. These capabilities can be datafilled in IP\_SSP\_CAPABILITIES as shown in table 4:

**IP Capabilities defined in China INAP**

| IPSSPCapabilities parameter | Value | Meaning                                                                | IPSSP_CAPABILITIES selections |
|-----------------------------|-------|------------------------------------------------------------------------|-------------------------------|
| 1st byte, bit 0             | 0/1   | Not support/Support IPRoutingAddress                                   | IPRA                          |
| 1st byte, bit 1             | 0/1   | Not support/Support VoiceBack                                          | VOICE_BACK                    |
| 1st byte, bit 2             | 0/1   | Not support/Support VoiceInformation, recognize through voice, speech. | VOICE_INFO_SPEECH             |
| 1st byte, bit 3             | 0/1   | Not support/Support VoiceInformation, recognize through voice, voice.  | VOICE_INFO_VOICE              |

|                   |                |                                               |               |
|-------------------|----------------|-----------------------------------------------|---------------|
| 1st byte, bit 4   | 0/1            | Not support /SupportText to Voice conversion. | TEXT_TO_VOICE |
| 1st byte, bit 5   | 0/1            | Not support/Support fax.                      | FAX           |
| 1st byte, bit 6   | 0/1            | Not support/Support recorder.                 | RECORDER      |
| 1st byte, bit 7   | 0/1            | Not support/Support script.                   | SCRIPT        |
| 2nd byte, bit 0   | 0/1            | Not support/Support manual operator.          | MAN_OPERATOR  |
| 2nd byte, bit 1   | 0/1            | Not support/Support conference.               | CONFERENCE    |
| 2nd byte, bit 2   | 0/1            | Not support/Support tone & announcement.      | TONE_ANNC     |
| 2nd byte, bit 3   | 0/1            | Not support/Support DTMF digit collection.    | DTMF_DIGCOL   |
| 2nd byte, bit 4   | 0/1            | Not support/Support sending DTMF signal.      | SEND_DTMF_SIG |
| 2nd byte, bit 5   | 0/1            | Not support/Support sending FSK signal.       | SEND_FSK_SIG  |
| 2nd byte, bit 6,7 | To be defined. |                                               |               |
| 3rd, 4th bytes    | To be defined. |                                               |               |

### Datafill example

The following example shows sample datafill for table SERVINFO:

#### Example of datafill:

```
TABLE SERVINFO
200 (INITDP_PARDS (SERVKEY) (CDPA)(IP_AVA) (IPSSP_CAP) $)
    (SRF_INFO (EARLY_ANS ANS_ON_ANNS)
    (IP_INFO Y (IPRA) (VOICE_INFO_SPEECH)
    (TONE_ANNC)(DTMF_DIGCOL)$)$)$
```

### Table release history update

New sub-option IP\_AVA, IPSSP\_CAP are added to option INITDP\_PARDS.  
New sub-option IP\_INFO is added to SRF\_INFO, and new option IP\_INFO has 2 sub-options: IP\_AVA and IP\_SSP\_CAPABILITIES.

### Supplementary information

N/A.

**Translation verification other tools**

N/A.

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

N/A.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

N/A.

**Configuration Walkthrough**

N/A.

***Product = CS 2000*****A00002904 -- CTI Toggle (Succession on DMS)****Description**

The Switch-Computer Applications Interface (SCAI) specifies an architecture and an Open Systems Interconnection (OSI) application layer protocol suite for peer-to-peer data communication between host computer applications and switch applications, thereby enabling the functional integration of computer systems and telephony switching systems.<sup>1</sup>

Remote Operation Service Element (ROSE) is used to support the interactive communication between the switch and host application.

Currently, ICM services exist for the use of four types of customers.

- Automatic Call Distribution (ACD) customers
- Meridian Digital Centrex (MDC) customers

---

1. Taken from the ANSI SCAI Standard document: ANSI TI.626-1993

- Residential (RES) customers
- SL-100 Private Branch Exchange (PBX) customers

ICM uses the following Operation Classes.

- Class 1: Synchronous, reporting success or failure
- Class 2: Asynchronous, reporting success or failure
- Class 5: Asynchronous, outcome not reported

This activity adds a Class 2 call control message, DV\_TOGGLE\_CALL, which is sent from the customer's host computer to the DMS to toggle between an agent's primary call leg and the consult call leg. The existing ICM messages DV\_CALL\_HELD\_U and DV\_CALL\_UNHELD\_U, will be changed to contain a new parameter that would indicate which leg of the call was held/unheld. The DV\_CALL\_HELD\_U and DV\_CALL\_UNHELD\_U messages will be sent out after a successful completion of the DV\_TOGGLE\_CALL message. The above two messages will also be sent out when the calls are toggled manually.

### **Application Logon SCAI Service Version**

The dv-Appl-Logon message contains a parameter, Service Version, which uniquely identifies the version of messages which will be sent during the session. A new Service Version value will be created to uniquely identify the stream of messages which are new or changed during this software release. The new Service Version will be SCAI18.

This new Service Version (SCAI18) must be specified in the dv-Appl-Logon message for the host application to send dv\_Toggle\_Call messages. If a Service Version lower than SCAI18 is specified, dv\_Toggle\_Call messages will not be available to the Host.

The Service Version is upward compatible. This means all of the functionality enabled and provided with any of the previous Service Versions will be provided in SCAI18. Future DMS-100 software releases will provide additional ICM functionality but will continue to allow the specification of the SCAI18 Service Version. Therefore, applications written to use SCAI18 will not require rewriting to continue to work properly.

### **Subscription to the new call control message and changed call held/unheld message**

The following changes in the table SCAISSRV are required to provide subscription to send the new ICM call control message DV\_TOGGLE\_CALL and the changed call event messages DV\_CALL\_HELD\_U and DV\_CALL\_UNHELD\_U.

### **Subscription for ACD**

- A new default tuple TPCC16\$ under category TPCC will be created with the new function TOGGCALL for the new message DV\_TOGGLE\_CALL.

TPCC16\$ will also contain the optional parameter HDUHDLEG of the function CALLHELD and CALLUNHELD set to Y.

### Subscription for Residential and Centrex lines

- A new default tuple SCAI3WC15\$ under the category SCAI3WC will be created with the new function TOGGCALL, for the new message DV\_TOGGLE\_CALL.
- A new default tuple SCAICC10\$ under the category SCAICC will be created with the optional parameter HDUHDLEG of the function CALLHELD and CALLUNHELD set to Y.

### Toggle Call Message and changed Held/Unheld message Setup and Validation

The following setup and conditions must be met in order for the host application to invoke the dv-Toggle-Call message.

1. The SCAI Service Version is at least SCAI18
2. An ICM switch-host session is established. A successful dv-Appl-Logon request was sent by the host computer.
3. The line which the host application is monitoring must be associated to the session via dv-DN-Associate.
4. For Centrex/Res lines the line option ECM with suboption CONF\_XFER set to 'Y' needs to be assigned to send DV\_TOGGLE\_CALL.
5. For Centrex/Res lines the line option ECM with suboption SCAICC set to 'Y' needs to be assigned to receive the changed DV\_CALL\_HELD\_U and DV\_CALL\_UNHELD\_U messages.
6. The switch-host session is subscribed to the new call control message, DV\_TOGGLE\_CALL and the changed messages DV\_CALL\_HELD\_U and DV\_CALL\_UNHELD\_U (SEE SECTION 2.2.2).

### Message Protocol

The ASN.1 notations for the new call control message provided by this activity, DV\_TOGGLE\_CALL is shown in this section. A sample X.209 hex encoding has been provided here. The length fields are variable because the length depends on the variable content. The tag values are taken from the ROSE protocols.

### Toggle Call ASN.1 Encoding

|                       |           |                                          |
|-----------------------|-----------|------------------------------------------|
| <b>dv-Toggle-Call</b> | OPERATION | ToggleCallArgument                       |
|                       | ARGUMENT  | ToggleCallResult                         |
|                       | RESULT    | { invalid-Call-State, missing-Parameter, |
|                       | ERRORS    | invalid-Parameter, not-Allowed,          |

```

agent not Logged In}

::= 51
ToggleCallArgument ::= SEQUENCE
  { origAddress      [2] AddressType OPTIONAL }

  AddressType ::= CHOICE
    { positionID    [0] IMPLICIT INTEGER,
      dialedDigits  [1] IMPLICIT IA5String,
      stationNumber [2] IMPLICIT OCTET STRING,
      q.931Address  [3] Q.931AddressType }

  ToggleCallResult ::= SEQUENCE
    { networkCallID [0] IMPLICIT SEQUENCE
      { networkNodeID [0] IMPLICIT INTEGER OPTIONAL,
        localCallID   [1] IMPLICIT INTEGER OPTIONAL }
    }

  invalid-Call-State ERROR ::= 0

  missing-Parameter ERROR ::= 1
    PARAMETER MissingParameter

  MissingParameter ::= SEQUENCE
    { missingParameterType [0] IMPLICIT ENUMERATED
      { missingOrigAddress (1) } OPTIONAL }

  invalid-Parameter ERROR ::= 2
    PARAMETER InvalidParameter

  InvalidParameter ::= SEQUENCE
    { invalidParameterType [0] IMPLICIT ENUMERATED
      { invalidOrigAddress (2) } OPTIONAL }

  not-Allowed ERROR ::= 3
  agent-Not-Logged-In ERROR ::= 5

```

### Toggle Call Coded Example

As shown in “Toggle call between Customer and Advisor2” on page49, a host has requested the switch to toggle the call from Customer - Adviosor1 call to Customer-Advisor2 call. The following encoding has to be sent from the host to the DMS to cause the Customer-Advisor1 call to be put on hold and the Customer-Advisor2 call to become active. It is assumed that before the message is sent, the Customer-Advisor1 call was active and Customer-Advisor2 call was on hold.

**INVOKE****HOST ==> DMS****dv-Toggle-Call Coded Example**

| Hex Dump                                                         |     |                | Information Element | Comments                                                            |
|------------------------------------------------------------------|-----|----------------|---------------------|---------------------------------------------------------------------|
| Tag                                                              | Len | Content        |                     |                                                                     |
| A1                                                               | 10  |                | INVOKE              | the message length is 16 bytes decimal                              |
| 02                                                               | 01  | 1F             | ..InvokeID          | its Invoke ID is decimal 31                                         |
| 02                                                               | 01  | 33             | ..Operation         | its operation value is dv-Toggle-Call [51] decimal                  |
| 30                                                               | 08  |                | ..Argument          | Toggle Call Arg is of type Sequence and is 8 bytes long decimal     |
| A2                                                               | 0C  |                | .... origAddress    | the origination address is of type constructor and is 12 bytes long |
| 82                                                               | 04  | 01 05<br>0A 04 | .... . posid        | the posid is 5540                                                   |
| Hex dump = A1 10 02 01 1F 02 01 33 30 08 A2 0C 82 04 01 05 0A 04 |     |                |                     |                                                                     |

**RETURN-RESULT****HOST <=== DMS****dv-Toggle-Call Return Result Coded Example**

| Hex Dump                                                                  |     |         | Information Element      | Comments                                                      |
|---------------------------------------------------------------------------|-----|---------|--------------------------|---------------------------------------------------------------|
| Tag                                                                       | Len | Content |                          |                                                               |
| A2                                                                        | 13  |         | RETURN RESULT            | the message length is 19 bytes decimal                        |
| 02                                                                        | 01  | 1F      | ..InvokeID               | its Invoke ID is decimal 31                                   |
| 30                                                                        | 0E  |         | ..Return Result Sequence | this sequence is 14 bytes long decimal                        |
| 02                                                                        | 01  | 33      | .... Operation           | its operation is dv-Toggle-Call [51]                          |
| 30                                                                        | 09  |         | .... Toggle Call Result  | the Toggle CallResult is of type Sequence and is 9 bytes long |
| A0                                                                        | 07  |         | .... . Network Call ID   | NetworkCallId is of type Sequence and is 7 bytes long         |
| 80                                                                        | 01  | 01      | ..... . NetworkNodeID    | Network Node ID is 1                                          |
| Hex dump = A2 13 02 01 1F 30 0E 02 01 33 30 09 A0 07 80 01 01 81 02 05 55 |     |         |                          |                                                               |



**dv-Toggle-Call Return Result Coded Example**

| Hex Dump                                                                  |     |         | Information Element | Comments               |
|---------------------------------------------------------------------------|-----|---------|---------------------|------------------------|
| Tag                                                                       | Len | Content |                     |                        |
| 81                                                                        | 02  | 05 55   | ..... Local Call ID | Local Call ID is 1365. |
| Hex dump = A2 13 02 01 1F 30 0E 02 01 33 30 09 A0 07 80 01 01 81 02 05 55 |     |         |                     |                        |

The following return error would be sent if a toggle call was requested on a set that did not have a consult leg call or if the set has conferenced the primary call and the consult leg call.

**RETURN-ERROR      HOST <=== DMS****dv-Toggle-Call Return Error Coded Example**

| Hex Dump                          |     |         | Information Element | Comments                                          |
|-----------------------------------|-----|---------|---------------------|---------------------------------------------------|
| Tag                               | Len | Content |                     |                                                   |
| A3                                | 06  |         | RETURN Error        | the message length is 6 bytes decimal             |
| 02                                | 01  | 1F      | ..InvokeID          | its Invoke ID is decimal 31                       |
| 02                                | 01  | 00      | ... Error Value     | Error Value is 0 representing Invalid Call State. |
| Hex dump =A3 06 02 01 1F 02 01 00 |     |         |                     |                                                   |

**Message Protocol**

The ASN.1 notations for the changed call event message provided by this activity, DV\_CALL\_HELD\_U is shown in this section. A sample X.209 hex encoding has been provided here. The length fields are variable because the length depends on the variable content. The tag values are taken from the ROSE protocols.

**Call Held ASN.1 Definition**

dv-CALL-HELD-U                      OPERATION  
ARGUMENT                      CallHeldArgument

::= 50

CallHeldArgument ::=

|                 |     |                      |           |
|-----------------|-----|----------------------|-----------|
| { networkCallID | [0] | SEQUENCE             |           |
| { networkNodeID |     | IMPLICIT SEQUENCE    |           |
| localCallID     |     | [0] IMPLICIT INTEGER | OPTIONAL, |
|                 |     | [1] IMPLICIT INTEGER | OPTIONAL} |
| heldParty       | [1] | Address Type         | OPTIONAL, |
| heldLeg         | [2] | IMPLICIT ENUMERATED  | OPTIONAL, |

{heldPrimaryLeg [0] OPTIONAL,  
heldConsultLeg [1] OPTIONAL}  
OPTIONAL}

AddressType:= CHOICE  
   {positionID [0] IMPLICIT INTEGER, (ONLY CHOICE)  
   dialedDigits [1] IMPLICIT IA5STRING,  
   stationNumber [2] IMPLICIT OCTET STRING,  
   q.931Address [3] Q.931AddressType}

Q.931AddressType:= SEQUENCE  
   {numberTypeNumberPlan [0]IMPLICIT OCTET STRING OPTIONAL,  
   presentationScreeningIndicator[1]IMPLICIT OCTET STRING OPTIONAL,  
   digits [2] IMPLICIT IA5STRING OPTIONAL}

### Call Held Coded Example

This example illustrates when the user has put the call on hold either using DV-HOLD-CALL or manually. The scenario is, B(DN 919-2463001) calls A(DN 919-4814210) and both of them are in talking state. The host application of A sends the call control message DV\_HOLD\_CALL to the switch. The call event message DV\_CALL\_HELD\_U, is sent back to the host application, indicating that the primary call on A has been put on hold.

DMS =====>HOST

### Call Held

| Hex Dump |     |         | Information Element      | Comments                                                 |
|----------|-----|---------|--------------------------|----------------------------------------------------------|
| Tag      | Len | Content |                          |                                                          |
| A1       | 1E  |         | INVOKE                   | Message length is 30 bytes.                              |
| 02       | 01  | 0F      | . . InvokeID             | Invoke ID is 15.                                         |
| 02       | 01  | 32      | . . Operation            | Operation value for dv_call_held_U is decimal 50.        |
| 30       | 16  |         | . . CallHeldArgument     | Type SEQUENCE and 22 bytes long.                         |
| A0       | 06  |         | . . . . .Network Call ID | NetworkCallId is of type Constructor and is 6 bytes long |
| 80       | 01  | 02      | . . . . .NetworkNodeID   | Network Node ID is 2                                     |
| 81       | 01  | 02      | . . . . .Local Call ID   | Local Call ID is 2.                                      |
| A1       | 0C  |         | . . . . .heldParty       | HeldParty is a 12 byte constructor.                      |



digits

[2] IMPLICIT

IA5STRING OPTIONAL}

**Call Unheld Coded Example**

This example illustrates when the user unholds either using DV-UNHOLD-CALL or manually. The scenario is, A(DN 919-7823640) consults B(DN 919-2463001) and both of them are in talking state. The host application of A sends the call control message DV\_HOLD\_CALL to the switch. Then the agent manually unholds the held call. The call event message DV\_CALL\_UNHELD\_U, is sent back to the host application, indicating that the held consult leg on A has been unheld.

**DMS ==> HOST****Call Unheld**

| Hex Dump                                                                                                            |     |                                           | Information Element   | Comments                                                 |
|---------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------|-----------------------|----------------------------------------------------------|
| Tag                                                                                                                 | Len | Content                                   |                       |                                                          |
| A1                                                                                                                  | 1E  |                                           | INVOKE                | Message length is 30 bytes.                              |
| 02                                                                                                                  | 01  | 0F                                        | .. InvokeID           | Invoke ID is 15.                                         |
| 02                                                                                                                  | 01  | 1E                                        | .. Operation          | Operation value for dv-Call-Unheld-U is decimal 30.      |
| 30                                                                                                                  | 16  |                                           | .. CallUnheldArgument | Type SEQUENCE and 22 bytes long.                         |
| A0                                                                                                                  | 06  |                                           | ... Network Call ID   | NetworkCallId is of type Constructor and is 6 bytes long |
| 80                                                                                                                  | 01  | 01                                        | .....NetworkNodeID    | Network Node ID is 1                                     |
| 81                                                                                                                  | 01  | 02                                        | .....Local Call ID    | Local Call ID is 2.                                      |
| A1                                                                                                                  | 0C  |                                           | ... unheldParty       | unheldParty is a 12 byte constructor.                    |
| 82                                                                                                                  | 0A  | 39 31<br>39 37<br>38 32<br>33 36<br>34 30 | .....stationNumber    | The DN of the phone is 919-782-3640                      |
| 82                                                                                                                  | 01  | 01                                        | .....unheldleg        | unheld leg is a consult leg.                             |
| Hex Dump = A1 1E 02 01 0F 02 01 1E 30 16 A0 06 80 01 01 81 01 02 A1 0C 82 0A 39 31 39 37 38 32 33 36 34 30 82 01 01 |     |                                           |                       |                                                          |

## Operational Measurements (OM)

### New/Modified OM groups

When a new ICM message is created it is necessary to create new registers in the associated OM group to peg any application-specific outgoing SCAI messages. Two new registers are being added to the SCAISRV4 OM group. These registers are pegged on a SCAIGRP basis.

The following new registers are created by this feature:

- TOGCLLRR - pegged when the switch sends out a RR in response to a valid DV\_TOGGLE\_CALL message request being received and processed.
- TOGCLLRE - pegged when the switch sends out a RE in response to an invalid DV\_TOGGLE\_CALL message request being received.

### Toggle Call invoke message flow examples

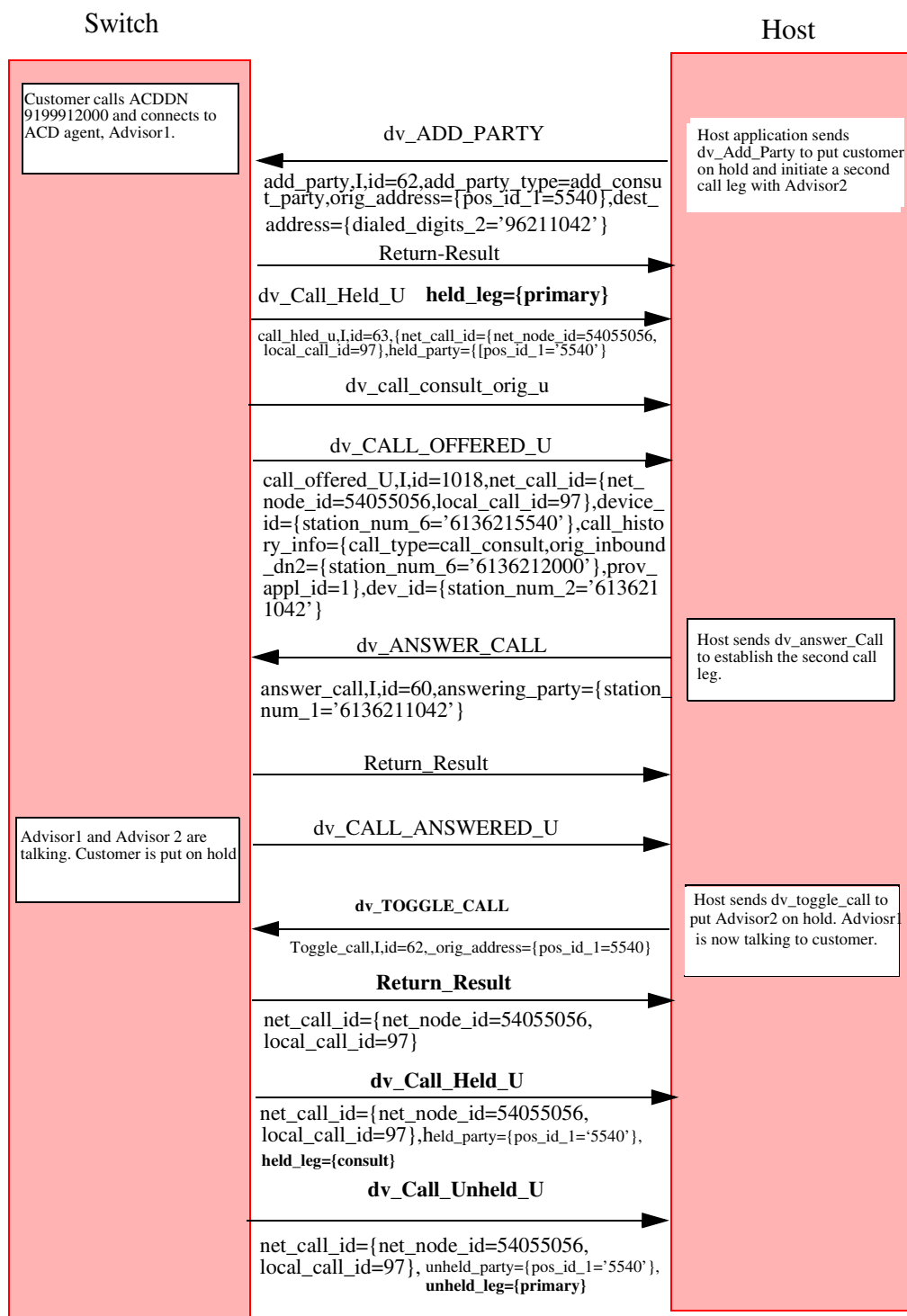
This message is used when an agent has two calls with one being active and the other on hold, and wants to go back and forth between the two calls. When an agent is active on call one and call two is on hold, the host sends the DV\_TOGGLE\_CALL message, now call one will be put on hold and call two will become active.

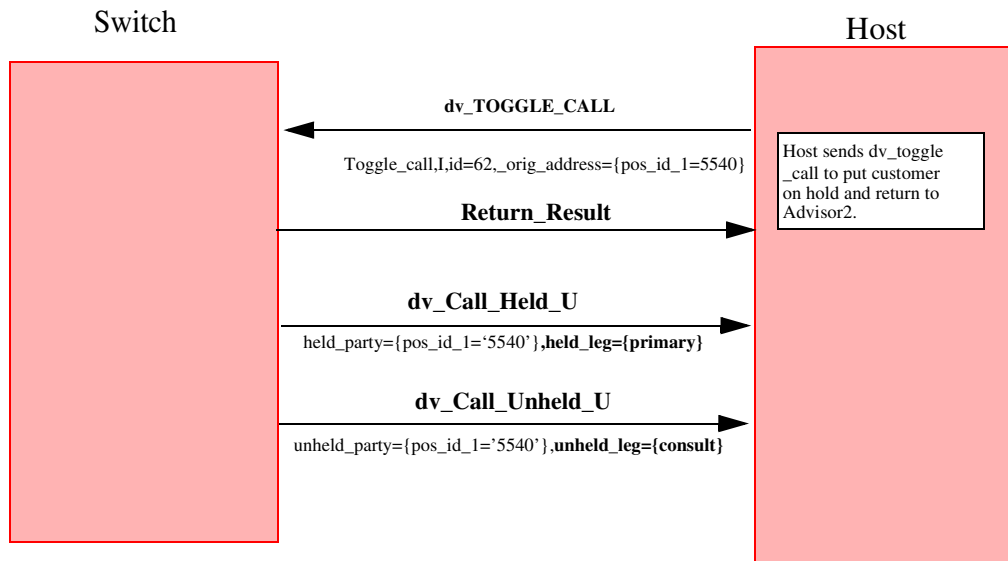
SCAI 3WC/call transfer toggle and set based 3WC/call transfer toggle are not interchangeable on a per call basis. When a call is extended by dv\_add\_party message, it cannot be controlled by the 3WC/call transfer set feature. Similarly if a call is extended via the 3WC/call transfer set feature, it cannot be controlled by the SCAI 3WC/call transfer.

Some message flow scenarios are considered in this section to get a better understanding of the feature functionality.

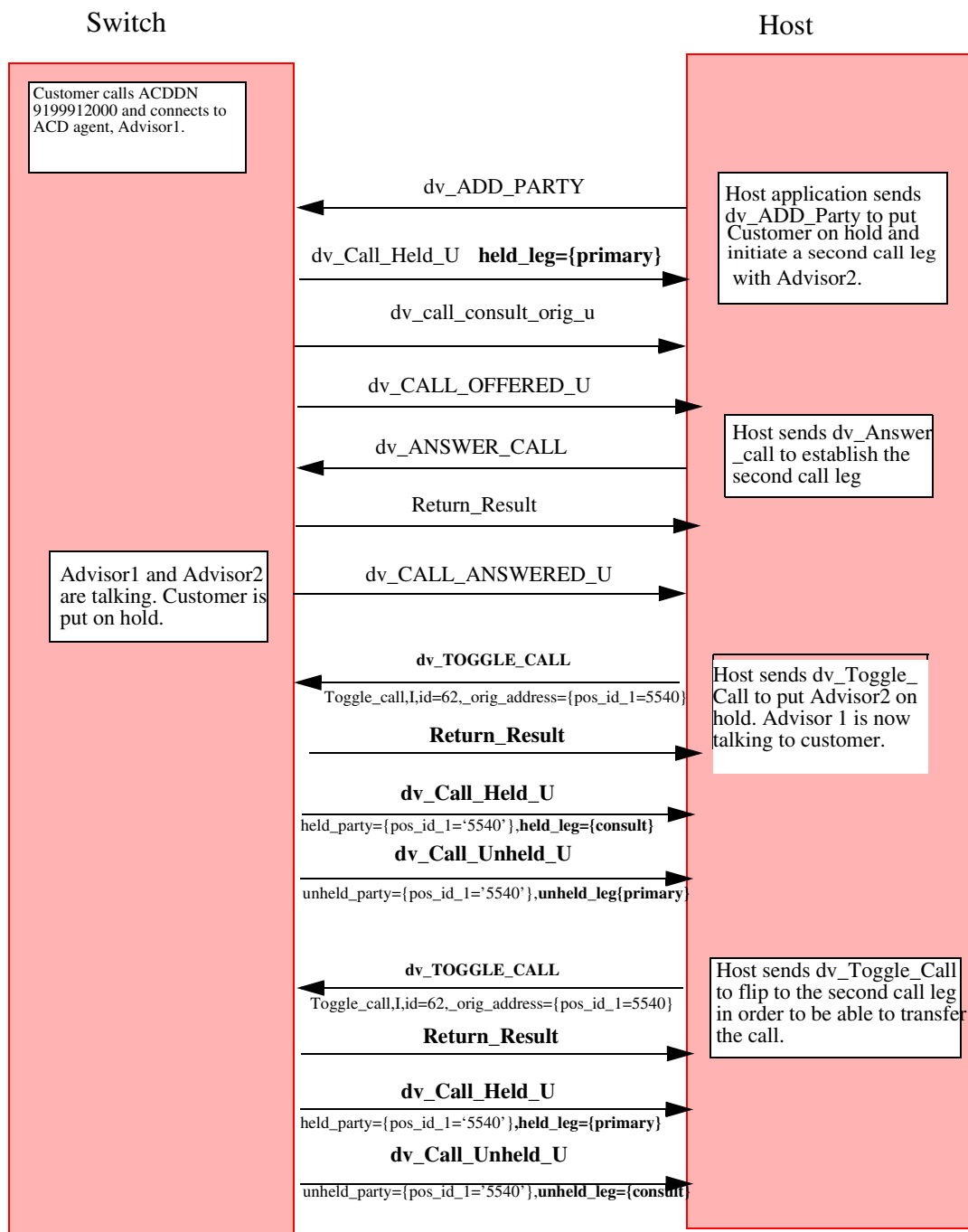
The proposed call control message and the additional dv\_call\_held\_u and dv\_call\_unheld\_u messages are highlighted in the figures.

## Toggle call between Customer and Advisor2

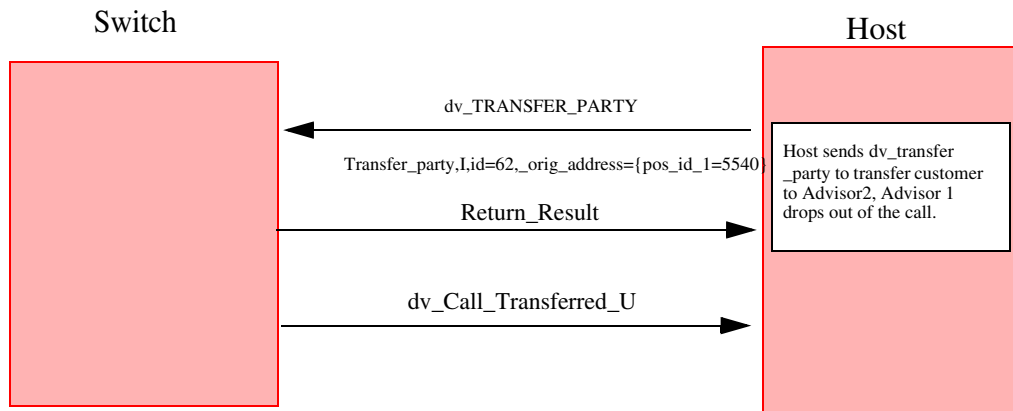


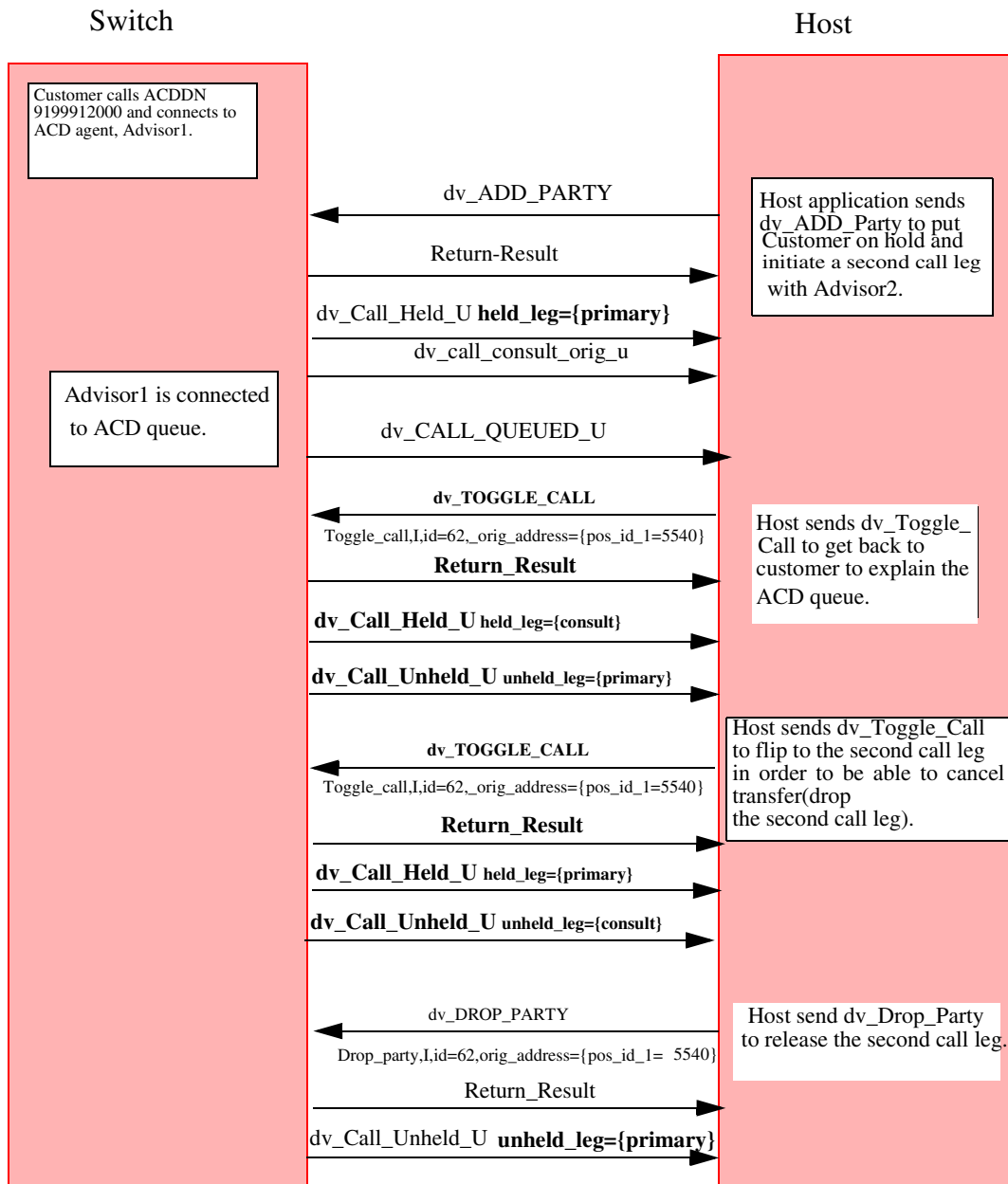


## Toggle with Transfer



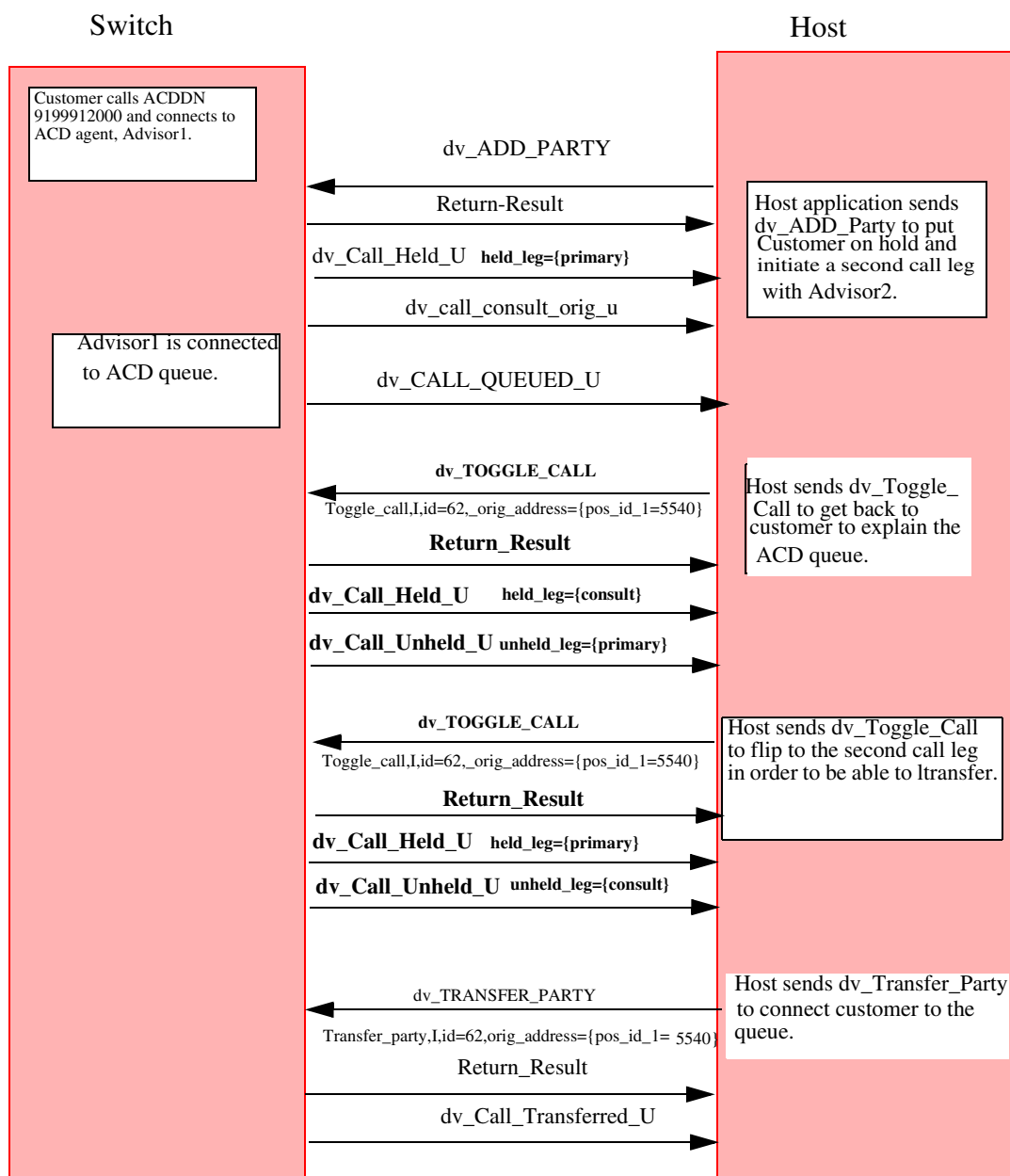




**Toggle call with cancel transfer****Note:**

- Manual toggle cannot be done when a call is in an ACD queue.
- When an ACD queue is reached over a trunk, Toggling is allowed using ICM only when the Audio option is datafilled for that ACD group.

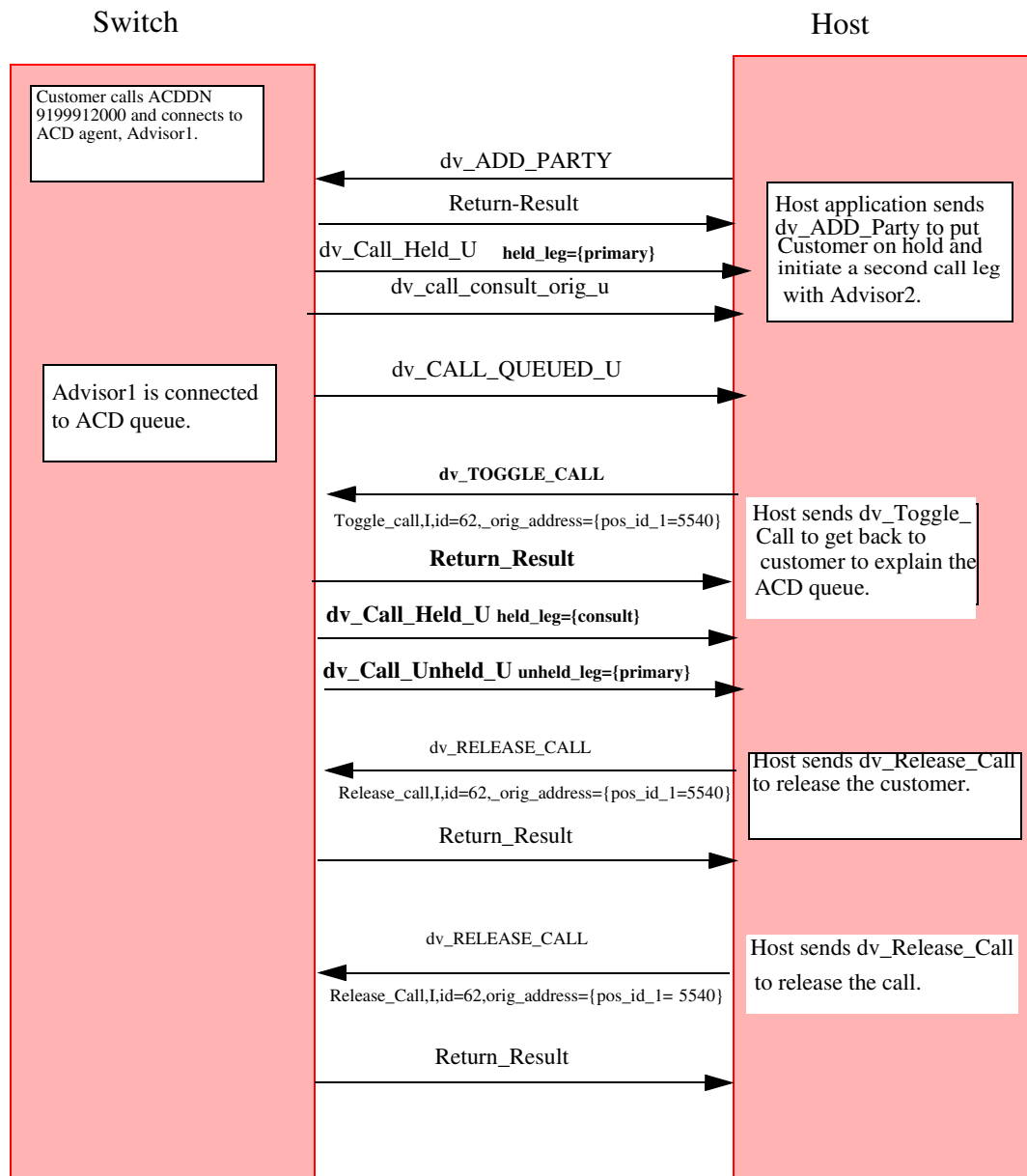
## Toggle and connect call to queue



### Note:

- Manual toggle cannot be done when a call is in an ACD queue.
- When an ACD queue is reached over a trunk, Toggling is allowed using ICM only when the Audio option is datafilled for that ACD group.

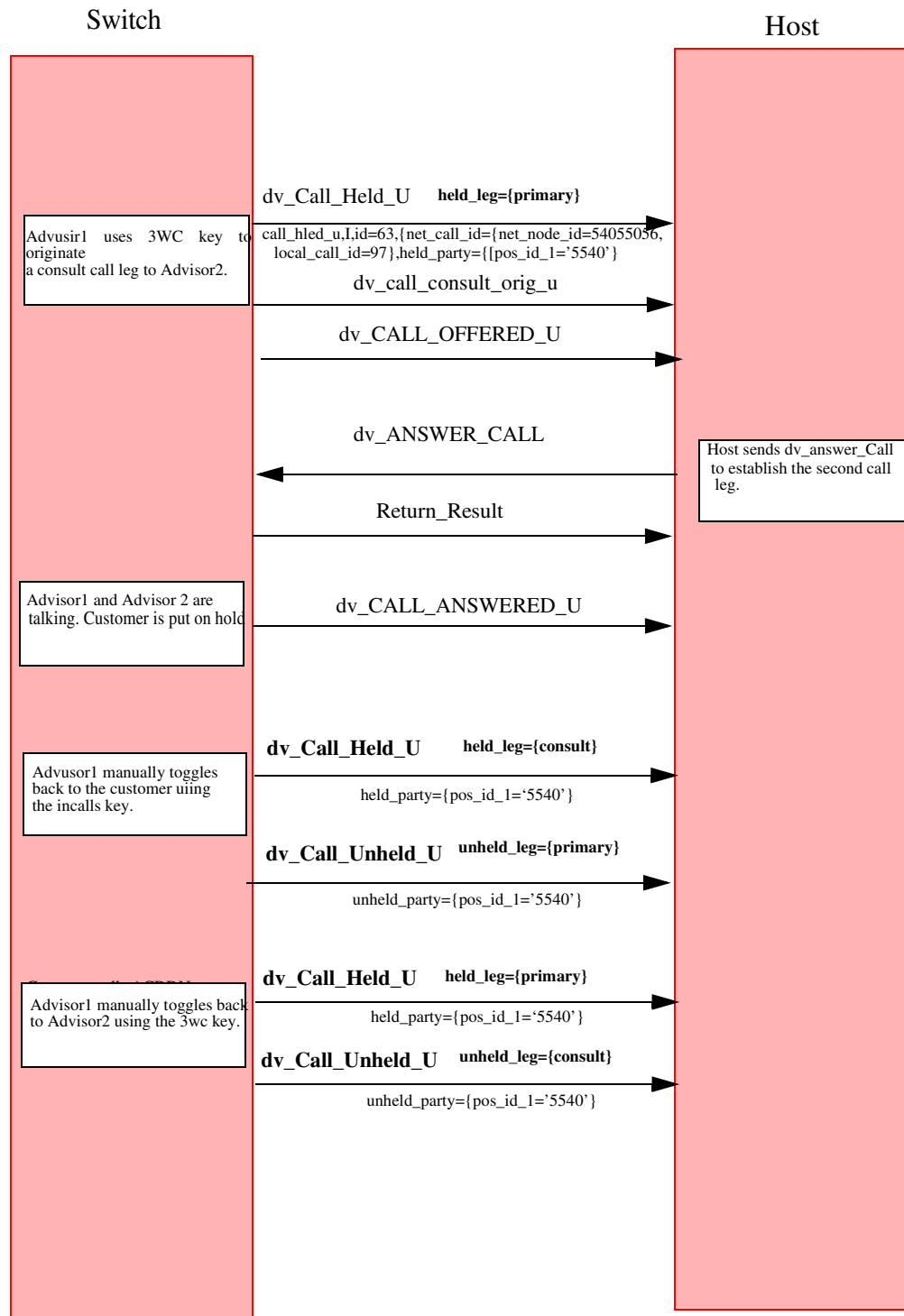
## Toggle and release call

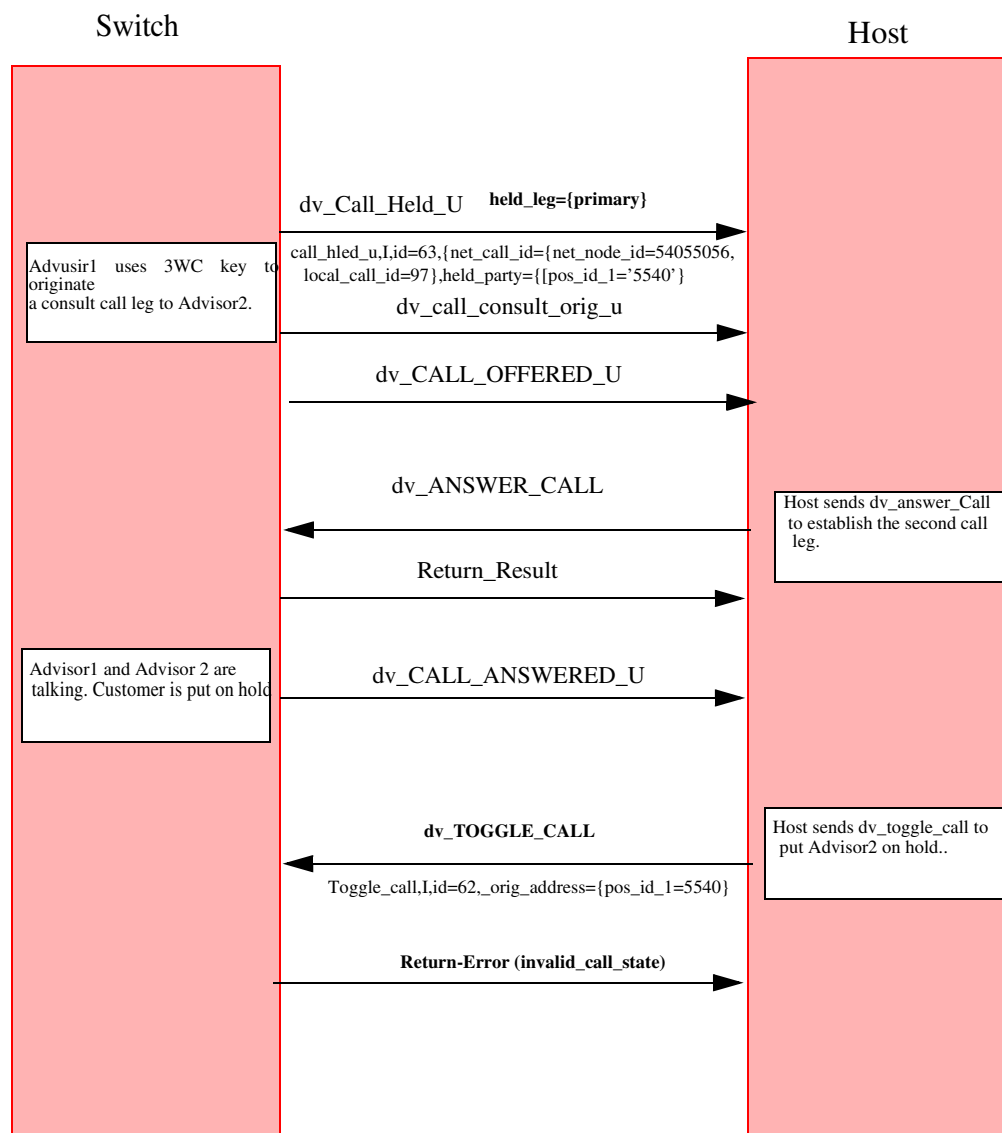


### Note:

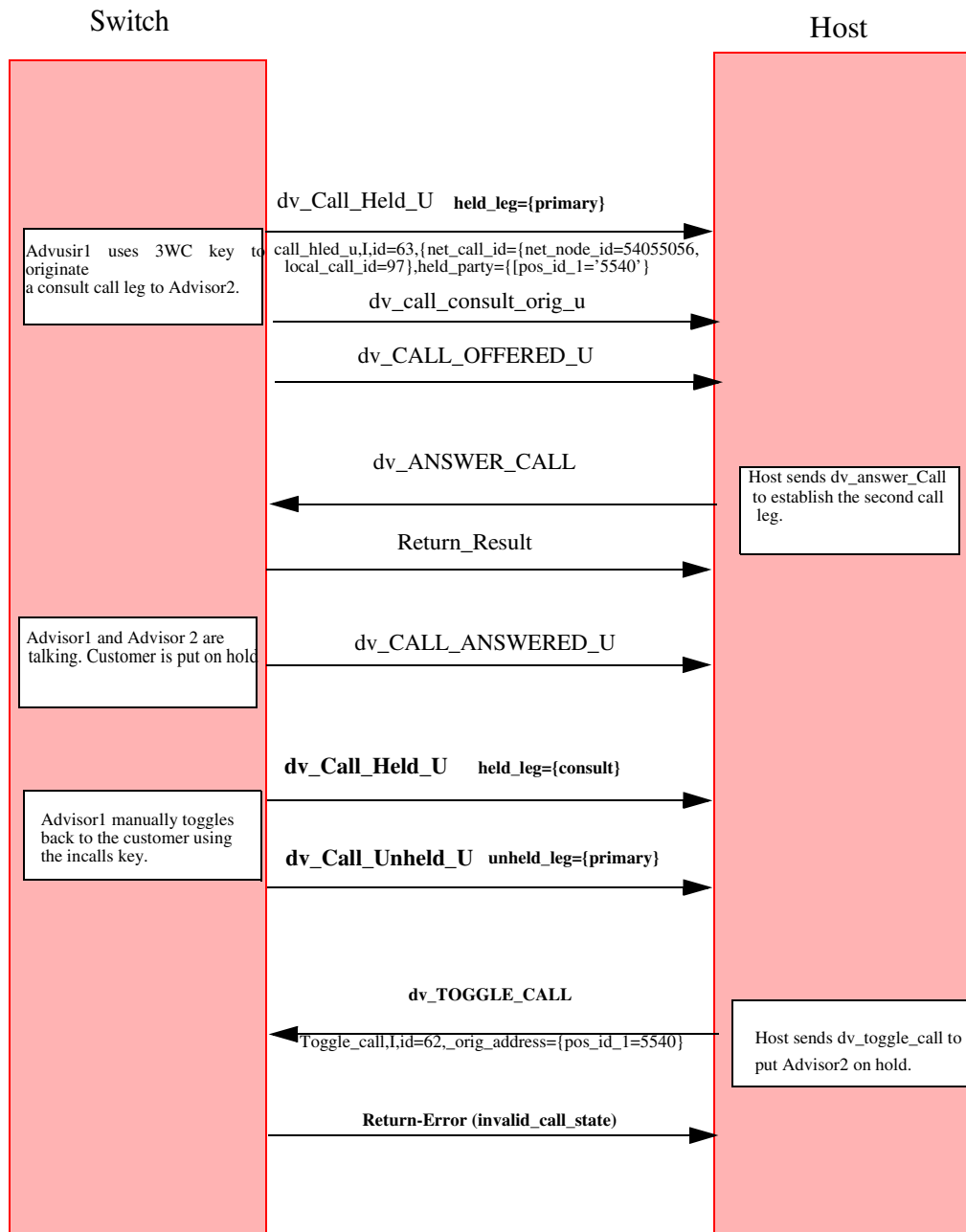
- Manual toggle cannot be done when a call is in an ACD queue.
- When an ACD queue is reached over a trunk, Toggling is allowed using ICM only when the Audio option is datafilled for that ACD group.

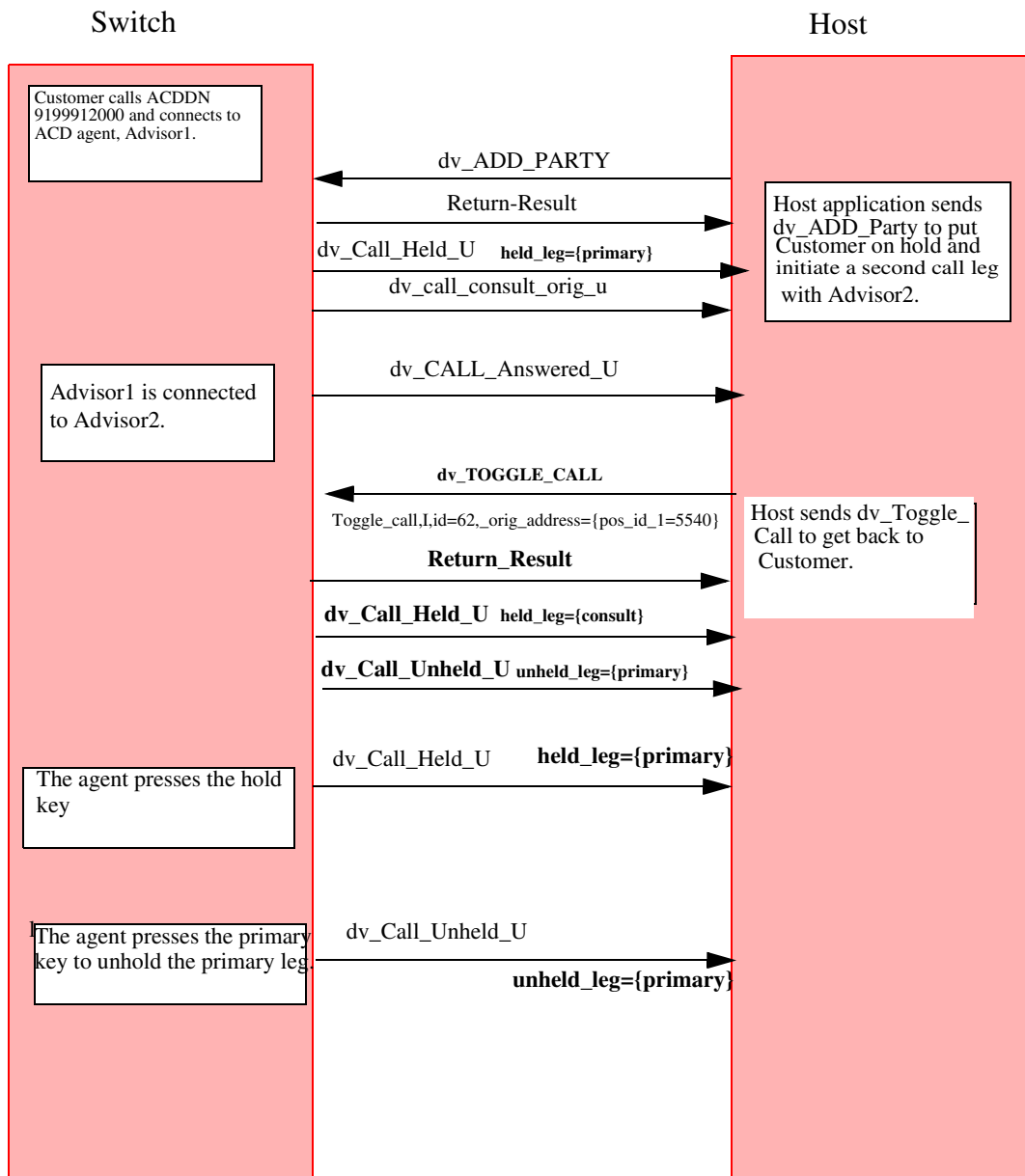
## Manual toggle call between Customer and Advisor2



**Manual consult party with CTI toggle**

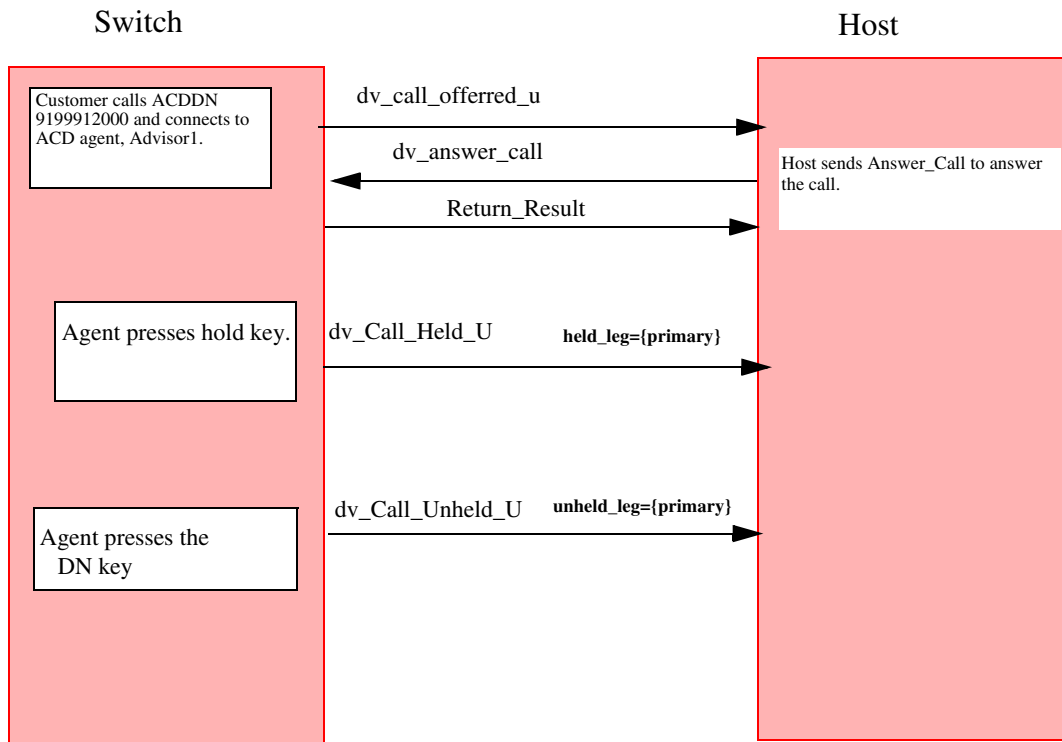
## Manual toggle with CTI toggle



**CTI toggle with manual hold**



## Two Party call with Hold



## Consult and release Advisor2

The following scenario does not require the new message.

1. Customer calls ACD group and is connected to Advisor1.
2. Advisor1 puts customer on hold and connects to Advisor2, using the `dv_Add_Party` message.
3. Advisor1 ends call with Advisor2 by using the `dv_Drop_Party` message.
4. Advisor1 is now connected to customer.

## Hardware Requirements or Dependencies

Not Applicable.

## Software Requirements or Dependencies

Not Applicable

## Limitations and restrictions

- The limitations and restrictions that apply to the functionalities of the 3WC flip flop apply to this feature as well. An exception is made by this feature when a call is queued in an ACD queue. Before this feature with 3WC, one could not toggle when the second leg is connected to an ACD queue. With this feature, this restriction has been removed only for ICM initiated toggle. Manual toggle will not be changed or affected.
- When the second call leg is connected to an ACD queue, toggling is ONLY allowed using ICM. Manual toggle is not allowed. The exception to this is when the queued ACD call is over a trunk and when that ACD group has the Audio option datafilled on it.
- Toggling is also not allowed when the call gets presented to an ACD agent..(i.e Call is ringing on the agent) The exception to this is when the ACD agent is reached over a trunk after being given queued audio.
- When the second call leg is connected to an ACD queue which is located in a different switch than the originator of the second call leg, (i.e termination to ACD queue is using a trunk) toggling is not possible unless the Audio option is datafilled in that ACD group.
- When the second call leg is a trunk ACDcall and it gets requeued due to the ACD agent not answering the call, the requeued call cannot be toggled either using ICM or by manual toggle.
- This feature is not supported on IBN (2500) sets.
- The existing restriction for Add\_Party, Transfer\_Party, Conference\_Party and Drop\_Party applies to this feature as well. When a consult leg is originated using dv\_Add\_Party, toggling must also be originated using ICM. When a consult leg is originated manually, toggling must also be done manually.

## Interactions

None of the existing interactions will be affected or changed by this activity.  
No new interactions will be introduced by this activity.

## Applicable customer facing sections

FaultManagement

Logs

\_\_N/A\_\_

|                                                 |         |
|-------------------------------------------------|---------|
| Alarms                                          | __N/A__ |
| Configuration                                   |         |
| Data Schema                                     | __X__   |
| User Interface                                  | __N/A__ |
| Element Management                              | __N/A__ |
| Security                                        | __N/A__ |
| Service Order                                   | __N/A__ |
| Office Parameters                               | __N/A__ |
| Accounting (includes AMA billing)               | __N/A__ |
| Performance (includes operational measurements) | __X__   |

## Glossary

| Term     | Description                                        |
|----------|----------------------------------------------------|
| ACD      | Automatic Call Distribution                        |
| ASN      | Abstract Syntax Notation                           |
| CTI      | Computer Telephone Integration                     |
| DN       | Directory Number                                   |
| ICM      | Intelligent Call Management                        |
| IBN      | Integrated Business Network                        |
| MDC      | Meridian Digital Centrex                           |
| RES      | Residential Enhanced Services                      |
| SCAICC   | Switch Computer Application Interface Call Control |
| SCAISSRV | Switch Computer Application Interface SCAI Service |
| TPCC     | Third party Call Control                           |

***Product = CS 2000***

**A00003147 -- DP Digit Reception Control (Succession on DMS)**

### Description

## Purpose

The goal of the work covered by this activity is to provide a mechanism that eliminates the problem about generation of fake emergency service calls and unwanted billing records by line faults, which is a serious nuisance.

## Background information

Insulation breakdown due to moisture or chafing of the cable pair due to wind causes the line to appear to be outpulsing digits. With the dial plan for the DMS switches, a pulse of 1 represents digit 1. Since digit "1" is only one pulse, for example, if there are three of these occurring within the interdigit pause, then the DMS routes the call as "111" which is an emergency service number in some countries.

## Functional description

By disabling DP digit collection on lines assigned DGT option, the impacts of these fake calls can be eliminated.

The functionality thus provided eliminates the possible generation of these phantom calls by completely disabling DP digit collection with the use of an office parameter; scanning for only offhook, flashes and DTMF tones are permitted.

The change has the following operational impacts/effects:

- Prevents the generation of phantom calls on lines assigned DGT option.
- Dial pulse equipment is not supported on lines assigned DGT option.

## Feature Operation

This activity provides control of DP Digit Collection on lines assigned DGT option by introducing a new office parameter `DISABLE_DP_RECEPTION_ON_DGT` in table `OFCENG`.

When office parameter `DISABLE_DP_RECEPTION_ON_DGT` in table `OFCENG` is assigned to Y, DP digit collection is disabled on lines assigned DGT option, only offhook, flashes and DTMF tones are permitted.

When office parameter `DISABLE_DP_RECEPTION_ON_DGT` in table `OFCENG` is set to N, DP digit collection functionality remains unchanged.

The diagram below shows the desired behaviour.

**Functional Behavior Diagram**

| <b>'Disable DP Reception on DGT' office parameter</b>       | <b>DIGITONE PHONE ON DGT LINE</b>                                                                            | <b>DIAL PULSE PHONE ON DGT LINE</b>                            | <b>DIAL PULSE PHONE ON DP LINE</b> |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------|
| office parameter set to N<br>(dp digit collection allowed)  | possible generation of fake calls, DP digit reception allowed.                                               | possible generation of fake calls, DP digit reception allowed. | possible generation of fake calls  |
| office parameter set to Y<br>(dp digit collection disabled) | possible generation of offhook, flashes and DTMF tones only, not fake calls, DP digit reception not allowed. | not supported, DP digit reception not allowed.                 | possible generation of fake calls. |

The new office parameter `DISABLE_DP_RECEPTION_ON_DGT` is not directly related to the `OFCVAR` parameter `DEFAULT_SIGNALLING_TYPE`. `DEFAULT_SIGNALLING_TYPE` parameter decides which option to be assigned to the line by default when no option is added to the line. If the `DEFAULT_SIGNALLING_TYPE=DP` and no option is assigned to the line, DP option is assigned automatically and the line is not affected by the new parameter `DISABLE_DP_RECEPTION_ON_DGT`. If the `DEFAULT_SIGNALLING_TYPE=DT` and no option is assigned to the line, DGT option is assigned automatically and the line is affected from the new parameter according to Table 1. If the `DEFAULT_SIGNALLING_TYPE=DT` and DP option is assigned to a line, the line is not affected from the new parameter, DP digit collection is allowed.

The new office parameter is downloaded to the targetted XPMs under following conditions:

- Static data download after XPM loading.
- Static data download during RTS of XPM.
- Change in the value of `DISABLE_DP_RECEPTION_ON_DGT` in table `OFCENG`.

One of the available locations of protected global data area in the XPM is reserved to store the new office parameter value.

Whenever a change occurs in the office parameter value, a msg is sent to all the targetted peripherals immediately, with the updated value.

Also, the XPMs are updated with the existing office parameter value whenever a loading or RTS of supported peripherals occur.

This does not cause any outage or static data mismatch in the peripherals.

There is no need for a reload, swact, etc on the peripherals for the parameter value update.

### **Supported Peripherals**

The definitive line/XPM types that need to be covered under this activity are:

- GPP V5.2 IBN Lines.
- GPP MelCAS IBN Lines.
- IBN Lines on PLGC.
- IBN Lines in RCO2.

All DMS-100 customers that deploy line services are able to use this functionality.

### **Error Detection**

A PM181 informational log is generated whenever a failure in updating the pre-defined global data location in the XPM is detected.

Refer to the Fault Management section for more details.

### **Activation**

Feature activation is done by setting the office parameter `DISABLE_DP_RECEPTION_ON_DGT` to Y.

Changes to `DISABLE_DP_RECEPTION_ON_DGT` are immediately effective.

The targetted PM's are immediately updated with the new value, without causing any outage in the XPM, no action is needed in the peripherals for the parameter value update.

By default, the office parameter value is set to N.

### **Hardware Requirements or Dependencies**

No changes due to this feature.

### **Software Requirements or Dependencies**

The new functionality provided by this activity is being implemented using the existing interfaces. As such, no new software dependencies are being introduced.

This functionality requires release SN07 or higher loads.

## Limitations and restrictions

The functionality that is provided by this feature restricts the use of Dial Pulse phones on lines assigned DGT option.

When the office parameter DISABLE\_DP\_RECEPTION\_ON\_DGT is set to Y, Dial Pulse phones on lines assigned DGT option are not supported.

## Patch Availability

The activity is implemented in SN07 and patched back to SN04.

## Interactions

There are no interactions with other features.

This feature has no effect on flash functionality and on features using flash functionality.

## Applicable customer facing sections

### Fault Management

Logs \_\_\_X\_\_\_

Alarms \_\_\_N/A\_\_\_

### Configuration

Data Schema \_\_\_N/A\_\_\_

User Interface \_\_\_N/A\_\_\_

Element Management \_\_\_N/A\_\_\_

Security \_\_\_N/A\_\_\_

Service Order \_\_\_N/A\_\_\_

Office Parameters \_\_\_X\_\_\_

Accounting (includes AMA billing) \_\_\_N/A\_\_\_

Performance (includes operational measurements) \_\_\_N/A\_\_\_

## Glossary

| Term | Explanation              |
|------|--------------------------|
| DGT  | Digitone                 |
| DMS  | Digital Multiplex System |
| DP   | Dial Pulse               |
| DT   | Digitone                 |

| Term | Explanation                         |
|------|-------------------------------------|
| GPP  | Global Peripheral Platform          |
| PLGC | Peripheral Line Group Controller    |
| RCO2 | Remote switching Center Offshore #2 |
| XPM  | Extended Peripheral Module          |
| DTMF | Digitone Multifrequency             |





## ISN07 Feature Deltas

***Product = CS 2000***

### **A00003410 -- New ETSI ISUP variant for Honduras (Succession on DMS)**

#### ***Functional Description***

The purpose of this feature is to introduce a new ETSI ISUP variant for Honduras market in MMP20. This variant should be defined under ETSI ISUP Version 2 (White Book).

The reason to use the new variant is that Honduras market requirements may not be provided neither by the BASE ETSI ISUP nor by one of existing variants. The detailed description of Honduras market requirements may be found in the Product Spec “ETSI ISUP for Honduras (HONDUTEL)”, module **P008287PS.AA05** in FMDOC library.

The brief description of Honduras market requirements:

- Honduras ISUP variant should be supported in QDT and QCI loads.
- Prohibit specific ISUP messages and parameters.
- Support of INR/INF ISUP messages.
- Support of national Calling Party Categories (CPC) in interworking between Honduras ETSI ISUP and FDCP protocols.
- Support of Trunk Offering (TKO) feature.
- Support of Malicious Call Trace feature.

The detailed description of Honduras market requirements is below.

## New Honduras variant

The type CCITT\_ISUP\_VARIANT\_TYPE should be extended with HONDURAS variant (new decimal value 43 will be used), see Figure . Trunk definition in the TRKSGRP table is shown in the Figure .

### Extension of CCITT\_ISUP\_VARIANT\_TYPE

```
type CCITT_ISUP_VARIANT_TYPE
{BASE, GERMANY, FRANCE, SPAIN, BELGIUM, ITALY, ISRAEL, PNG, SPARE, UK,
CHILE, COSTA_RICA, NORWAY, NEW_ZEALAND, ETHIOPIA, GEORGIA, MYANAMAR,
VIETNAM, ISDEFO, SAUDI, ACIF_AUSTRALIA, BRAZIL, MEXICO, TURKEY, PORTUG
AL, DENMARK, SPIROU, SWEDEN, AUSTRIA, EGYPT, JPN_INTERCONN, PERU,
ARGENTINA, POLAND, CZECH, HUNGARY, CA30_AUSTRALIA, HONGKONG, TAIWAN,
SINGAPORE, CHINA, BANGLADESH, RUSSIA, HONDURAS}
```

### HONDURAS variant in TRKSGRP

```
TABLE TRKSGRP
pos orisup2 0

>orisup2 0 ORISUP2 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0
TMX100 N N HONDURAS 100_WHITE (ALL_NOA ) $ NIL CIC
```

The Honduras ETSI ISUP variant should be supported in the following crosses.

### Supported crosses

| port2<br>port1 | ISUP | FDCP | IBN |
|----------------|------|------|-----|
| ISUP           | Y    | Y    | Y   |
| FDCP           | Y    |      |     |
| IBN            | Y    |      |     |

## Allowed ISUP Messages and Optional Parameters

Messages that should be **supported** in Honduras market are shown in the Table , “Supported messages,” on page 566. If any other message will be received in the trunk it should be responded with ISUP\_CNF (confusion).

### Supported messages

| Message          | Code            |
|------------------|-----------------|
| Address complete | 0 0 0 0 0 1 1 0 |

**Supported messages**

| Message                                  | Code            |
|------------------------------------------|-----------------|
| Answer                                   | 0 0 0 0 1 0 0 1 |
| Blocking                                 | 0 0 0 1 0 0 1 1 |
| Blocking acknowledgement                 | 0 0 0 1 0 1 0 1 |
| Call progress                            | 0 0 1 0 1 1 0 0 |
| Circuit group blocking                   | 0 0 0 1 1 0 0 0 |
| Circuit group blocking acknowledgement   | 0 0 0 1 1 0 1 0 |
| Circuit group reset                      | 0 0 0 1 0 1 1 1 |
| Circuit group reset acknowledgement      | 0 0 1 0 1 0 0 1 |
| Circuit group unblocking                 | 0 0 0 1 1 0 0 1 |
| Circuit group unblocking acknowledgement | 0 0 0 1 1 0 1 1 |
| Confusion                                | 0 0 1 0 1 1 1 1 |
| Connect                                  | 0 0 0 0 0 1 1 1 |
| Continuity                               | 0 0 0 0 0 1 0 1 |
| Continuity check request                 | 0 0 0 1 0 0 0 1 |
| Information (national use)               | 0 0 0 0 0 1 0 0 |
| Information request (national use)       | 0 0 0 0 0 0 1 1 |
| Initial address                          | 0 0 0 0 0 0 0 1 |
| Operator (for TKO)                       | 1 1 1 1 1 0 0 1 |
| Release                                  | 0 0 0 0 1 1 0 0 |
| Release complete                         | 0 0 0 1 0 0 0 0 |
| Reset circuit                            | 0 0 0 1 0 0 1 0 |
| Resume                                   | 0 0 0 0 1 1 1 0 |
| Subsequent address                       | 0 0 0 0 0 0 1 0 |
| Suspend                                  | 0 0 0 0 1 1 0 1 |
| Unblocking                               | 0 0 0 1 0 1 0 0 |
| Unblocking acknowledgement               | 0 0 0 1 0 1 1 0 |

Parameters that should be **supported** for Honduras variant are shown in the Table , “Supported parameters.”. Parameters that are not supported should not

be included in the ISUP messages that are built in the switch, and being received from another switch should be discarded.

#### Supported parameters

| Parameter                              | Code            |
|----------------------------------------|-----------------|
| Access transport                       | 0 0 0 0 0 0 1 1 |
| Automatic congestion level             | 0 0 1 0 0 1 1 1 |
| Backward call indicators               | 0 0 0 1 0 0 0 1 |
| Called party number                    | 0 0 0 0 0 1 0 0 |
| Calling party number                   | 0 0 0 0 1 0 1 0 |
| Calling party's category               | 0 0 0 0 1 0 0 1 |
| Cause indicators                       | 0 0 0 1 0 0 1 0 |
| Circuit group supervision message type | 0 0 0 1 0 1 0 1 |
| Closed user group interlock code       | 0 0 0 1 1 0 1 0 |
| Connected number                       | 0 0 1 0 0 0 0 1 |
| Continuity indicators                  | 0 0 0 1 0 0 0 0 |
| End of optional parameters             | 0 0 0 0 0 0 0 0 |
| Event information                      | 0 0 1 0 0 1 0 0 |
| Forward call indicators                | 0 0 0 0 0 1 1 1 |
| Information indicators                 | 0 0 0 0 1 1 1 1 |
| Information request indicators         | 0 0 0 0 1 1 1 0 |
| Nature of connection indicators        | 0 0 0 0 0 1 1 0 |
| Optional backward call indicators      | 0 0 1 0 1 0 0 1 |
| Optional forward call indicators       | 0 0 0 0 1 0 0 0 |
| Range and status                       | 0 0 0 1 0 1 1 0 |
| Subsequent number                      | 0 0 0 0 0 1 0 1 |
| Suspend/Resume indicators              | 0 0 1 0 0 0 1 0 |
| Transmission medium requirement        | 0 0 0 0 0 0 1 0 |
| User service information               | 0 0 0 1 1 1 0 1 |
| User-to-user indicators                | 0 0 1 0 1 0 1 0 |
| User-to-user information               | 0 0 1 0 0 0 0 0 |

**Note:** Parameters and indicators supported in INR/INF messages are described below in the section .

## Support of INR/INF

Information request indicators under the INformation Request (INR) message and Information indicators under the INformation (INF) message should support only calling party address.

Supported information indicators are shown in the following table.

### INR / INF - Indicators support

| Message | Indicators                      | Bits | Value |
|---------|---------------------------------|------|-------|
| INR     | calling party address request   | A    | Y     |
|         | holding indicator               | B    | N     |
|         | calling party category request  | D    | N     |
|         | charge information request      | E    | N     |
|         | malicious call identification   | H    | N     |
| INF     | calling party address response  | BA   | Y     |
|         | hold provided                   | C    | N     |
|         | calling party category response | F    | N     |
|         | charge information response     | G    | N     |
|         | solicited information           | H    | N     |

### INR/INF Indicators supported

| Message | Indicator supported                         | Not supported          |
|---------|---------------------------------------------|------------------------|
| INR     | calling party address (bit A)               | Bits B - P should be 0 |
| INF     | calling party address response (bits A - B) | Bits C - P should be 0 |

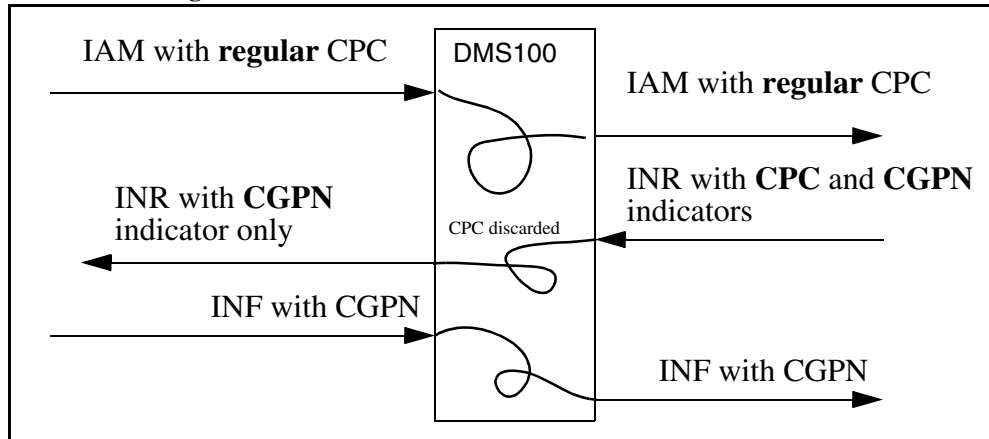
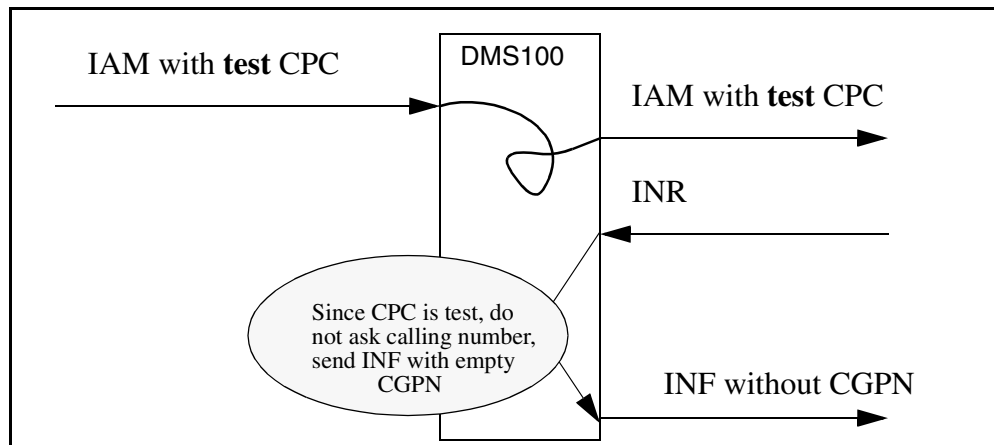
Optional parameters supported in INR/INF are shown in the Table , “INR / INF - Optional Parameters support,” on page 570.

**INR / INF - Optional Parameters support**

| Message | Indicators                          | Supported |
|---------|-------------------------------------|-----------|
| INR     | call reference                      | N         |
|         | network specific facility           | N         |
|         | parameter compatibility information | N         |
| INF     | calling party category              | N         |
|         | <b>calling party number</b>         | <b>Y</b>  |
|         | call reference                      | N         |
|         | connection request                  | N         |
|         | parameter compatibility information | N         |
|         | network specific facility           | N         |

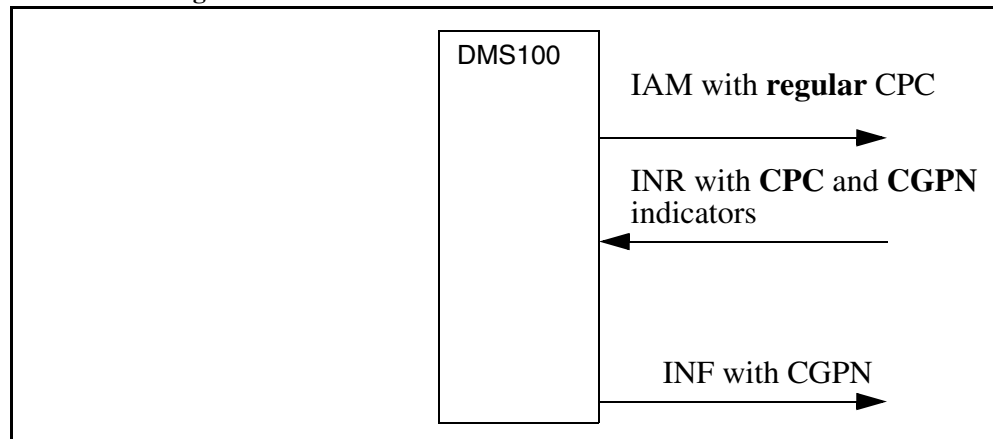
**Message Type: INR and INF messages.**

| Message | Parameter                      | Type | Length |
|---------|--------------------------------|------|--------|
| INR     | Message Type                   | F    | 1      |
|         | Information request indicators | F    | 2      |
|         | End of optional parameters     | O    | 1      |
| INF     | Message Type                   | F    | 1      |
|         | Information indicators         | F    | 2      |
|         | calling party number           | O    | 5-12   |
|         | End of optional parameters     | O    | 1      |

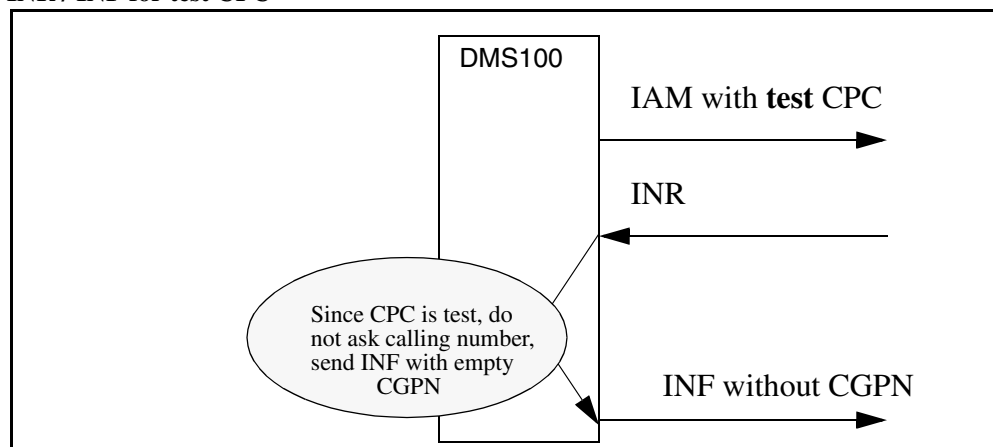
**INR / INF in Tandem switch****INR / INF for regular CPC****INR / INF for test CPC**

## INR / INF in Originating switch

### INR / INF for regular CPC

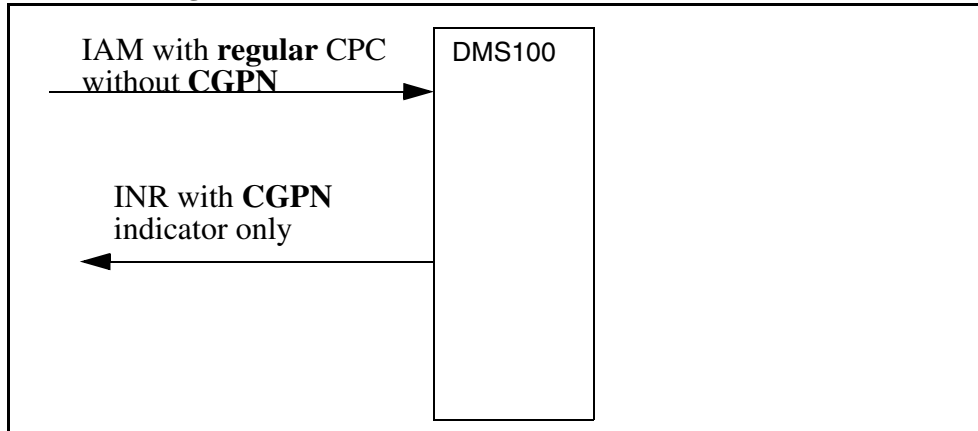


### INR / INF for test CPC



## INR / INF in Terminating switch



**INR / INF for regular CPC****Calling Party Categories: Values and Mapping.**

The following calling party categories should be supported for Honduras variant (see table below).

**Calling Party Categories**

| CPC               | Value |
|-------------------|-------|
| Regular           | #0A   |
| Priority          | #0B   |
| Public phone      | #0F   |
| National Operator | #E1   |
| Test              | #0D   |

In the ISUP - FDCP and FDCP - ISUP crosses that should be supported by Honduras ETSI ISUP variant the mapping between ISUP CPC categories and MFC activities is following:

**CPC Mapping**

| ISUP CPC              | Value | MFC Activity | Signal |
|-----------------------|-------|--------------|--------|
| ISUP_CPC_SUBSCRIBER_1 | #0A   | REG_SUB      | 1      |
| ISUP_CPC_TOF_OPER     | #E1   | OPER         | 5      |
| ISUP_CPC_PRIORITY     | #0B   | PR_SUB       | 2      |
| ISUP_CPC_PAYPHONE     | #0F   | LOCAL_COIN   | 4      |
| ISUP_CPC_TEST_CALL    | #0D   | MTC_EQ       | 3      |

In the mapping for ISUP to FDCP - Convert all ISUP\_CPC categories except the above mentioned to REG\_SUB MFC Activity.

In the mapping for FDCP to ISUP - Convert all MFC Activities categories except the above mentioned to ISUP\_CPC\_Subscriber\_1.

### Trunk Offering

The Honduras requirements for trunk offering are the same that for Costa-Rica market, detailed information on it may be found in the feature **A00002291.AA15** “Trunk Offering Expansion”, FMDOC library.

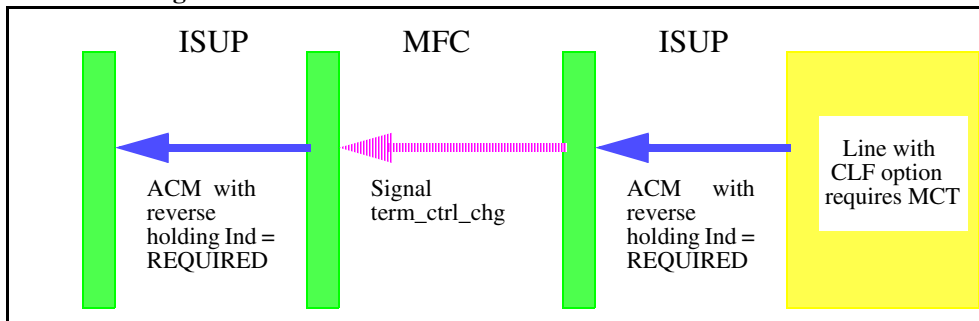
- The ISUP Operator signal should be #F9.
- The operator calling party category should be #E1 (see section “Calling Party Categories” on page 573).

### Malicious Call Trace

MCT support means that the field **Reverse\_Holding\_Ind** in the ACM message (that is set according to the will of MCT terminator) should be transferred via net.

In the FDCP to ISUP tandem ACM with Reverse\_Holding\_Ind = REQUIRED should be transferred into activity TERM\_CTRL\_CHG, and into activity CONNECT\_CALL\_CHG otherwise.

#### Reverse holding indicator transfer



### Hardware Requirements or Dependencies

N/A

### Software Requirements or Dependencies

N/A

## Limitations and restrictions

**A.** Messages that should be **supported** in Honduras market are shown in Table , “Supported messages,” on page 566. If any other message will be received in the trunk, it should be responded with ISUP\_CNF (confusion) message.

**B.** Parameters that should be **supported** for Honduras variant are shown in Table , “Supported parameters,” on page 568. Parameters that are not supported should not be included in the ISUP messages that are built in the switch, and being received from another switch should be discarded.

**C.** The definition of Honduras variant will be only for SX05 release.

## Interactions

N/A

## Glossary

| Term | Description            |
|------|------------------------|
| CPC  | Calling Party Category |
| INF  | Information            |
| INR  | Information Request    |
| MCT  | Malicious Call Trace   |
| TKO  | Trunk Offering         |

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

**Data Schema X**

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

|                                                 |     |
|-------------------------------------------------|-----|
| Office Parameters                               | N/A |
| Accounting (includes AMA billing)               | N/A |
| Performance (includes operational measurements) | N/A |

## References

“Trunk Offering Expansion”, feature A00002291, available elsewhere in this document.

## Configuration for A00003410

### Hardware and Software Requirements

There is no special Hardware/Software Requirements.

### Initial Configuration

N/A.

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A.

### Upgrade Impact

N/A

### Data schema (DS) (CM, MIBS, RDB)

#### New/modified tables, MIBs, or Database Schema

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| TRKSGRP        | CHANGED                  | UNCHANGED                          |

#### Table/MIB/Remote Database Schema information

##### Table Name: TRKSGRP

##### Functional description

DMS100 switches are all based on ETSI V2 White book specification. Each market which its requirements are different from the base, can implement it by using the ability to declare its own VARIANT. Each market can use the VARIANT that already has been declared by the ISUP Platform.

*For example:* The Honduras national variant is identified by datafilling of the VARIANT field as ‘HONDURAS’ in table TRKSGRP for the Honduras ETSI ISUP trunks.

The VERSION field in table TRKSGRP is datafilled when the PROTOCOL field in table TRKSGRP indicates Q767 (ETSI ISUP). The 100\_WHITE is available whenever the PROTOCOL is datafilled as Q767. The datafilled Version 100\_WHITE together with the Variants define whether ETSI ISUP V2 or another market of ETSI ISUP V2 is used for that particular trunk group.

### Usage sequence and implications (CM Only)

Current datafill order unchanged.

### Size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| TRKSGRP                | 0              |                |                       |

### Fields/OIDs

#### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Entry    | Explanation and action                            |
|---------|----------------|------------------------|----------|---------------------------------------------------|
| VARIANT | Changed        | subfield               | HONDURAS | See section “Functional description” on page 576. |

### Datafill example

#### HONDURAS variant in Table TRKSGRP

|                  |                    |         |                                       |
|------------------|--------------------|---------|---------------------------------------|
| SGRPKEY CARDCODE |                    | SGRPVAR |                                       |
| SGRPVAR          |                    |         |                                       |
| -----            |                    |         |                                       |
| HONDURAS_ISUP 0  | DS1SIG             |         |                                       |
| C7UP             |                    |         |                                       |
| 2W N N UNEQ NONE | <b>Q767</b> THRL 0 | DMSNODE | N Y <b>HONDURAS 100_WHITE</b> \$ ETSI |
| CIC              |                    |         |                                       |
|                  | ↓                  | ↓       | ↓                                     |
|                  | External Protocol  | Variant | Version                               |

**Table release history update**

SN07 adds the entry HONDURAS as a value for field VARIANT in table TRKSGRP.

**Supplementary information**

None.

**Translation verification other tools**

Table TRKSGRP does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

N/A.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

N/A.

**Configuration Walkthrough**

N/A.

***Product = CS 2000*****A00003411 -- New Toneset for Honduras (Succession on DMS)*****Functional Description***

This feature provides new loadable tones for the Honduras market on the base of existing NTMX76AB and NTMX76CA tone cards for the GPP and DTCO2 peripherals in the MMP20 stream.

The tone set includes:

- DTMF (Dual-Tone Multi-Frequency) tones
  - The DTMF tones are added to support EBS (Electronic Business Set) and signalling to PABXs (Private Automatic Branch Exchanges). The following is the list the DTMF tones that should be defined for

Honduras market: dtmf digit 1, dtmf digit 2, dtmf digit 3, dtmf digit 4, dtmf digit 5, dtmf digit 6, dtmf digit 7, dtmf digit 8, dtmf digit 9, dtmf digit 0, dtmf tone \*, dtmf tone #, dtmf tone A, dtmf tone B, dtmf tone C, dtmf tone D.

- MFC (Forward Multi-Frequency Compelled) tones
  - The MFC tones are added to support R2 protocol signalling. The following is the list the MFC tones that should be defined for Honduras market: MFC 1, MFC 2, MFC 3, MFC 4, MFC 5, MFC 6, MFC 7, MFC 8, MFC 9, MFC 10, MFC 11, MFC 12, MFC 13, MFC 14, MFC 15.
- B MFC (Backward Multi-Frequency Compelled) tones
  - The following is the list the B MFC tones that should be defined for Honduras market: MFC B1, MFC B2, MFC B3, MFC B4, MFC B5, MFC B6, MFC B7, MFC B8, MFC B9, MFC B10, MFC B11, MFC B12, MFC B13, MFC B14, MFC B15.
- Supervisory Tones
  - The supervisory tones consist of standard voice band supervisory tones generated by equipment connected to public exchanges. The following is the list the supervisory tones that should be defined for Honduras market: Dial Tone, Silent Tone, Milliwait Tone, Low Tone, High Tone, SF Loud tone, Audible Ringing Tone, Busy Tone, Congestion (Reorder), ROH (Howler), Call Waiting Tone, Confirmation Tone (PIT), Special Dial Tone, Vacant.

By specifying the appropriate TONESET field in table LTCINV, the tone-making process generates the tone samples required by Honduras market. The TONESET field should be set to 'HONTONES'. These tone samples are sent to the tone memory (RAM).

## Continuous tones

### Continuous Tones definition

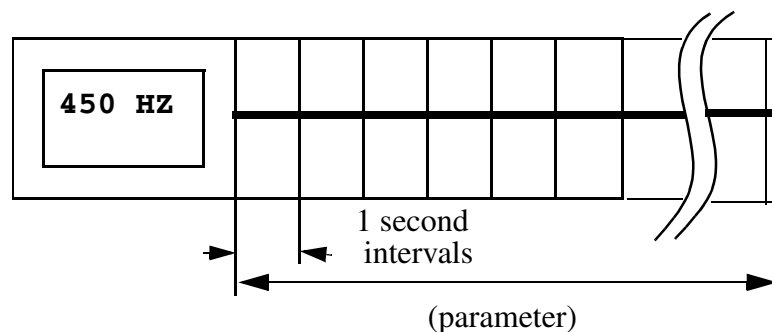
| Tone          | Description                                                                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DIAL TONE     | Is sent to the call originator after off-hook until the first digit is received by the exchange.                                                                  |
| SILENT TONE   | Is sent as a quiet termination for the tone-off periods to prevent noise.                                                                                         |
| MILLIWAT TONE | Is sent through an O/G or an I/C trunk at 0 dBm level (1 mW) so that the far end can measure losses of the trunk. The tone is used for trunk tests T902 and T904. |
| LOW TONE      | The LOW Tone is for future use.                                                                                                                                   |
| HIGH TONE     | The HIGH Tone is for future use.                                                                                                                                  |
| SF LOUD TONE  | The SF LOUD tone is used for XPM tests.                                                                                                                           |

### Continuous Tones description

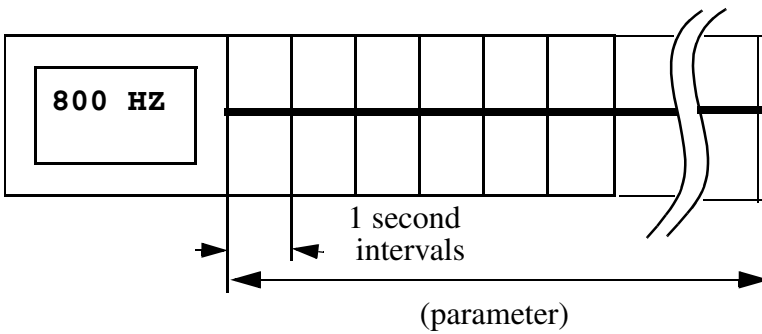
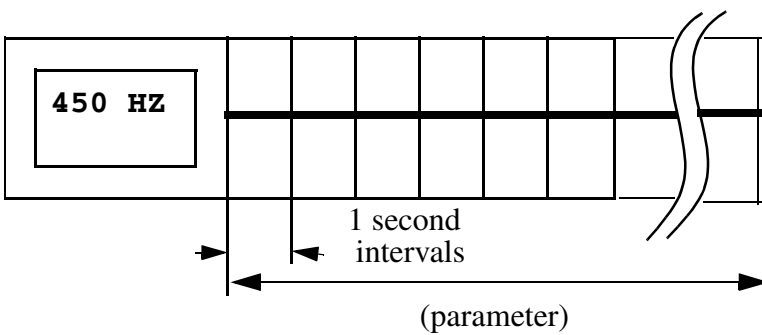
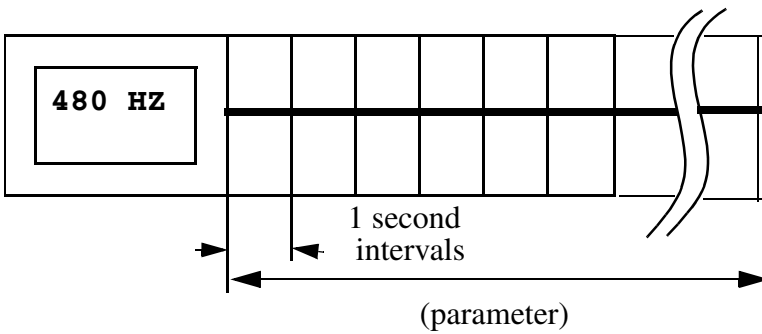
#### SILENT TONE

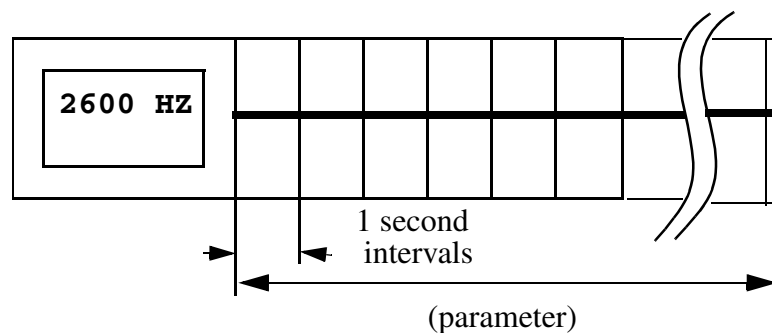
Is sent as a quiet termination for the tone-off periods to prevent noise.

#### DIAL TONE





**MILLIWAT TONE****LOW TONE****HIGH TONE**

**SF LOUD TONE****Simple Tones allocation**

The list of the simple Honduras tones is shown below in Figure , "Honduras, Simple Tones".

**Honduras, Simple Tones**

| Index | Tone description | in use |
|-------|------------------|--------|
| 01    |                  |        |
| 02    |                  |        |
| 03    | ROH (Howler)     | +      |
| 04    | AUDIBLE RINGING  | -      |
| 05    | LOW TONE         | +      |
| 06    | DIAL TONE        | +      |
| 07    |                  |        |
| 08    |                  |        |
| 09    | HIGH TONE        | +      |
| 0A    |                  |        |
| 0B    | SF LOUD TONE     | +      |
| 0C    |                  |        |
| 0D    | B MFC2           | +      |
| 0E    | B MFC3           | +      |
| 0F    |                  |        |
| 10    | SILENT TONE      | +      |

**Honduras, Simple Tones**

| Index | Tone description | in use |
|-------|------------------|--------|
| 11    | MFC I1           | +      |
| 12    | MFC I2           | +      |
| 13    | MFC I3           | +      |
| 14    | MFC I4           | +      |
| 15    | MFC I5           | +      |
| 16    | MFC I6           | +      |
| 17    | MFC I7           | +      |
| 18    | MFC I8           | +      |
| 19    | MFC I9           | +      |
| 1A    | MFC I10          | +      |
| 1B    | MFC I11          | +      |
| 1C    | MFC I12          | +      |
| 1D    | MFC I13          | +      |
| 1E    | MFC I14          | +      |
| 1F    | MFC I15          | +      |
| 20    | DTMF D           | +      |
| 21    | DTMF 1           | +      |
| 22    | DTMF 2           | +      |
| 23    | DTMF 3           | +      |
| 24    | DTMF 4           | +      |
| 25    | DTMF 5           | +      |
| 26    | DTMF 6           | +      |
| 27    | DTMF 7           | +      |
| 28    | DTMF 8           | +      |
| 29    | DTMF 9           | +      |
| 2A    | DTMF 0           | +      |
| 2B    | DTMF *           | +      |
| 2C    | DTMF #           | +      |

**Honduras, Simple Tones**

| Index | Tone description | in use |
|-------|------------------|--------|
| 2D    | DTMF A           | +      |
| 2E    | DTMF B           | +      |
| 2F    | DTMF C           | +      |
| 30    | MW TONE          | +      |
| 31    | BMFC1            | +      |
| 32    | COT1             | -      |
| 33    | COT2             | -      |
| 34    | B MFC4           | +      |
| 35    | B MFC5           | +      |
| 36    | B MFC6           | +      |
| 37    | B MFC7           | +      |
| 38    | B MFC8           | +      |
| 39    | B MFC9           | +      |
| 3A    | B MFC10          | +      |
| 3B    | B MFC11          | +      |
| 3C    | B MFC12          | +      |
| 3D    | B MFC13          | +      |
| 3E    | B MFC14          | +      |
| 3F    | B MFC15          | +      |

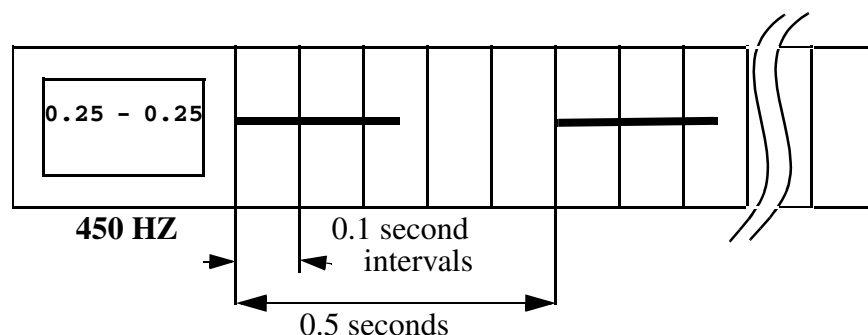
**Periodic Tones****Tones definition****Tones definition**

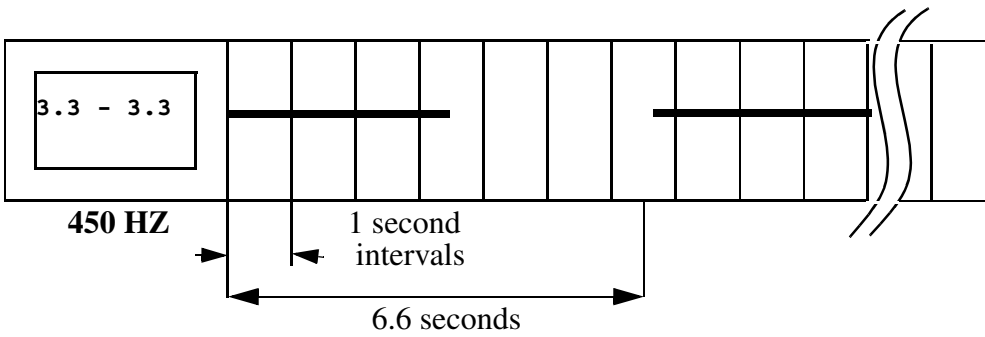
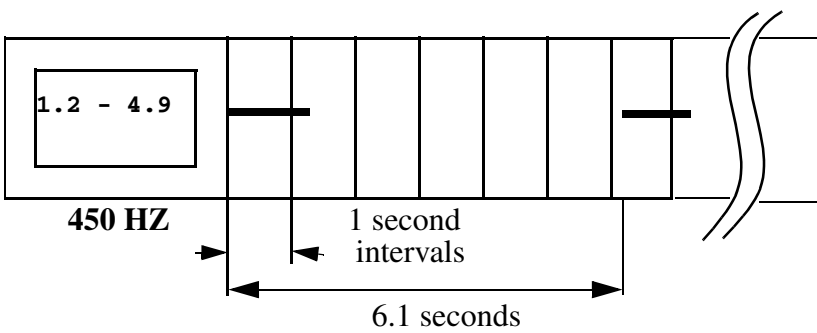
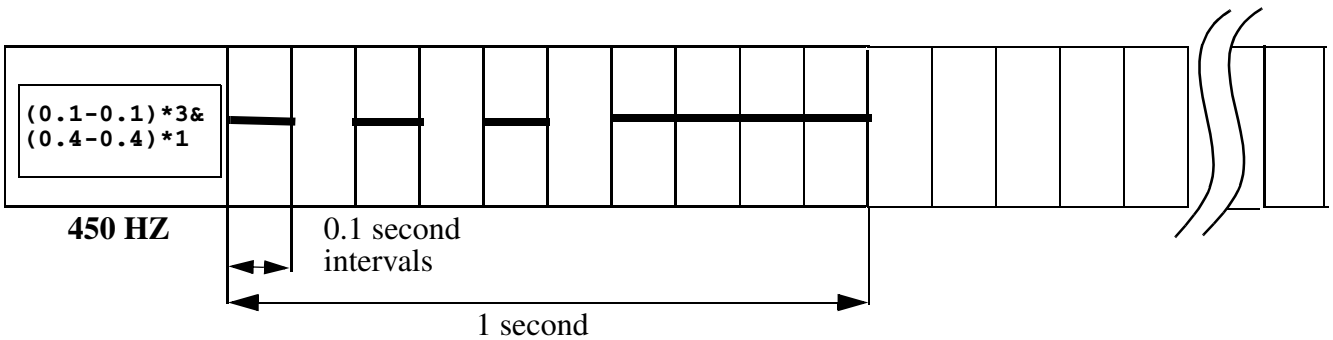
| Tone            | Description                                                                                                                             |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| CONGESTION TONE | Is sent in the backward direction to indicate to the calling party congestion on the O/G trunk, or blocking condition in the NET module |
| BUSY TONE       | Is sent to the subscriber to indicate unavailable destination.                                                                          |
| RING BACK TONE  | Is sent to the originator during wait for answer state.                                                                                 |

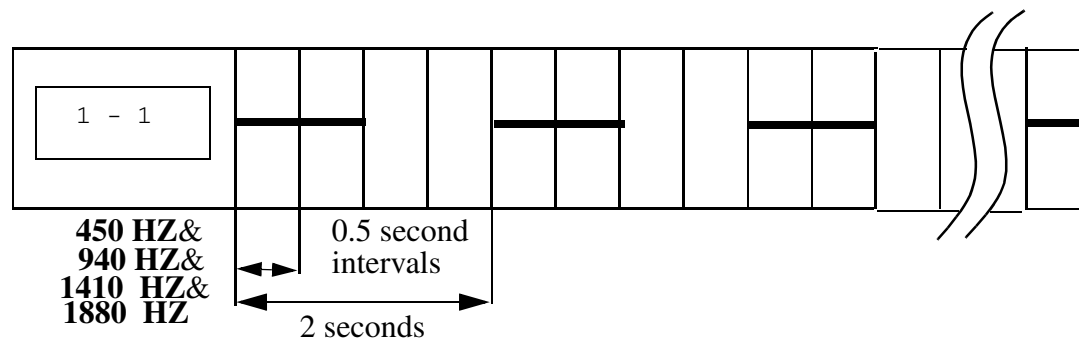
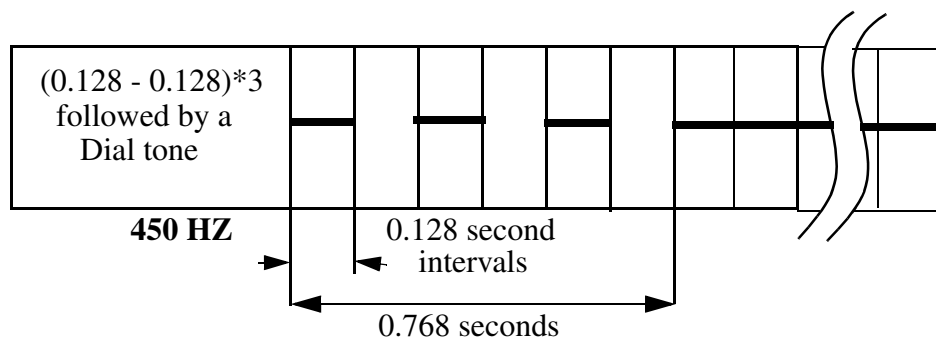
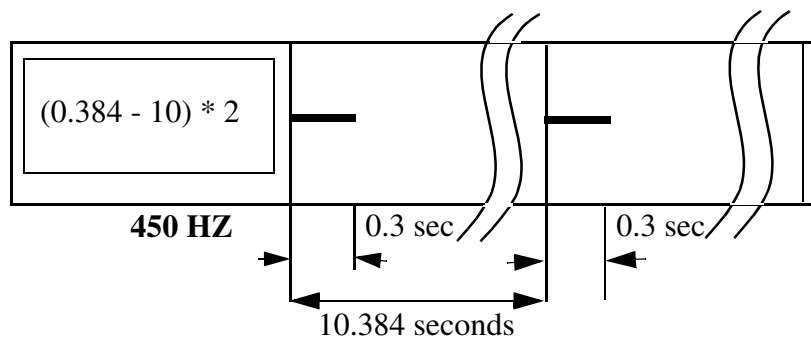
**Tones definition**

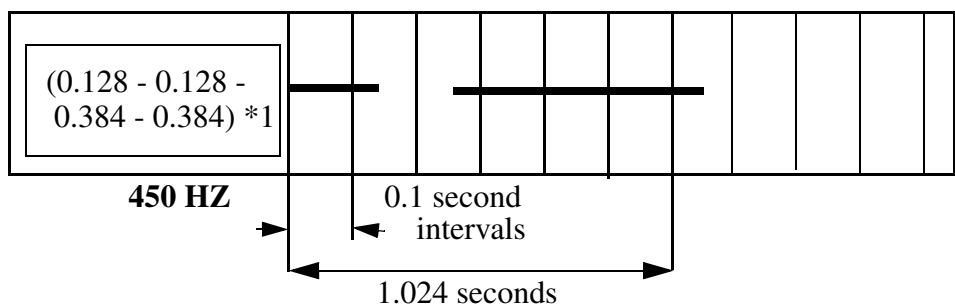
| <b>Tone</b>              | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VACANT TONE              | Is sent due to one of the following treatment conditions:<br>FNAL - Feature Not Allowed.<br>HNPI - Home NPA Intercept.<br>VACT - Vacant Code.                                                                                                                                                                                                                                                                                                     |
| ROH (HOWLER)             | The Receiver Off Hook tone (ROH) is sent to the subscriber as a loud tone after it was left off-hook for more than a predefined time and no digits dialed. It is also sent when the terminator remains off-hook for more than a predefined time after originator disconnect. The ROH tone consists of 4 frequencies, 470Hz, 940Hz, 1410Hz and 1880Hz mixed together. Each frequency has a -2dBm level so that the total bursts ROH level is 4dBm. |
| SPECIAL DIAL TONE (SPDT) | Is given to a subscriber in various features to allow him continue with the dialling.                                                                                                                                                                                                                                                                                                                                                             |
| CALL WAITING TONE        | Is given to a terminator (who subscribed to the CWT feature) as a warning signal that another call has entered and is waiting for an answer.                                                                                                                                                                                                                                                                                                      |
| CONFIRMATION TONE        | Is given to a subscriber that has activated a feature as a positive acknowledge that the feature has been received by the switch.                                                                                                                                                                                                                                                                                                                 |
| INTRUSION TONE           | This Tone is used to provide the warning for a subscriber that is occupied in a call that an operator has just established a TPS/ENQ as part of the Trunk Offering feature. We shall probably provide the intrusion tone for the operator trunk offering feature, directly from the CTM card. In which case the pattern will remain as it is provided in the CTM and will not be changed.                                                         |

**Note:** The meaning of (+) is that it is in use, the meaning of (-) is that it is not currently in use.

**Periodic Tones cadences****CONGESTION TONE**

**BUSY TONE****RING BACK TONE****VACANT TONE**

**ROH (HOWLER)****SPECIAL DIAL TONE (SPDT)****CALL WAITING TONE**

**CONFIRMATION TONE****Periodic Tones allocation**

The list of the periodic Honduras tones is shown below in Figure , "Honduras, Periodic Tones".

**Honduras, Periodic Tones**

| <b>Tone-Id</b> | <b>Tone</b>               | <b>in use</b> |
|----------------|---------------------------|---------------|
| 80             | Audible Ringing Tone      | +             |
| 81             | Busy Tone                 | (treatment)   |
| 82             | Congestion (Reorder) Tone | (treatment)   |
| 83             | ROH (Howler)              | +             |
| 84             | Busy Verification Tone    | -             |
| 85             | Call Waiting Tone         | +             |
| 86             | PABX confirmation         | -             |
| 87             | Confirmation Tone (PIT)   | (treatment)   |
| 88             | PABX confirmation         | -             |
| 89             | Special Dial Tone (SPDT)  | +             |
| 8A             | PABX Audible Ringing      | -             |
| 8B             | Special Audible Ringing   | -             |
| 8C             | Intercept Tone            | -             |
| 8D             | Warble Tone               | -             |
| 8E             | Toll Break-in             | -             |
| 8F             | Vacant Tone               | (treatment)   |
| 90             |                           |               |



**Honduras, Periodic Tones**

| <b>Tone-Id</b> | <b>Tone</b>                    | <b>in use</b>        |
|----------------|--------------------------------|----------------------|
| 91             |                                |                      |
| 92             | Holding Tone                   | Silent Tone          |
| 93             |                                |                      |
| 94             | Special Information Tone       | -                    |
| 95             | Switching Indication Tone      | -                    |
| 96             |                                |                      |
| 97             | Line Lockout                   | Silent Tone          |
| 98             |                                |                      |
| 99             | Stuttered Dial tone            | -                    |
| 9A             |                                |                      |
| 9B             | Caller Waiting Tone            | Audible Ringing Tone |
| 9C             | Negative Indication Tone (NIT) | -                    |
| 9D             | Warning Tone                   | -                    |
| 9E             | Intrusion Tone                 | -                    |
| 9F             |                                |                      |

**Transmission Requirements**

Characteristics of simple and periodic tones in Honduras market are shown below.

**Honduras. Transmission Requirements**

| <b>Tone Name</b> | <b>Frequency (Hz)</b> | <b>Frequency Tolerance</b> | <b>Level (dbm0)</b> | <b>Cadence rate Tolerance</b> | <b>Tone Id. in hex</b> |
|------------------|-----------------------|----------------------------|---------------------|-------------------------------|------------------------|
| Dial Tone        | 450                   | 0.5%                       | -8                  | --                            | 06                     |
| Silent Tone      | 0                     | --                         | -100                | --                            | 10                     |
| MFC 1            | 1380/1500             | +/-4hz                     | -11.5/-11.5         | --                            | 11                     |
| MFC 2            | 1380/1600             | +/-4hz                     | -11.5/-11.5         | --                            | 12                     |
| MFC 3            | 1500/1620             | +/-4hz                     | -11.5/-11.5         | --                            | 13                     |
| MFC 4            | 1380/1740             | +/-4hz                     | -11.5/-11.5         | --                            | 14                     |

**Honduras. Transmission Requirements**

| <b>Tone Name</b> | <b>Frequency (Hz)</b> | <b>Frequency Tolerance</b> | <b>Level (dbm0)</b> | <b>Cadence rate Tolerance</b> | <b>Tone Id. in hex</b> |
|------------------|-----------------------|----------------------------|---------------------|-------------------------------|------------------------|
| MFC 5            | 1500/1740             | +/-4hz                     | -11.5/-11.5         | --                            | 15                     |
| MFC 6            | 1620/1740             | +/-4hz                     | -11.5/-11.5         | --                            | 16                     |
| MFC 7            | 1380/1860             | +/-4hz                     | -11.5/-11.5         | --                            | 17                     |
| MFC 8            | 1500/1860             | +/-4hz                     | -11.5/-11.5         | --                            | 18                     |
| MFC 9            | 1620/1860             | +/-4hz                     | -11.5/-11.5         | --                            | 19                     |
| MFC 10           | 1740/1860             | +/-4hz                     | -11.5/-11.5         | --                            | 1A                     |
| MFC 11           | 1380/1980             | +/-4hz                     | -11.5/-11.5         | --                            | 1B                     |
| MFC 12           | 1500/1980             | +/-4hz                     | -11.5/-11.5         | --                            | 1C                     |
| MFC 13           | 1620/1980             | +/-4hz                     | -11.5/-11.5         | --                            | 1D                     |
| MFC 14           | 1740/1980             | +/-4hz                     | -11.5/-11.5         | --                            | 1E                     |
| MFC 15           | 1860/1980             | +/-4hz                     | -11.5/-11.5         | --                            | 1F                     |
| DTMF 1           | 697/1209              | 1.5%                       | -5 / -5             | --                            | 21                     |
| DTMF 2           | 697/1336              | 1.5%                       | -5 / -5             | --                            | 22                     |
| DTMF 3           | 697/1477              | 1.5%                       | -5 / -5             | --                            | 23                     |
| DTMF 4           | 770/1209              | 1.5%                       | -5 / -5             | --                            | 24                     |
| DTMF 5           | 770/1336              | 1.5%                       | -5 / -5             | --                            | 25                     |
| DTMF 6           | 770/1477              | 1.5%                       | -5 / -5             | --                            | 26                     |
| DTMF 7           | 852/1209              | 1.5%                       | -5 / -5             | --                            | 27                     |
| DTMF 8           | 852/1336              | 1.5%                       | -5 / -5             | --                            | 28                     |
| DTMF 9           | 852/1477              | 1.5%                       | -5 / -5             | --                            | 29                     |
| DTMF 0           | 941/1336              | 1.5%                       | -5 / -5             | --                            | 2A                     |
| DTMF *           | 941/1209              | 1.5%                       | -5 / -5             | --                            | 2B                     |
| DTMF #           | 941/1477              | 1.5%                       | -5 / -5             | --                            | 2C                     |
| DTMF A           | 697/1633              | 1.5%                       | -5 / -5             | --                            | 2D                     |
| DTMF B           | 770/1633              | 1.5%                       | -5 / -5             | --                            | 2E                     |
| DTMF C           | 852/1633              | 1.5%                       | -5 / -5             | --                            | 2F                     |
| DTMF D           | 941/1633              | 1.5%                       | -5 / -5             | --                            | 20                     |

**Honduras. Transmission Requirements**

| <b>Tone Name</b>        | <b>Frequency (Hz)</b> | <b>Frequency Tolerance</b> | <b>Level (dbm0)</b> | <b>Cadence rate Tolerance</b> | <b>Tone Id. in hex</b> |
|-------------------------|-----------------------|----------------------------|---------------------|-------------------------------|------------------------|
| MFC B1                  | 1020/1140             | +/-4hz                     | -11.5/-11.5         | --                            | 31                     |
| MFC B2                  | 900/1140              | +/-4hz                     | -11.5/-11.5         | --                            | 0D                     |
| MFC B3                  | 900/1020              | +/-4hz                     | -11.5/-11.5         | --                            | 0E                     |
| MFC B4                  | 780/1140              | +/-4hz                     | -11.5/-11.5         | --                            | 34                     |
| MFC B5                  | 780/1020              | +/-4hz                     | -11.5/-11.5         | --                            | 35                     |
| MFC B6                  | 780/900               | +/-4hz                     | -11.5/-11.5         | --                            | 36                     |
| MFC B7                  | 660/1140              | +/-4hz                     | -11.5/-11.5         | --                            | 37                     |
| MFC B8                  | 660/1020              | +/-4hz                     | -11.5/-11.5         | --                            | 38                     |
| MFC B9                  | 660/900               | +/-4hz                     | -11.5/-11.5         | --                            | 39                     |
| MFC B10                 | 660/780               | +/-4hz                     | -11.5/-11.5         | --                            | 3A                     |
| MFC B11                 | 540/1140              | +/-4hz                     | -11.5/-11.5         | --                            | 3B                     |
| MFC B12                 | 540/1020              | +/-4hz                     | -11.5/-11.5         | --                            | 3C                     |
| MFC B13                 | 540/900               | +/-4hz                     | -11.5/-11.5         | --                            | 3D                     |
| MFC B14                 | 540/780               | +/-4hz                     | -11.5/-11.5         | --                            | 3E                     |
| MFC B15                 | 540/660               | +/-4hz                     | -11.5/-11.5         | --                            | 3F                     |
| Milliwat Tone           | 800                   | 1.5%                       | 0                   | --                            | 30                     |
| Low Tone                | 450                   | 0.5%                       | -8                  | --                            | 05                     |
| High Tone               | 480                   | 0.5%                       | -8                  | --                            | 09                     |
| SF Loud tone            | 2600                  | 2.5%                       | -8                  | --                            | 0B                     |
| Audible Ringing Tone    | 450                   | 0.5%                       | -8                  | + 10%                         | 80                     |
| Busy Tone               | 450                   | 0.5%                       | -8                  | ± 10%                         | 81                     |
| Congestion (Reorder)    | 450                   | 0.5%                       | -8                  | ± 10%                         | 82                     |
| ROH (Howler)            | 470/940               | 2.5%                       | -2/-2               | ± 10%                         | 83                     |
|                         | 1410/1880             | 2.5%                       | -2/-2               | ± 10%                         |                        |
| Call Waiting Tone       | 450                   | 0.5%                       | -10                 | ± 10%                         | 85                     |
| Confirmation Tone (PIT) | 450                   | 0.5%                       | -8                  | ± 10%                         | 87                     |
| Special Dial Tone       | 450                   | 0.5%                       | -8                  | ± 10%                         | 89                     |

**Honduras. Transmission Requirements**

| <b>Tone Name</b> | <b>Frequency<br/>(Hz)</b> | <b>Frequency<br/>Tolerance</b> | <b>Level<br/>(dbm0)</b> | <b>Cadence<br/>rate<br/>Tolerance</b> | <b>Tone Id.<br/>in hex</b> |
|------------------|---------------------------|--------------------------------|-------------------------|---------------------------------------|----------------------------|
| Vacant           | 450                       | 0.5%                           | -8                      | ± 10%                                 | 8F                         |

**Hardware Requirements or Dependencies**

The NTMX76AB card must be equipped on GPP line peripherals with SX05 processor.

The NTMX76CA card must be equipped on DTCO2 trunk peripherals SX05 processor.

**Software Requirements or Dependencies**

The QPO20xx or QCI20xx load files should be supported for SX05 processor.

**Limitations and restrictions**

This feature can only be used with peripherals equipped with the NTMX76AB, NTMX76CA tone cards.

**Interactions**

N/A

**Applicable customer facing sections****Fault Management**

Logs N/A

Alarms N/A

**Configuration**

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

Realtime X

Engineering Information

X

## Glossary

| Term     | Description                       |
|----------|-----------------------------------|
| New term | Definition                        |
| DTCO2    | Digital Trunk Controller Overseas |
| GPP      | Global Peripheral Platform        |
| Hz       | Hertz                             |
| MFC      | Multi-Frequency Compelled         |
| PIT      | Positive Indication Tone          |
| RAM      | Random Access Memory              |
| DTMF     | Dual-Tone Multi-Frequency         |

## *Configuration for A00003411*

### Hardware and Software Requirements

The NTMX76AB card must be equipped on GPP line peripherals with SX05 processor.

The NTMX76CA card must be equipped on DTCO2 trunk peripherals SX05 processor.

The QPO20xx or QCI20xx load files should be supported for SX05 processor.

### Initial Configuration

GPP should be loaded with QPO20xx load file.

DTCO2 should be loaded with QCI20xx load file.

NTMX76AB tone cards must be equipped on GPP peripherals.

NTMX76CA tone cards must be equipped on DTCO2 peripherals.

The LTCINV table should be datafilled with the new 'HONTONES' toneset.

The GPP/DTCO2 static data should be downloaded

**Office/Subnet parameters (OP/SP) (CM & SESM)**

FEATURE\_TONE\_SET office parameter.

**New/modified office/subnet parameters**

| Parm table | Parameter name   | NEW/<br>CHANGED/<br>DELETED/<br>RELOCATED | Domain (CM or<br>Subnet<br>Management |
|------------|------------------|-------------------------------------------|---------------------------------------|
| OFCENG     | FEATURE_TONE_SET | CHANGED                                   | CM                                    |

**Parameter information****Functional description**

The FEATURE\_TONE\_SET office parameter is responsible for providing market specific feature treatment definitions instead of default hardcoded definitions.

This office parameter will be expanded so as to include the new HONTONES toneset that is required for the Honduras market.

**Provisioning rules**

For the Honduras market the FEATURE\_TONE\_SET office parameter must be set to HONTONES value.

**Activation**

For activation of the office parameter the Restart Reload must be performed.

**Dependencies**

None

**Consequences**

If this office parameter is not set to HONTONES, the CWT tone will not be connected during CWT feature usage for Honduras market.

**Memory requirements**

No memory impact.

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema**

The LTCINV table will be modified. The TONESET field will be enhanced with HONTONES tones set.

**New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| LTCINV         | CHANGED                  | UNCHANGED                          |

**Table/MIB/Remote Database Schema information****Name: LTCINV**

Line and Trunk Controller Inventory.

**Fields/OIDs****Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry    | Explanation and action                                  |
|---------|----------------|------------------------|----------|---------------------------------------------------------|
| TONESET | Changed        | refinement             | HONTONES | The TONE_SET_TYPE type is extended with HONTONES value. |

**Datafill example****The LTCINV datafill example**

```

LTCNAME ADNUM FRTYPE FRNO SHPOS FLOOR ROW FRPOS EQPEC LOAD EXECTAB CSLNKTAB
OPTCARD TONESET PROCPEC EXTLINKS E2LOAD OPTATTR PEC6X40 EXTINFO
-----
PLGC 0 2 IDTE 0 51 0 D 3 6X02UC TLG17TAC (POTS POTSEX) (KEYSET KSETEX)
(RMM_TERM RSMEX) $ (0 8) (0 9) (1 24) (1 25) (0 10) (0 11) (0 12) (0 13)
(0 14) (0 15) (1 26) (1 27) (1 28) (1 29) (1 30) (1 31) $ (UTR15 ) (UTR17 )
(MSG6X69 ) (CMR13 CMR10A) (NT6X44EA ) $ HONTONES MX77AA MX77AA 0 UPFWNU01
(METER ) $ 6X40AC N

```

**Supplementary information**

NONE

**Translation verification other tools**

N/A

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

- Verify that the TL6K69LB tone card exists on the peripheral.
- Verify that this card is datafilled in the LTCINV tuple.
- Verify that the 'HONTONES' toneset is defined for the peripheral with the TL6K69LB tone card.
- Load Static Data to the peripheral

***Product = CS 2000*****A00003465 -- ETSI BRI Channel Reservation Override (Succession on DMS)*****Functional Description***

This feature provides the user to override the channel reservations for the calls on a loop. This enables the user to steal channel reserved for any other non-CW incoming alerting call for another call. Incoming alerting call is a call which ALERT is sent by the set to the switch.

Channel steal request is sent by SETUP, CONNECT or RETRIEVE messages with a proprietary facility information element.

This feature is required to enable subscribers to be able to freely answer incoming calls.

For DBArt, Stationary Train dispatchers use specially developed terminals for telecommunication purposes, called GeFo. The telecommunication I/F to the fixed network is based on ETSI BRI point to multipoint connections. When a call is presented to the user, the network always reserves a free B-channel. The



user is not allowed to answer a waiting call, if both B-channels are reserved. To overcome this operational restriction, the terminal will be allowed to request allocation override on a reserved B-channel.

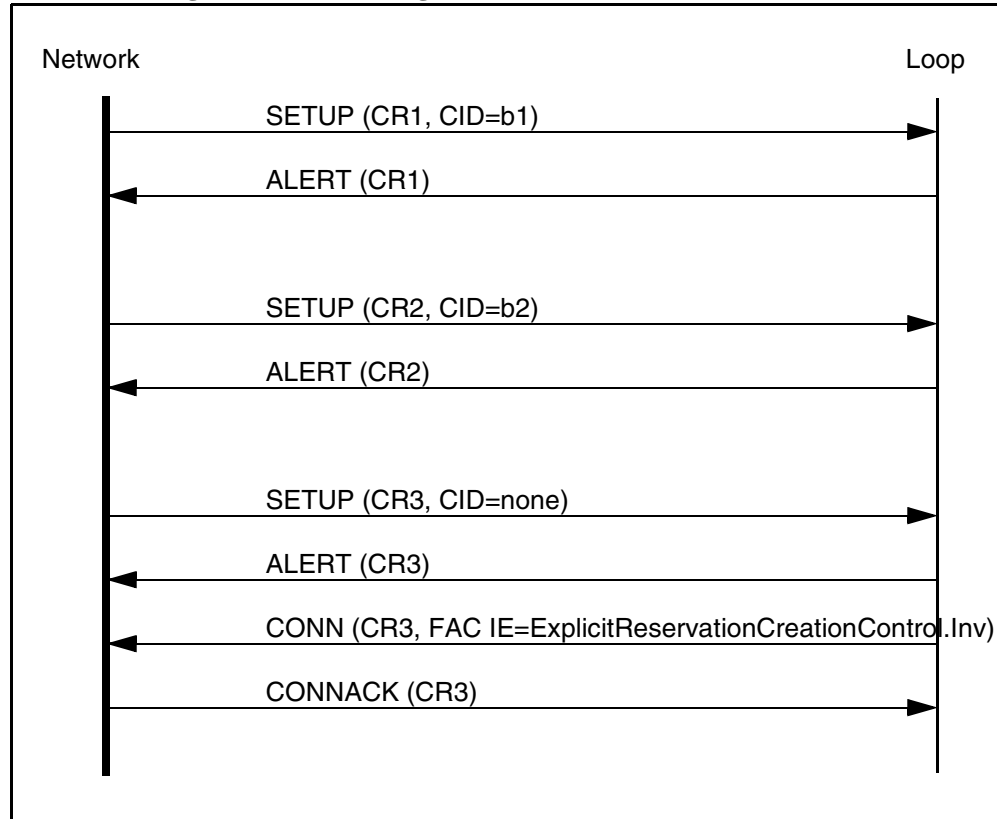
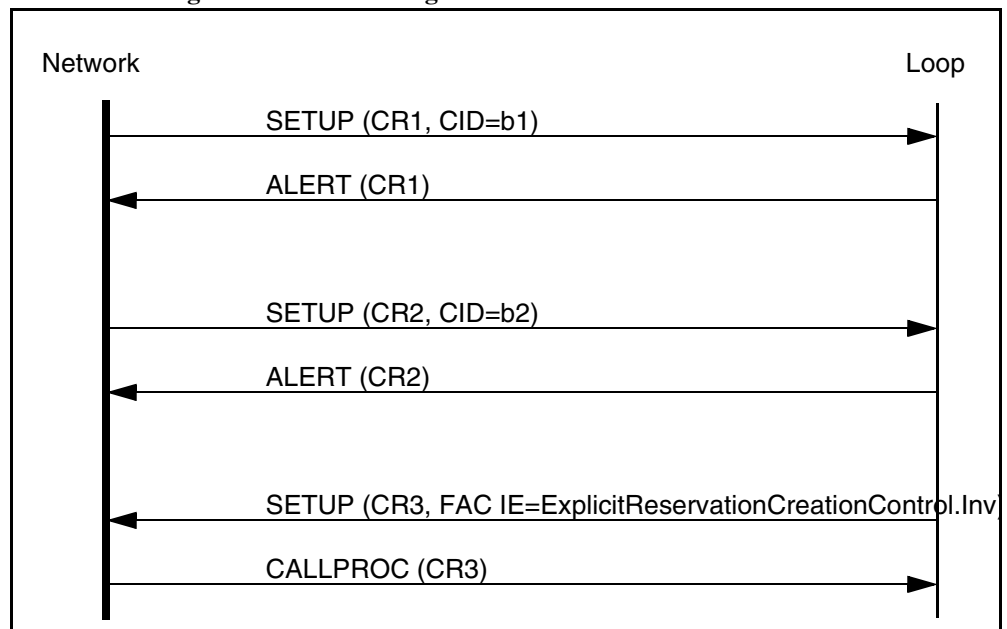
### Requesting channel steal

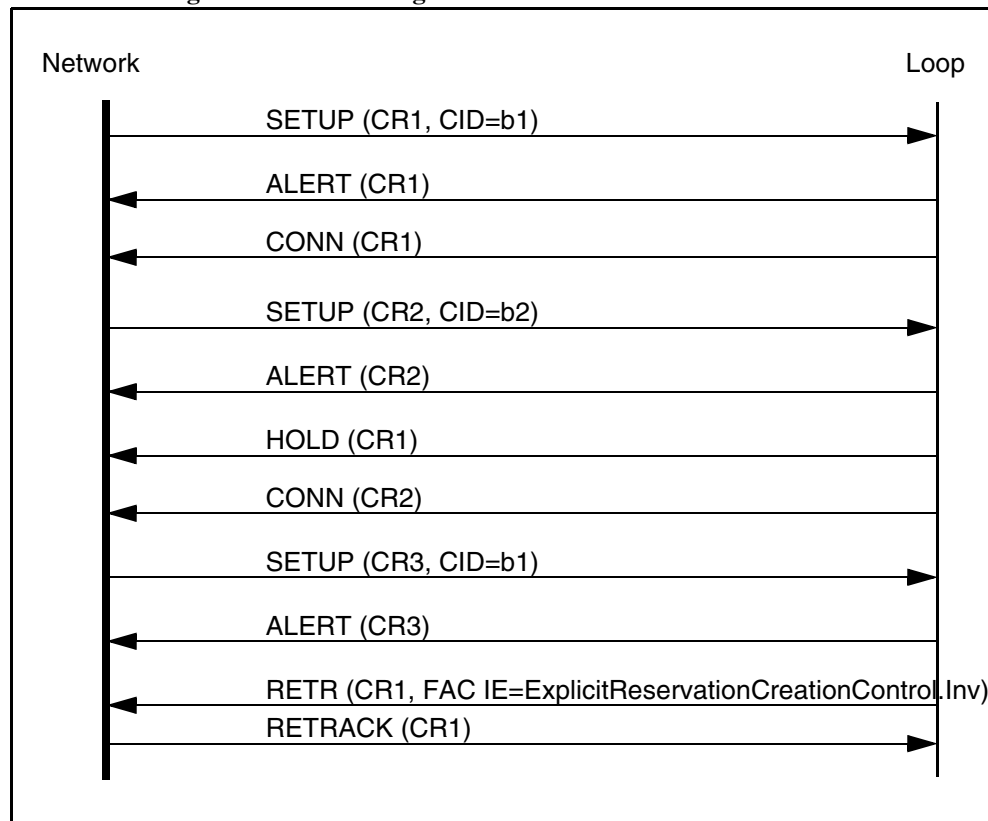
To override the B-channel allocation for incoming alerting non-CW calls in case of incoming CW calls and outgoing calls, the mechanism for a user control of network-side channel reservation provided in ETS 300196-1 "Generic functional protocol for the support of supplementary services" in chapter 10.1.2 is used.

In order to minimize potential future implementations, the optional argument `controlOption` is extended by the proprietary value "reservationRequiredOverrideAllocations" with the value 128 (#80). The extended ASN.1 definition from table D.7 is outlined below.

```
ExplicitReservationCreationControl ::= OPERATION
  ARGUMENT controlOption ENUMERATED {
    noReservationRequired (0),
    reservationRequiredWithReservationIndicator (1),
    reservationRequiredWithoutReservationIndicator (2),
    reservationRequiredOverrideAllocations (128)} -- optional
  RESULT ReservationIndicator -- optional
  ERRORS { maximumNumberOfReservationsReached,
    notAvailable,
    notSubscribed,
    unwantedReservationCreated}
```

The reservation FAC IE can be sent in outgoing SETUP messages (to free up an allocated B-channel for an outgoing call) and in outgoing CONNECT or RETRIEVE messages (to free up an allocated B-channel for an incoming CW call).

**Channel stealing with CONN message****Channel stealing with SETUP message**

**Channel stealing with RETR message**

The terminal can pass the channel ID (CID) which it wants to reserve, but in case this preferred CID cannot be reserved (e.g. already stolen) the other b-channel will be returned in the next call control message.

During an attempt to setup an outgoing call while both B-channels are busy, the terminal is responsible to automatically hold or release one of its calls to free up a B-channel.

**ExplicitReservationCreationControl.Invoke**

| Hex Value              | Description                 |
|------------------------|-----------------------------|
| 1C                     | Facility                    |
| 0C                     | Facility Length             |
| 91                     | Supplementary Service Spare |
| A1                     | Invoke Operation            |
| 09                     | Invoke Length               |
| 02 - Universal Integer | Invoke ID Tag               |

|                                             |                      |
|---------------------------------------------|----------------------|
| 01                                          | Invoke ID Length     |
| A unique invoke Identifier                  | Invoke Identifier    |
| 02 - Universal Integer                      | Operation Tag        |
| 01                                          | Operation Length     |
| 14 - ExplicitReservationCreationControl     | Operation Identifier |
| 02 - Universal Integer                      | controlOption Tag    |
| 01                                          | controlOption Length |
| 80 - reservationRequiredOverrideAllocations | controlOption        |

If an allocated B-channel will be provided (an allocated B-channel from another incoming alerting non-CW call) or if a B-channel is available the response from the XPM in the next call control message is a FAC Return Result.

#### **ExplicitReservationCreationControl.ReturnResult**

| Hex Value                                  | Description                 |
|--------------------------------------------|-----------------------------|
| 1C                                         | Facility                    |
| 06                                         | Facility Length             |
| 91                                         | Supplementary Service Spare |
| A2                                         | ReturnResult Operation      |
| 03                                         | ReturnResult Length         |
| 02 - Universal Integer                     | Invoke ID Tag               |
| 01                                         | Invoke ID Length            |
| InvokeID of the Invoke component, set sent | Invoke Identifier           |

In case the request can not be fulfilled (e.g. both B-channels are busy), the response from the XPM is a FAC return error component with the error "maximumNumberOfReservationsReached".

If the optional parameter in Invoke component is different than #80, the request can not be fulfilled. If no parameter is included, or the parameter has the value 0, 1 or 2 the request is valid and a FAC RE component with error code "notAvailable" will be sent (valid request, not supported).

If the value is between 2 and #80 or greater than #80 the request is invalid (coding error) and a FAC reject with the problem code "mistyped-argument" will be sent.

**ExplicitReservationCreationControl.ReturnError**

| Hex Value                                  | Description                 |
|--------------------------------------------|-----------------------------|
| 1C                                         | Facility                    |
| 09                                         | Facility Length             |
| 91                                         | Supplementary Service Spare |
| A3                                         | ReturnError Operation       |
| 06                                         | ReturnError Length          |
| 02 - Universal Integer                     | Invoke ID Tag               |
| 01                                         | Invoke ID Length            |
| InvokeID of the Invoke component, set sent | Invoke Identifier           |
| 02 - Universal Integer                     | Error Tag                   |
| 01                                         | Error Length                |
| 00 - maximumNumberOfReservationsReached    | Error Code                  |

**Software optionality control (SOC) option**

The soc option SULN0028 “SULN BRI Call Queuing” which is created by the activity A00002377 “10 AFC Keys for BRI Directory Number” is also used for this activity. The functionality of this activity is depend on the SOC option SULN0028. When the SOC option is changed, static data of PLGCs and GPPs should be updated. A warning is printed when SOC is changed in CI level;

*“Static data update is required for related PLGCs and GPPs. Please BSY/RTS the inactive unit and perform swact” .*

**Hardware Requirements or Dependencies**

N/A

**Software Requirements or Dependencies**

N/A

**Limitations and restrictions**

1. Pre-emption services (MLPP): If a call selected to be pre-empted has had its b-channel stolen, the pre-emption does not successfully free up a b-channel and the pre-empting call will not complete. Therefore, the operator must disable MLPP network pre-emption in datafill by setting NONPREEMPT=YES, if B-channel stealing is to be used. Please note that, precedence calls are still allowed.

2. Busy determination services (CW, CF, CCBS, MLPP): A channel that has been made available after b-channel stealing is not available to CW, CF and CCBS. Specifically, if there is an alerting call that has had its b-channel stolen and there is also a free b-channel, CW, CF and CCBS consider that free channel as reserved against the call that had its b-channel stolen. A basic scenario could be as follows:
  - Consider, b1 and b2 are reserved for two different alerting calls and there is an additional waiting call on loop.
  - Assume b1 is stolen for the waiting call.
  - Let call holding b2 to terminate.
  - We have a free b-channel available on XPM and the set can originate a new call. However CM thinks that both channels are in use and no normal calls are terminated to the loop. Therefore CW, CF, CCBS, MLPP pre-emption or MLPP alternate party diversion may be tried.
3. Terminal Impact (1): A call that has had its b-channel stolen cannot be answered unless there is another channel available for stealing or one has been freed by the terminal. Therefore, the terminals used must be specially designed to first verify that a call can be answered under this new algorithm if b-channel stealing is to be used. A terminal can always send the stealing request, even there is no need for stealing since there are available b-channels.
4. Terminal Impact (2): Since the terminals used must have complete knowledge of all calls on the loop to make the determination of which calls can be answered (see previous point), the operator must ensure only one terminal may be active on the loop if b-channel stealing is used.
5. Terminal Impact (3): Since b-channel stealing may cause the b-channel specified in the next call control message (RETR ACK, CONN ACK, CALL PROC) to the channel stealing request to be different than previous messages, the terminals must always use the b-channel specified in the CONNECT ACK and ignore b-channels specified in earlier messages.

## Interactions

### Pre-emption services (MLPP):

Pre-emption services (MLPP): If a call selected to be pre-empted has had its b-channel stolen, the pre-emption does not successfully free up a b-channel and the pre-empting call will not complete. Therefore, the operator must disable MLPP network pre-emption in datafill by setting NONPREEMPT=YES, if B-channel stealing is to be used. Please note that, precedence calls are still allowed.

**Busy determination services (CW, CF, CCBS):**

Busy determination services (CW, CF, CCBS, MLPP): A channel that has been made available after b-channel stealing is not available to CW, CF and CCBS. Specifically, if there is an alerting call that has had its b-channel stolen and there is also a free b-channel, CW, CF and CCBS consider that free channel as reserved against the call that had its b-channel stolen. A basic scenario could be as follows:

- Consider, b1 and b2 are reserved for two different alerting calls and there is an additional waiting call on loop.
- Assume b1 is stolen for the waiting call.
- Let call holding b2 to terminate.
- We have a free b-channel available on XPM and the set can originate a new call. However CM thinks that both channels are in use and no normal calls are terminated to the loop. Therefore CW, CF, CCBS, MLPP pre-emption or MLPP alternate party diversion may be tried.

**Applicable customer facing sections****Fault Management**

|        |         |
|--------|---------|
| Logs   | __N/A__ |
| Alarms | __N/A__ |

**Configuration**

|                    |         |
|--------------------|---------|
| Data Schema        | __N/A__ |
| User Interface     | __N/A__ |
| Element Management | __N/A__ |
| Security           | __N/A__ |
| Service Order      | __N/A__ |
| Office Parameters  | __N/A__ |

|                                   |         |
|-----------------------------------|---------|
| Accounting (includes AMA billing) | __N/A__ |
|-----------------------------------|---------|

|                                                 |         |
|-------------------------------------------------|---------|
| Performance (includes operational measurements) | __N/A__ |
|-------------------------------------------------|---------|

**References**

A00002377-10 AFC Keys for BRI Directory Number, available elsewhere in this document.

## ***Product = CS2000***

### **A00003467 -- Reverse Translations Enhancements via CUSTMOD Option (Succession on DMS)**

#### **Description**

##### **Background Information**

The purpose of this feature is to enhance Reverse Translations to co-exist with CS1R.

The current DMS100 MMP product has requirements to alter the default dialling on a per CLI basis, which is originally determined by the incoming trunk group (Customer Group and NCOS). This is done by assignment of the CUSTMOD option against the given CLI(s) (Calling Line Identity) and assigning a new customer group. In order to make use of the new customer group, in the routing phase (IBNRTxx), the routing option invoked is IBNRX. This allows a form of re-translations to occur, which is not exactly re-entering Universal Translations at the top of the digit analysis phase. The digits then are re-examined using the new Customer Group info and when entering Universal Translations, the call will then re-route according to this data.

The limitation is that CS1R and IBNRX are not integrated to be supported in the same call. This is due to the fact that the CS1R functions are ONLY designed to work within the digit translations phase of the call and IBNRX is invoked in the routing phase. Thus, the call will fail.

The primary enhancement is to allow Reverse Translations to be invoked within the digit analysis phase of the call. The preferred place to provide the enhancement is within the "Featinfo Validate".

##### **Introduction**

The functional diagram of this feature is shown in the [“Functional Behavior Diagram” on page 607](#).

CUSTMOD, which is an option in refinement VALDATOP for XLASEL FEATINFO in universal translation tables, is enhanced by this feature; and the new field REV\_XLA (Reverse\_Translations\_Trigger) and its refinement DELDIGS (Delete Prefix Digits) are added to the CUSTMOD option.

The entry in new field REV\_XLA can be either Y or N.

When the CUSTMOD option is encountered in one of the translation tables (for ex in table PXCODE), and when these conditions are satisfied

- i. The entry in field REV\_XLA is “Y”



- ii. The customer group or NCOS is changed in table DNSCRNx

the Reverse Translation starts within the "Featinfo Validate" option in Universal Translation tables, i.e. within the digit analysis phase of the call, and digit analysis stops and re-enters at the standard IBN translations block with the new Customer Group and NCOS.

So, based on the Access Code used to invoke CLI Screening, the customer can decide on a per CLI basis if they want to change the default Customer Group/NCOS from the Trunk Group assigned or override the default with the one defined against the CLI. The new Customer Group/NCOS is used immediately during digit analysis without having to wait for the routing phase of call as per current implementation of IBNRX (an example for previous implementation of reverse translation is shown in [“Traver output of the previous implementation - Part 1 / 2”](#) on page 608 and in [“Traver output of the previous implementation - Part 2 / 2”](#) on page 609).

The new refinement DELDIGS allows the removal of prefix digits before retranslation (re-enter of IBNXLA) begins. DELDIGS is a mandatory field only if the entry in field REV\_XLA is “Y”. The entry in new refinement DELDIGS can be an integer from 0 to 18, inclusive.

Sample datafill is shown in the following figure.

#### Sample Datafill

```
TABLE PXCODE

PTTXLA 888 888 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y Y 6) $ 0 0 24 PX VALIDATE

PTTXLA 890 890 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y N) $ 0 0 24 PX VALIDATE
```

REV\_XLA option starts the reverse translation once per call.

Activation of the functionality is controlled by the SOC option XLAS0054 “XLAS Rev Trans Custmod”. If the SOC is turned OFF or ON, it is possible to datafill the new field REV\_XLA but this option is ignored when the SOC is turned OFF.

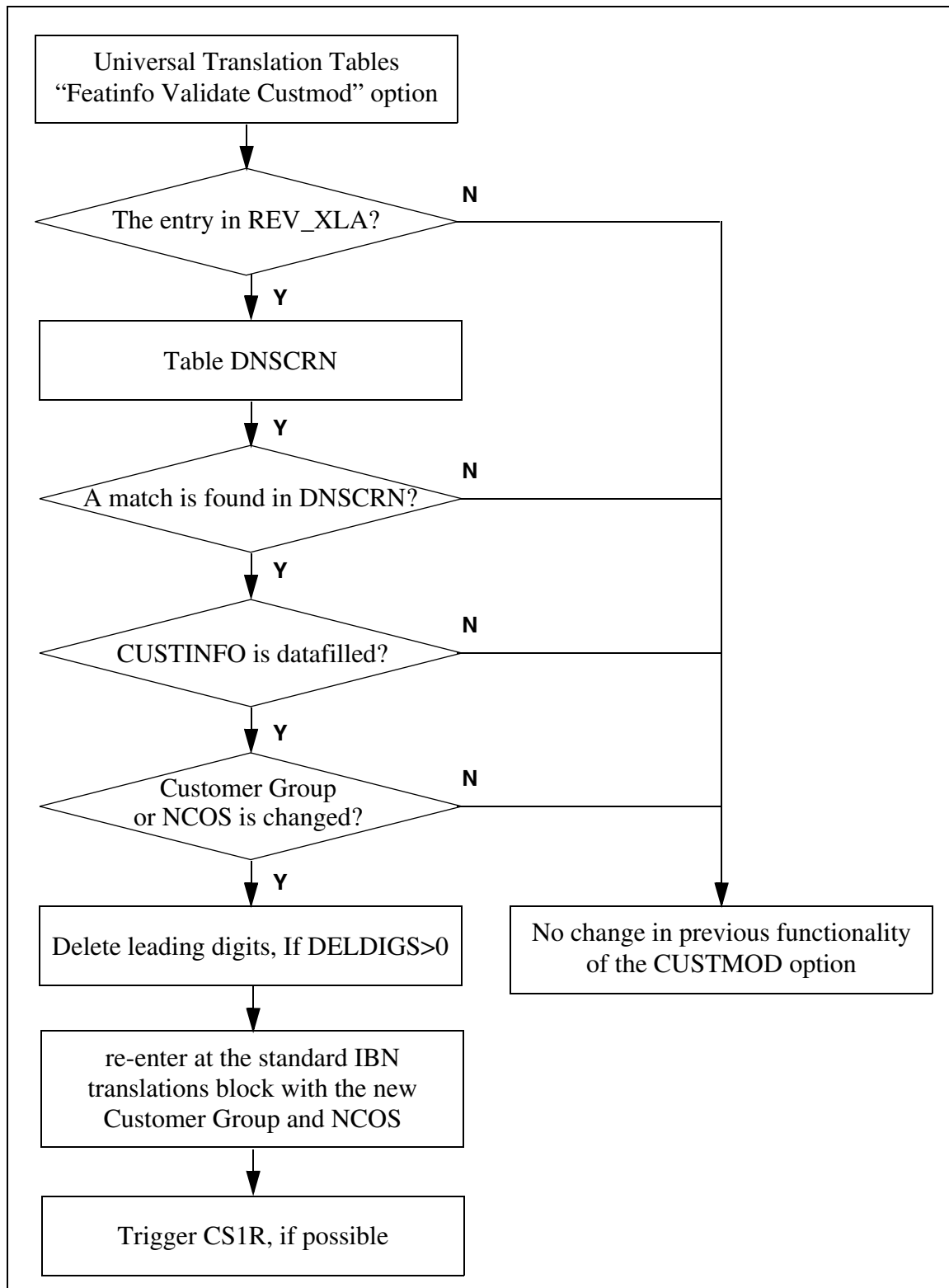
Also,

- No changes are done in Table DNSCRN and the other DNSCRNx tables. This is to ensure integrity of the provisioning systems.

- If the entry in new field REV\_XLA is Y or N, then if IBNRX is encountered in the routing phase, then IBNRX still functions as it always did. So, there is full transparency to this feature with existing capabilities.
- If the entry in 'new' field REV\_XLA is Y, and the CLI does not have defined any Customer Group info, then any options in Featinfo selector will be completed and translation continues on universal translations.

If the call hits an AMAGRPID option in lineattr tables after the reverse translation starts, then this second AMAGRPID over-writes the previous one. And, the last AMAXLAID option (which can be datafilled in universal translation tables) over-writes the previous AMAXLAID option, too. An example for these options is shown in “New traver output - Part 1 / 2” on page 610 and “New traver output - Part 2 / 2” on page 611.

The translations verification (traver) tool is enhanced by this feature. It is now possible to trace the reverse translation via traver; after REV\_XLA is hit, the traver shows the translation tables, the CS1R trigger points, the terminator, the outpulsed digits, and so on. Please refer to “New traver output - Part 1 / 2” on page 610, and “New traver output - Part 2 / 2” on page 611.

**Functional Behavior Diagram**

**Traver output of the previous implementation - Part 1 / 2**

```

CI:
>traver tr 2wisupba 8887835470 b
TABLE TRKGRP
2WISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675451 ANSDISC
0 Y N N N N N Y 0
      0 N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE  CUSTHEAD:  CUSTGRP,  PRELIMXLA,  CUSTXLA,  FEATXLA,
VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
PTTXLA 88 NET N Y 0 N NDGT N Y GEN (LATTR 100 102_NPRT_1
NLCA_NILLA_1)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 0 PX PTTXLA NIL 00 102_NPRT_1
NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:      8887835470
TABLE PXCODE
PTTXLA 888 888 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:

```

**Traver output of the previous implementation - Part 2 / 2**

```
PLEASE ENTER CLI DIGITS:
>7835476
TABLE DNSCRN
. 7835476 (CUSTINFO VALID 0) $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:      8887835470
TABLE PXCODE
VALIDATE 888 888 RTE ( DEST 888)$
TABLE: PXRTE
KEY: VALIDATE 888
. T IBNRTE 888
. . TABLE IBNRTE
. . 888 IBNRX
. . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
INAP Info Analyzed TDP:  no subscribed trigger.
INAP Route Select Failure TDP:  no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OGISP1AB                8887835470                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>
```

## New traver output - Part 1 / 2

```

CI:
>traver tr 2wisupba 8887835470 b
TABLE TRKGRP
2WISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675451 ANSDISC
0 Y N N N N N Y 0
    0 N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD:  CUSTGRP,  PRELIMXLA,  CUSTXLA,  FEATXLA,
VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA:  XLANAME PTTXLA
PTTXLA 88 NET N Y 0 N NDGT N Y GEN (LATTR 100 102_NPRT_1
NLCA_NILLA_1)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 0 PX PTTXLA NIL 00 102_NPRT_1
NLCA_NILLA_1 (AMAGRPID DSDSG) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:      8887835470
TABLE PXCODE
PTTXLA 888 888 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y Y 0) $ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>7835476
TABLE DNSCRN
. 7835476 (CUSTINFO VALID 0) $

```

## New tracer output - Part 2 / 2

```

. 7835476 (CUSTINFO VALID 0) $
REV_XLA set to Y - Now translating using new assigned CUSTGRP
and NCOS
TABLE NCOS
VALID 0 0 0 $ ( XLAS NETXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
VALID NXLA VALIDXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME NETXLA
NETXLA 88 NET N Y 0 N NDGT N Y GEN (LATTR 1 102_NPRT_1
NLCA_NILLA_1)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
1 IBN NONE NT 0 0 NILSFC 0 PX NETXLA NIL 00 102_NPRT_1
NLCA_NILLA_1 (AMAGRPID NEW) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
NETXLA SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:      8887835470
TABLE PXCODE
NETXLA 888 888 RTE ( DEST 888) (AMAXLAID TEST) $
TABLE: PXRTE
KEY: NETXLA 888
. S OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
NEW DFLT (FLEXOCI 6)$
TABLE AMAXLAID
TEST DFLT (FLEXCTYP GENERIC 804 OVRDALL )$
TABLE FLEXAMA
NEW TEST GRPDATA (FLEXOCI 12)$
Originator is not an EIN agent, therefore EIN info is not
processed.

+++ TRAVEL: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES
1 OGISP1AB      8887835470      ST

```

## IN Interaction

The new functionality enables to support CS1R and the CUSTMOD option to be supported in the same call, as explained in the following paragraph.

The new functionality is to be able to trigger IN system after execution of the CUSTMOD option when the reverse translation is triggered; functional Behavior Diagram is shown in “Functional Behavior Diagram” on page 607; and an example is shown in “New traver output - Part 1 / 2” on page 615 and “New traver output - Part 2 / 2” on page 616.

Also, the traver output shows the outpulsed digit result and the route choice(s) for both standard and CS1R triggered calls. Traver outputs of the previous implementation of CUSTMOD option is shown in “Traver output of the previous implementation - Part 1 / 2” on page 613 and “Traver output of the previous implementation - Part 2 / 2” on page 614; the new outputs are shown in “New traver output - Part 1 / 2” on page 615 and “New traver output - Part 2 / 2” on page 616.

Both TDP2 and TDP3 are supported by this feature. TDP2 occurs at the Info Collected point in the call (This can be seen in the traver - INAP Info Collected TDP). The reverse XLA occurs after this so we will do a TDP2 check, then reverse XLA. When this happens, the call will go back through the INFOCOL point in call. (Normally this occurs between DGCOL and IBNXLA. Reverse XLA does go back through these table so we will go back through another TDP2 trigger point. As shown in “New traver output - Part 1 / 2” on page 615 and “New traver output - Part 2 / 2” on page 616.

Other traver examples are shown in the three figures that start with [“Traver example - Part 1 / 3” on page 617](#).

The working principle of CS1R is not effected.

AIN (Advanced Intelligent Networks; the North American standard of IN) and GIN (GSP IN) are not supported. Only EIN (ETSI INAP V8) is supported.

After the CONNECT message is received by the SSP, the original customer group and ncos of the originator trunk is used by the IN translation system. For ex: When the call triggers at TDP-3 on the SSP to provide an IN number translation service, after the IBNRX option, the translation system uses the customer group of the originating trunk, not the customer group and the ncos values defined in DNSCRN table.



### Traver output of the previous implementation - Part 1 / 2

```

CI:
>traver tr ISUPBA 888998 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0
Y N N N N N Y 0 0
    N 0 0 0 0 Y N N N N N N N N NATL $
    . . TABLE TRKAIN
    . . ISUPBA MDCGRP
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD:  CUSTGRP,  PRELIMXLA,  CUSTXLA,  FEATXLA,
VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
MDCGRP INFOCOL
    . GENTRIG ( SPC KCDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to individual trunk.
INAP Info Collected TDP:  trigger criteria not met.
TABLE IBNXLA:  XLANAME PTTXLA
PTTXLA 888 NET N Y 0 N NDGT N Y GEN (LATTR 100 102_NPRT_1
NLCA_NILLA_1)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 0 PX PTTXLA NIL 00 102_NPRT_1
NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          888998
TABLE PXCODE
PTTXLA 888 888 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y)$ 0 0 24 PX VALIDATE

```

## Traver output of the previous implementation - Part 2 / 2

```

PLEASE ENTER CLI DIGITS:
>1027835402
TABLE DNSCRN
. 1027835402 (CUSTINFO VALID 0) $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          888998
TABLE PXCODE
VALIDATE 888 888 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          998
TABLE PXCODE
LINCUXL 998 998 RTE ( DEST 998)$
TABLE: PXRTE
KEY: LINCUXL 998
. T IBNRTE 888
. . TABLE IBNRTE
. . 888 IBNRX
. . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
TABLE TRIGGRP
MDCGRP INFOANAL
. GENTRIG ( CDPN KCDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to individual trunk.
. . TABLE TRIGDIG
. . KCDIG GENTRIG 998 GENTRIG EVENT TCAP INAPV8 TCPIP 0
(SERVKEY 111)
. . (SERVINFO_INDEX 99) $
. . . TABLE SERVINFO
. . . 99
. . . (INITDP_PARMS (SERVKEY) (CDPA) (CLI) (EVENT_TYPE) $)$
INAP Info Analyzed TDP: trigger criteria met, querying the
database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

INAP Info Analyzed TDP: trigger criteria met, querying the
database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

>

```

## New traver output - Part 1 / 2

```

CI:
>traver tr ISUPBA 888998 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0
Y N N N N N Y 0 0
    N 0 0 0 0 Y N N N N N N N N NATL $
    . . TABLE TRKAIN
    . . ISUPBA MDCGRP
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD:  CUSTGRP,  PRELIMXLA,  CUSTXLA,  FEATXLA,
VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
MDCGRP INFOCOL
    . GENTRIG ( SPC KCDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to individual trunk.
INAP Info Collected TDP:  trigger criteria not met.
TABLE IBNXLA:  XLANAME PTTXLA
PTTXLA 888 NET N Y 0 N NDGT N Y GEN (LATTR 100 102_NPRT_1
NLCA_NILLA_1)$ $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 0 PX PTTXLA NIL 00 102_NPRT_1
NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          888998
TABLE PXCODE
PTTXLA 888 888 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y
Y)$) ( CUSTMOD Y Y 3)$ 0 0 24 PX VALIDATE

```

## New tracer output - Part 2 / 2

```

PLEASE ENTER CLI DIGITS:
>1027835402
TABLE DNSCRN
. 1027835402 (CUSTINFO VALID 0) $
REV_XLA set to Y - Now translating using new assigned CUSTGRP
and NCOS
TABLE NCOS
VALID 0 0 0 $ ( XLAS NETXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
VALID NXLA VALIDXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
MDCGRP INFOCOL
. GENTRIG ( SPC KCDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to individual trunk.
. . TABLE TRIGDIG
. . KCDIG GENTRIG 998 GENTRIG EVENT TCAP INAPV8 TCPIP 0
(SERVKEY 111)
. . (SERVINFO_INDEX 99) $
. . . TABLE SERVINFO
. . . 99
. . . (INITDP_PARS (SERVKEY) (CDPA) (CLI) (EVENT_TYPE) $)$
INAP Info Collected TDP: trigger criteria met, querying the
database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

INAP Info Collected TDP: trigger criteria met, querying the
database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

>

```

**Traver example - Part 1 / 3**

```

CI:
>>traver tr 2wbtupba 9870555 ainres icsx connect 1587835407 b
TABLE TRKGRP
2WBTUPBA IBNT2 0 NPDGP NCRT PTTTUPB 0 LIDL 0 N ANSDISC 0 Y N N
N N N N 0 0 N 0 1
      0 1 N N N N N N N N Y VPN NATL $
TABLE NSCDEFS
VPN 1 (STDACC 162) (RETMET CHG) $
. . TABLE TRKAIN
. . 2WBTUPBA AIN AIN SMGRP
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
PTTUPB 0 0 0 PTTCOS ( XLAS PTTXLA PTTFEAT NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
PTTUPB NXLA PTTXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT N Y DOD N 100 102_NPRT_1 NLCA_NILLA_1
NONE $) $ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 0 PX PTTXLA NIL 00 102_NPRT_1
NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT CONT ( AMAXLAID STNPAID) ( XLT NSC GNP)$ NODFOP
NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          9870555
TABLE PXCODE
PTTXLA 987 987 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y N N
N)$) ( CUSTMOD Y Y 3) ( CLISERV DENEME)$ 0 3 19 PX TEST

```

**Traver Example - Part 2/3**

```

PLEASE ENTER CLI DIGITS:
>1027835407
TABLE CLISERV
. DENEME 1 ( PARTIAL )$
TABLE DNSCRN
. 102 (CUSTINFO CUST783 0) $
REV_XLA SET TO Y - NOW TRANSLATING USING NEW ASSIGNED CUSTGRP
AND NCOS
TABLE NCOS
CUST783 0 0 0 $ ( XLAS NETXLA STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
CUST783 NXLA NETXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME NETXLA
TUPLE NOT FOUND
Default from table XLANAME:
NETXLA
(NET N Y 0 N NDGT N Y GEN (LATTR 1 102_NPRT_1 NLCA_NILLA_1)
$ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
1 IBN NONE NT 0 0 NILSFC 4 PX NETXLA NIL 00 102_NPRT_1
NLCA_NILLA_1
(AMAGRPID NEW) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
NETXLA DFLT CONT ( CONSUME 0) ( XLT CT CUST783A)$ NODFOP CON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 0555
TABLE PXCODE
NETXLA 05 05 RTE ( PF 0) ( MM 4 15) ( DEST 555) ( CLASS NATL)
( AMAXLAID TEST)$
TABLE: PXRTE
KEY: NETXLA 555
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
NEW DFLT (FLEXOCI 6)$
TABLE AMAXLAID
TEST DFLT (FLEXCTYP GENERIC 804 OVRDALL )$

```

**Traver Example - Part 3/3**

```

TABLE FLEXAMA
NEW TEST GRPDATA (FLEXOCI 12)$
TABLE TRIGGRP
SMGRP INFOANAL
. GENTRIG ( CDPN SMDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to individual trunk.
Trigger INAPV8 GENTRIG is applicable to individual trunk.
.. TABLE TRIGDIG
.. SMDIG GENTRIG 0555 GENTRIG EVENT TCAP INAPV8 TCPIP 0
(SERVKEY 99)
.. (SERVINFO_INDEX 99) $
...TABLE SERVINFO
...99
... (INITDP_PARS (SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE)$)
... (BILL_INFO (AMA_OPT (DIALED_DIGITS_INFO MODULE_40)
... (AMA_XLA_OPT (MAINTN_CALLCODE)$) (CORRELATION_ID$) $)$)
... (DIGIT_COLLECTION_INFO ( FULL_CDPA) $)
... (RESPONSE_INFO (CONNECT_OPT (XLA_REENTRY (UNIV_XLA PX
INCPXLA)$)$)$)
... (EDPS_INFO (EXPLICIT) $) (CS1R (CONTINUE) (CWA) $)$
INAP Info Analyzed TDP: trigger criteria met, querying the
database.
INAP Info Analyzed TDP: AINRES CONNECT option specified
TABLE PXHEAD
INCPXLA SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
1587835407
TABLE PXCODE
INCPXLA 158 158 RTE ( PF 3) ( MM 10 10) ( DEST 158) ( AMAXLAID
TEST)$
TABLE: PXRTE
KEY: INCPXLA 158
. S OGISP2BC
EXIT TABLE PXRTE
TABLE AMAXLAID
TEST DFLT (FLEXCTYP GENERIC 804 OVRDALL )$
EXIT TABLE PXRTE

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OGISP2BC                7835407                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL
+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

## Hardware Requirements or Dependencies

N/A

## Software Requirements or Dependencies

Activation of the functionality is controlled by the SOC option XLAS0054 “XLAS Rev Trans Custmod”.

This feature is patched backed to SW000004. The patch ID is NAP43. NAP43 is a password activatable patch. For an ONP from (ISN04 - ISN06) to (ISN07 and beyond), the state of the SOC option XLAS0054 will automatically be set to ‘ON’, if NAP43 was activated before the ONP, and also all of the functionalities of this feature will be ON after the ONP, too. But for this ONP, a password for SOC option is still required to change the RTU field of the SOC option XLAS0054 in loads SW000007 and beyond. “SOC states and RTU values of the SOC option XLAS0054 after ONPs” is described in the following table.

**SOC states and RTU values of the SOC option XLAS0054 after ONPs**

| ONP                                                                                          | State of SOC option after ONP                                        |                                                                    | RTU of SOC option after ONP                                     |                                                                 |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
|                                                                                              | IF State of SOC option in ISN07 (nodatafill load) before ONP is IDLE | IF State of SOC option in ISN07 (nodatafill load) before ONP is ON | IF RTU of SOC option in ISN07 (nodatafill load) before ONP is N | IF RTU of SOC option in ISN07 (nodatafill load) before ONP is Y |
| ISN04 (ISN04 or ISN06) to ISN07 (ISN07 or beyond)<br>NAP43 is active on ISN04 (or ISN06)     | ON                                                                   | ON                                                                 | N                                                               | Y                                                               |
| ISN04 (ISN04 or ISN06) to ISN07 (ISN07 or beyond)<br>NAP43 is not active on ISN04 (or ISN06) | IDLE                                                                 | ON                                                                 | N                                                               | Y                                                               |



## Limitations and restrictions

REV\_XLA option starts the reverse translation once per call.

AIN (Advanced Intelligent Networks; the North American standard of IN) and GIN (GSP IN) are not supported. Only EIN (ETSI INAP V8) is supported.

Only TDM trunks are supported by the REV\_XLA option.

REV\_XLA is functional for only the trunk originated calls. Supported Trunk types are:

- ETSI ISUP V1, V2, V3
- All National variants of ETSI ISUP (can be V1 or V2 based)
- BTUP V2, V2+
- SSUTR2
- SPIROU
- National variants of ETSI PRI
- QSIG
- Numeris VN4 PRI
- Numeris VN6 PRI
- DPNSS

## Interactions

When a call is initiated by a feature, REV\_XLA does not start the reverse translation after the featinfo selector; i.e. feature initiated calls are not supported by this activity. Some examples for the unsupported features are:

- Call diversion favors
- CFRA
- Attendant Console's night service
- CCBS
- MONA
- IBN Auth code and Acct code features
- RSA
- DISA

Supported feature interworkings are:

- Calling Party Category Screening and Routing
- CDN

- BC, as exists plus Universal MMP15 feature.
- PN screen
- IN CS-1, CS-2, CS-3, CS-4
- All existing AMA functionality
- Forced overlap outgoing - Eire
- NETINFO
- All existing Validate CLI functionality
- IN Billing - all current IN billing to be supported (including FCI)
- French NAOC (AU3283) base feature support required along with the new NAOC features in ISN07

REV\_XLA is supported only in the translation phase of the call. Therefore REV\_XLA option is not supported after the other re-translation options in routing tables. But those other re-translation options in routing tables are supported by the REV\_XLA option when the call hits the REV\_XLA option before these options. For ex: REV\_XLA option is not supported after

- RT, GBL options in universal routing tables
- RT, RX, GBL options in OVRx and OFRx tables
- RX, IBNRX, GBL options in IBNRTx tables
- VFGs

### **Applicable customer facing sections**

#### **Fault Management**

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

#### **Configuration**

|                    |     |
|--------------------|-----|
| Data Schema        | X   |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

|                                   |     |
|-----------------------------------|-----|
| Accounting (includes AMA billing) | N/A |
|-----------------------------------|-----|

|                                                 |     |
|-------------------------------------------------|-----|
| Performance (includes operational measurements) | N/A |
|-------------------------------------------------|-----|

Activation of the functionality is controlled by the SOC option XLAS0054 “XLAS Rev Trans Custmod”.

## Glossary

| Term    | Description                   |
|---------|-------------------------------|
| REV_XLA | Reverse_Translations_Trigger  |
| XLA     | Translation                   |
| CS1R    | Capability Set 1 (Refined)    |
| CLI     | Calling Line Identity         |
| TDP     | Trigger Detection Point       |
| TDP2    | Information Collected         |
| TDP3    | Analyze Info                  |
| AIN     | Advanced Intelligent Networks |
| GIN     | GSP IN                        |
| EIN     | ETSI INAP V8                  |

## Traver Examples

### Traver Example #1

The value of WHITLIST in Universal Code table is “Y”

CUSTOMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “N”

CLISERV option exists in Universal Code table

The customer group or ncoss is changed in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
```

```

      N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y N
) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 (CUSTINFO VALID 0) $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
VALIDATE 889 889 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        7835475
TABLE PXCODE
LINCUXL 783 783 RTE ( MM 7 10) ( DEST 783) ( CLASS NATL)$
TABLE: PXRTE

```

```

KEY:  LINCUXL  783
.  S  OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP:  no subscribed trigger.
INAP Route Select Failure TDP:  no subscribed trigger.

```

```

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

```

DIGIT TRANSLATION ROUTES

```

```

1 OGISP1AB                7835475                ST

```

```

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

```

```

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

```

>

```

## Traver Example #2

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “N”

CLISERV option exists in Universal Code table

No CUSTINFO option in table DNSCRN

```

>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
      N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.

```

```

TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y N
) ( CLISERV SERVSNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVSNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 $
TABLE PXHEAD
SERVFAIL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)$
TABLE: PXRTE
KEY: SERVFAIL 889
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

DIGIT TRANSLATION ROUTES

1 2WISUPAB 7835475 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

### Traver Example #3

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “N”

CLISERV option does not exist in Universal Code table

No CUSTINFO option in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
```

```

TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y N
)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE DNSCRN
. 1027835479 $
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
TABLE TMTCNTL
TITRGRP ( 0)
. SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 64)
. SUBTABLE TREAT
KEY NOT FOUND
TRMT NOT FOUND - USE RODR

+++ TRAVER: CALL TRACE TERMINATED DUE TO DATA TROUBLE +++

TABLE TMTCNTL SUB OFFTREAT NOT DATAFILLED

TREATMENT ROUTES.  TREATMENT IS: CNAD
1 UKREORDER

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

## Traver Example #4

The value of WHITLIST in Universal Code table is “Y”



CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

The customer group or ncos is changed in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
```

8897835475

```

>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 (CUSTINFO VALID 0) $
REV_XLA SET TO Y - NOW TRANSLATING USING NEW ASSIGNED CUSTGRP AND NCOS
TABLE NCOS
VALID 0 0 0 $ ( XLAS VALIDXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
VALID NXLA VALIDXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME VALIDXLA
TUPLE NOT FOUND
Default from table XLANAME:
VALIDXLA
(NET N Y 0 N NDGT Y Y GEN (LATTR 11 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
11 IBN NONE NT 0 0 NILSFC 0 PX VALIDXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
(AMAGRPID NEW) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
VALIDXLA SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7835475
TABLE PXCODE
VALIDXLA 783 783 RTE ( DEST 889) ( CLASS NATL) ( AMAXLAID TEST) ( LNET LOC) (
MZONE 2)$
TABLE: PXRTE
KEY: VALIDXLA 889
. S OGISP2AB
EXIT TABLE PXRTE
TABLE AMAGRPID
NEW DFLT (FLEXOCI 6)$
TABLE AMAXLAID
TEST DFLT (FLEXCTYP GENERIC 804 OVRDALL )$
TABLE FLEXAMA
NEW TEST GRPDATA (FLEXOCI 12)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

DIGIT TRANSLATION ROUTES

```

1 OGISP2AB                7835475                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

### Traver Example #5

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

CUSTINFO option exists in table DNSCRN

The customer group or ncos is not changed in table DNSCRN

```

>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
      N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9

```

```

TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 (CUSTINFO CUST783A 2) $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
VALIDATE 889 889 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                7835475
TABLE PXCODE
LINCUXL 783 783 RTE ( MM 7 10) ( DEST 783) ( CLASS NATL)$
TABLE: PXRTE
KEY: LINCUXL 783
. S OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

## DIGIT TRANSLATION ROUTES

```

1 OGISP1AB                7835475                ST

```

## TREATMENT ROUTES. TREATMENT IS: GNCT

```

1 OFL

```

```
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

```
>
```

## Traver Example #6

The value of WHITLIST in Universal Code table is “Y”

CUSTOMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “N”

The value of REV\_XLA refinement is “Y”

No CLISERV option in Universal Code table

No CUSTINFO option in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
```

```

TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD N Y
3)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE DNSCRN
. 1027835479 $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
VALIDATE 889 889 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                7835475
TABLE PXCODE
LINCUXL 783 783 RTE ( MM 7 10) ( DEST 783) ( CLASS NATL)$
TABLE: PXRTE
KEY: LINCUXL 783
. S OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OGISP1AB                7835475                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

### Traver Example #7

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement if “Y”

The value of REV\_XLA refinement is “Y”

No CLISERV option in Universal Code table

No CUSTINFO option in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y Y
3)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE DNSCRN
```

```

. 1027835479 $
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
TABLE TMTCNTL
TITRKGRP ( 0)
. SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 64)
. SUBTABLE TREAT
KEY NOT FOUND
TRMT NOT FOUND - USE RODR

+++ TRAVER: CALL TRACE TERMINATED DUE TO DATA TROUBLE +++

TABLE TMTCNTL SUB OFFTREAT NOT DATAFILLED

TREATMENT ROUTES.  TREATMENT IS: CNAD
1 UKREORDER

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

### Traver Example #8

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No CUSTINFO option in table DNSCRN

```

>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR

```



```

AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 $
TABLE PXHEAD
SERVFAIL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)$
TABLE: PXRTE
KEY: SERVFAIL 889
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP:  no subscribed trigger.
INAP Route Select Failure TDP:  no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

DIGIT TRANSLATION ROUTES

1 2WISUPAB 7835475 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

### Traver Example #9

The value of WHITLIST in Universal Code table is “Y”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No entry matched in table DNSCRN

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP: no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
```

```

      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. No match found
. Screening failed
TABLE PXHEAD
SERVFAIL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)$
TABLE: PXRTE
KEY: SERVFAIL 889
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 2WISUPAB                        7835475                        ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

**Traver Example #10**

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

The customer group or ncsc is changed in table dnscrn

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
8897835475
```

```

TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 (CUSTINFO VALID 0) $
REV_XLA SET TO Y - NOW TRANSLATING USING NEW ASSIGNED CUSTGRP AND NCOS
TABLE NCOS
VALID 0 0 0 $ ( XLAS VALIDXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
VALID NXLA VALIDXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME VALIDXLA
TUPLE NOT FOUND
Default from table XLANAME:
VALIDXLA
(NET N Y 0 N NDGT Y Y GEN (LATTR 11 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
11 IBN NONE NT 0 0 NILSFC 0 PX VALIDXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
(AMAGRPID NEW) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
VALIDXLA SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7835475
TABLE PXCODE
VALIDXLA 783 783 RTE ( DEST 889) ( CLASS NATL) ( AMAXLAID TEST) ( LNET LOC) (
MZONE 2)$
TABLE: PXRTE
KEY: VALIDXLA 889
. S OGISP2AB
EXIT TABLE PXRTE
TABLE AMAGRPID
NEW DFLT (FLEXOCI 6)$
TABLE AMAXLAID
TEST DFLT (FLEXCTYP GENERIC 804 OVRDALL )$
TABLE FLEXAMA
NEW TEST GRPDATA (FLEXOCI 12)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

```

```
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

```
DIGIT TRANSLATION ROUTES
```

```
1 OGISP2AB          7835475          ST
```

```
TREATMENT ROUTES.  TREATMENT IS: GNCT
```

```
1 OFL
```

```
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

```
>
```

### Traver Example #11

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No entry found in table dnscrn

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
```

```

PTTXLA
  (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
  (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. No match found
TABLE PXHEAD
SERVFAIL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                        8897835475
TABLE PXCODE
SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)$
TABLE: PXRTE
KEY: SERVFAIL 889
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 2WISUPAB                      7835475                      ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

**Traver Example #12**

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “N”

The value of REV\_XLA refinement is “Y”

No CLISERV option in Universal Code table

No CUSTINFO option in table dnscrn

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
      N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
      (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
      (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
```

8897835475



```

TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL Y Y Y Y)$) ( CUSTMOD N Y
3)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE DNSCRN
. 1027835479 $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 8897835475
TABLE PXCODE
VALIDATE 889 889 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7835475
TABLE PXCODE
LINCUXL 783 783 RTE ( MM 7 10) ( DEST 783) ( CLASS NATL)$
TABLE: PXRTE
KEY: LINCUXL 783
. S OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OGISP1AB 7835475 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

### Traver Example #13

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

## No CLISERV option in Universal Code table

## No CUSTINFO option in table dnscrn

```

>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)$) ( CUSTMOD Y Y
3)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE DNSCRN
    . 1027835479 $
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
TABLE TMTCNTL

```

8897835475

```

TITRGRP ( 0)
. SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 64)
. SUBTABLE TREAT
KEY NOT FOUND
TRMT NOT FOUND - USE RODR

+++ TRAVER: CALL TRACE TERMINATED DUE TO DATA TROUBLE +++

TABLE TMTCNTL SUB OFFTREAT NOT DATAFILLED

TREATMENT ROUTES.  TREATMENT IS: CNAD
1 UKREORDER

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

### Traver Example #14

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No CUSTINFO option in table dnscrn

```

>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$

```

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL  
CUST783A NXLA NETXLA1 NXLA 0 NDGT

TABLE DIGCOL

NDGT specified: digits collected individually

INAP Info Collected TDP: no subscribed trigger.

TABLE IBNXLA: XLANAME PTTXLA

TUPLE NOT FOUND

Default from table XLANAME:

PTTXLA

(NET N Y 0 N NDGT Y Y GEN (LATTR 100 102\_NPRT\_1 NLCA\_NILLA\_1) \$ \$)\$ 9

TABLE DIGCOL

NDGT specified: digits collected individually

TABLE LINEATTR

100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102\_NPRT\_1 NLCA\_NILLA\_1

(AMAGRPID OLD) \$

LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE

TABLE XLAPLAN

102\_NPRT\_1 NSCR 102 NPRT NONE N \$ GG

TABLE RATEAREA

NLCA\_NILLA\_1 NLCA NIL NILLATA \$

TABLE PXHEAD

PTTXLA DFLT TRMT ( OFC VACT)\$ NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:

8897835475

TABLE PXCODE

PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)\$) ( CUSTMOD Y Y  
3) ( CLISERV SERVNAME)\$ 0 0 24 PX VALIDATE

PLEASE ENTER CLI DIGITS:

>1027835479

TABLE CLISERV

. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)\$

TABLE DNSCRN

. 1027835479 \$

TABLE PXHEAD

SERVFAIL SDFLT NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:

8897835475

TABLE PXCODE

SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)\$

TABLE: PXRTE

KEY: SERVFAIL 889

. S 2WISUPAB

EXIT TABLE PXRTE

TABLE AMAGRPID

OLD DFLT (FLEXOCI 1)\$

INAP Info Analyzed TDP: no subscribed trigger.

INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

```
1 2WISUPAB                7835475                ST
```

```
TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL
```

```
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

```
>
```

## Traver Example #15

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “N”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No CUSTINFO option in table dnscrn

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
```

```
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)$) ( CUSTMOD N Y
3) ( CLISERV SERVNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. 1027835479 $
TABLE PXHEAD
VALIDATE DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
VALIDATE 889 889 DMOD ( DEL 3) ( XLT PX LINCUXL)$
TABLE PXHEAD
LINCUXL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                7835475
TABLE PXCODE
LINCUXL 783 783 RTE ( MM 7 10) ( DEST 783) ( CLASS NATL)$
TABLE: PXRTE
KEY: LINCUXL 783
. S OGISP1AB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OGISP1AB                7835475                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>
```

## Traver Example #16

The value of WHITLIST in Universal Code table is “N”

CUSTMOD option exists in Universal Code table

The value of CUSTSCRN refinement is “Y”

The value of REV\_XLA refinement is “Y”

CLISERV option exists in Universal Code table

No entry found in table dnscrn

```
>traver tr isupba 8897835475 b
TABLE TRKGRP
ISUPBA IBNT2 0 NPDGP NCRT CUST783A 0 MIDL 2 7675499 ANSDISC 0 Y N N N N N Y 0
0
    N 0 0 0 0 Y N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
CUST783A 2 0 0 $ ( XLAS PTTXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP:  no subscribed trigger.
TABLE IBNXLA: XLANAME PTTXLA
TUPLE NOT FOUND
Default from table XLANAME:
PTTXLA
    (NET N Y 0 N NDGT Y Y GEN (LATTR 100 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 NLCC NONE NT 0 0 NILSFC 4 PX PTTXLA NIL 00 102_NPRT_1 NLCA_NILLA_1
    (AMAGRPID OLD) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
```

```

PTTXLA DFLT TRMT ( OFC VACT)$ NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
PTTXLA 889 889 FEATINFO VALIDATE ( SUBSCRN ( GENERAL N Y Y Y)$) ( CUSTMOD Y Y
3) ( CLISERV SERVSNAME)$ 0 0 24 PX VALIDATE
PLEASE ENTER CLI DIGITS:
>1027835479
TABLE CLISERV
. SERVSNAME 0 ( PARTIAL ) ( FAILRTE PX SERVFAIL)$
TABLE DNSCRN
. No match found
TABLE PXHEAD
SERVFAIL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                8897835475
TABLE PXCODE
SERVFAIL 889 889 RTE ( PF 3) ( MM 10 10) ( DEST 889) ( CLASS NATL)$
TABLE: PXRTE
KEY: SERVFAIL 889
. S 2WISUPAB
EXIT TABLE PXRTE
TABLE AMAGRPID
OLD DFLT (FLEXOCI 1)$
INAP Info Analyzed TDP: no subscribed trigger.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 2WISUPAB                7835475                ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>

```

## ***Product = CS2000***

### **A00003627 -- T.38 FAX Support for H.323 (Intl IAW)**

#### ***Functional Description***

This activity provides “Call Server controlled switchover to T.38 (or G.711)” for Call Server routed H.323 calls. Fax interworking is supported on calls



between H.323 GWs (e.g. Meridian, Cisco, BCM) and H.248 GWs (e.g. PVG) or MGCP GWs (e.g. Mediatrix). At least one involved agent must be H.323.

Fax interworking is provided over Session Initiation Protocol (SIP-T). All involved Call Servers must support the prerequisites given in section “SIP-T Support for T.38 fax” on page 659.

This feature provides “Call Server controlled switchover to T.38 (or G.711)” depending on T.38 network option:

- If **Netopt is set to “T.38”** and both GW support T.38, then upon fax detection, switchover is done from G.729 (or G.711) to T.38 codec.
- If **Netopt is not set to “T.38”**, or a GW does not support T.38, then switchover to T.38 does not apply. If the call was set up with G.729 codec, switching is done from G.729 to G.711 codec. If the call was set up with G.711, no switchover occurs.

This activity builds on top of the SN06.1 activity A00001895 “H.323 Base Application” that included development to support basic call capabilities for H.323 GWs connected to the CS2K.

This feature does not impact the capability of a GW to do autonomous switchover to T.38 in a call that does not involve an H.323 GW (e.g. PVG to PVG call).

Digital call control signaling (ISUP, ISDN, H.323) may request a Group 3 fax call within the first setup message (IAM, SETUP) by BC IE = “3.1 kHz audio” and HLC IE = “Facsimile Group 3”. Checking this teleservice “Fax Group 3” and opening a T.38 channel from beginning is not considered by this feature.

Testing is done on the international CS2K load only.

### ISN06 restrictions

The ISN06 CS2K solution does not provide interworking to Group 3 facsimile equipment (G3FE) connected to H.323 GW.

There are three different methods to do Group 3 fax over IP signalling:

1. Autonomous GW switching to fax transport mode via inband indication.
2. Call Server control of GW switching to fax transport mode.
3. GW switching to fax transport mode - peer-to-peer out of band indication.

The ISN06 CS2K solution provides autonomous switching to fax transport mode (G.711 codec or T.38 mode) if a fax tone (e.g. CNG, V.21 header) was received. The H.248 GW does not notify the H.248 GWC or far end GWC/GW about fax tone event or about autonomous switchover to T.38 mode.

H.323 generally supports method #2 for gatekeeper (GK) routed calls and method #3 for peer-to-peer calls. SIP GWs tend to support method #2 and #3.

To support fax interworking to H.323 GW, method #2 “Call Server controlled switchover to T.38 mode” is implemented on CS2K.

**Note:** The peer-to-peer approach (#3) does not work for GK controlled calls and is therefore out of scope for this CS2K implementation.

## VoIP Network Model

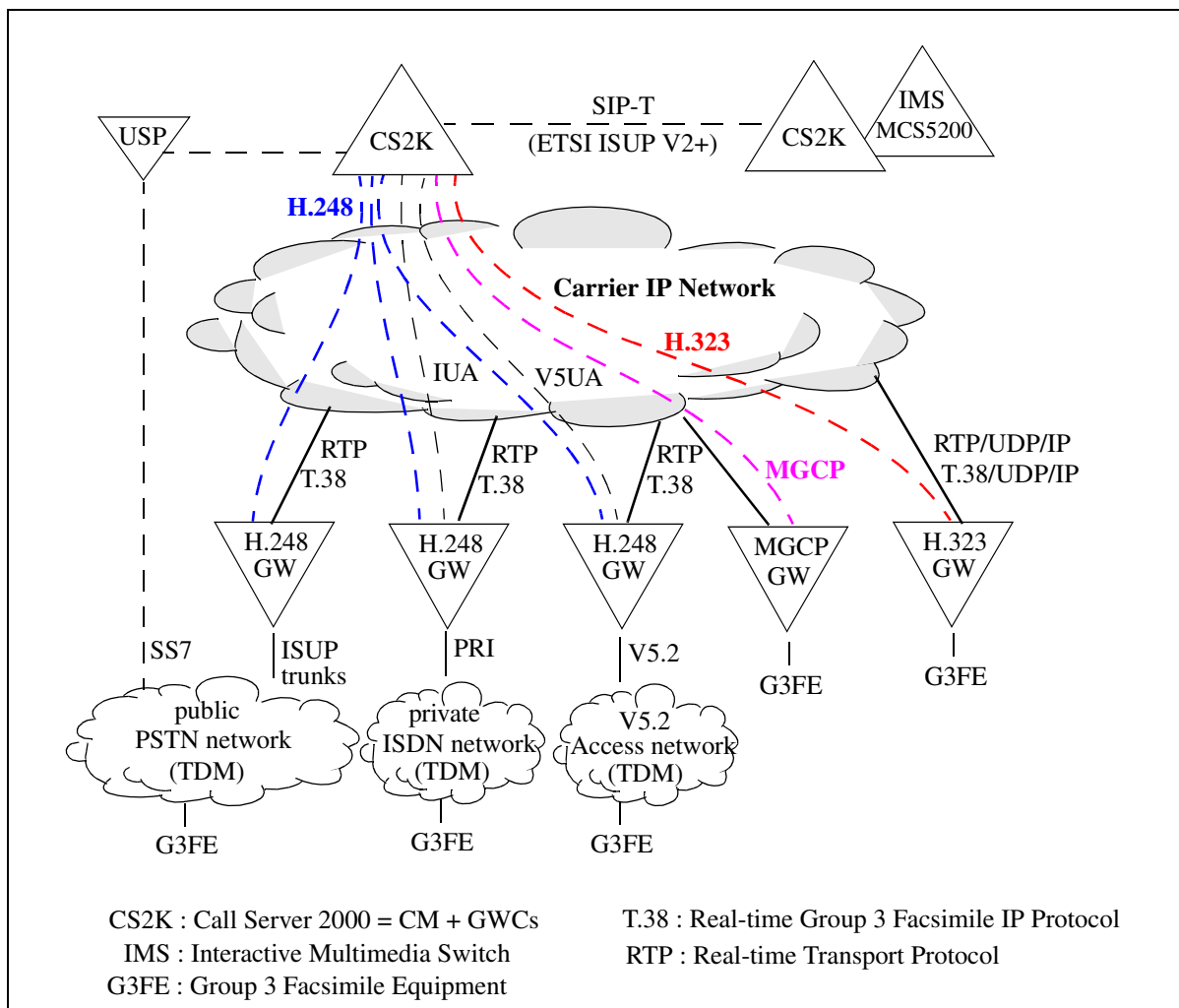
[“Configuration example for facsimile transmission over IP networks” on page 655](#) shows an example for T.38 fax data transmission over IP networks.

The H.323 GW is connected via H.323 protocol to the CS2K, which consist of H.225 protocol (Call control signaling) and H.245 protocol (Multimedia communication control). The G3FE devices are connected directly to the GW.

The H.248 GW supports voice trunking for public PSTN and private ISDN network. The GW is controlled via Media gateway control protocol H.248 from Call Server 2000 (CS2K). Call control signaling is relayed via IUA for ETSI PRI and via V5UA for V5.2 access between GW and CS2K.

The MGCP GW supports analog lines and is controlled by MGCP protocol only.

Media stream is transported via Real Time Protocol (RTP/UDP/IP) for voice calls and via Internet Facsimile Protocol (T.38/UDP/IP) for Group 3 fax calls.

**Configuration example for facsimile transmission over IP networks****Applicable Standards**

The ITU-T recommendations T.30 [1], T.38 [2] + [3], H.323 [4], T.225.0 [5], T.245 [6], H.248.1 [7], H.248.2 [8] applies for this feature. They are listed in the References section of this document with title and issue date.

**H.323 Support for T.38 fax**

Implementation of “Call Server controlled switchover to T.38 mode” is based on T.38 [2] Annex B, D and E, Draft Amendment to T.38 [3] Annex E and H.323 [4] Annex D.

The H.323 GWC requests the remote H.248 or MGCP side to detect fax tone and to notify the H.323 GWC about a fax event.

Upon receipt of fax event notification from remote H.248 or MGCP side, the H.323 GWC controls switching to T.38 mode. The logical voice channel is cleared and a T.38 fax channel is opened. The SDP(T.38) data is sent to the remote side, which is invited to switch over to T.38.

A remote H.248 or MGCP GW may send a SDP indicating simultaneous support of voice media stream via “m=audio ..” and T.38 media stream via “m=image ..” line. The “m=image 1 udptl t38” line in SDP means that T.38 codec is supported and “autonomous switchover to T.38” might be used lateron - see [3] Annex E.2.2.

**Note:** A SDP coding sample for simultaneous voice and T.38 support is given in [“SDP sample for H.248 -> H.323 \(FS\) interworking over SIP-T” on page 661.](#)

A H.323 GW which does not support voice media stream and T.38 media stream at the same time, removes/rejects the “m=image 1 udptl t38” line. This means that “autonomous switchover to T.38” is not used for this call.

**Note:** To switch successfully to T.38, each side should know the T.38 capability of the other side. A GW indicates T.38 capability, by including a “a=cdsc: 1 image udptl t38” line in SDP. This means that “Call Server controlled switchover to T.38” is supported and might be used lateron.

## H.248 Support for T.38 fax

**Note:** Implementation of “Call Server controlled switchover to T.38 mode”, makes use of “Call Type Discriminator package” (ctyp) with event “Discriminating Tone detected” (dtone). See H.248.2 [8], chapter 7.

The GWC checks the GW capability to support T.38 via H.248 AuditValue command. If the H.248 GW replies with H.248 package “ctyp-1”, then “Call Server controlled switchover to T.38 mode” is supported - see [“Coding example: Check supported H.248 packages” on page 657.](#)

**Note:** If Netopt = “T.38”, the H.248 GWC add the ephemeral termination with voice and T.38 codec - see [“Coding example: Add ephemeral with G.729 and T.38 codec” on page 658.](#)

The H.248 GW does not switch over to T.38, before the remote SDP is received.

- If the remote SDP contains T.38 codec (m=image 1 udptl t38), then “autonomous switchover to T.38” applies.
- If the remote SDP indicates T.38 capability (a=cdsc: 1 image udptl t38), then “Call Server controlled switchover to T.38 mode” applies.

The H.248 coding examples below display H.248 message as used in the call flow examples in section “Call Flows” on page 664.

**Coding example: Check supported H.248 packages**

| Transaction (GWC -> MG)                                                                                       | Reply (GWC <- MG)                                                                                                          |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| MEGACO/1 [47.174.66.80]:2944<br>Transaction=62 {<br>Context=-{<br>AuditValue=Root{<br>Audit {Packages}<br>}}} | MEGACO/1 [47.166.34.20]:2944<br>Reply=62 {<br>Context=-{<br>AuditValue=Root{<br>Audit {Packages {..., ctyp-1, ...}}<br>}}} |

**Coding example: Request fax event detection**

| Transaction (GWC -> MG)                                                                                                                             | Reply (GWC <- MG)                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| MEGACO/1 [47.174.66.80]:2944<br>Transaction=63 {<br>Context=\$ {<br>Add=e1/03/05/1 {<br>M{O{MO=RC, tdmec=ON }},<br>Events = 234 {ctyp/dtone}<br>}}} | MEGACO/1 [47.166.34.20]:2944<br>Reply=63 {<br>Context= 1234{<br>Add=e1/03/05/1<br>}} |

**Coding example: Notify fax event V.21 flag**

| Transaction (GWC <-MG)                                                                                                                                                     | Reply (GWC -> MG)                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| MEGACO/1 [47.166.34.20]:2944<br>Transaction=64 {<br>Context=1234 {<br>Notify=e1/03/05/1 {<br>ObservedEvents=234 {<br>20030924T14001201:ctyp/dtone{dtc<br>=V21flag}<br>}}}} | MEGACO/1 [47.174.66.80]:2944<br>Reply=64{<br>Context= 1234{<br>Notify=e1/03/05/1<br>}} |

**Coding example: Add ephemeral with G.729 and T.38 codec”**

| Transaction (GWC ->MG)                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reply (GWC <- MG)                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>MEGACO/1 [47.166.34.20]:2944 Transaction=64 { Context=1234 { Add = \$ { Media {LocalControl { v=0 c=IN IP4 \$ m=audio\$ RTP/AVP 18 a=ptime:20 m=image \$ udptl t38 ... }}}}}</pre>                                                                                                                                                                                                                                                                                           | <pre>MEGACO/1 [47.174.66.80]:2944 Reply=64{ Context= 1234{ Add = rtp/34 { Media {Local { v=0 c=IN IP4 47.174.66.14 m=audio 1111 RTP/AVP 18 13 19 a=ptime:20 m=image 2222 udptl t38 a=T38Fax ... a=T38Fax... ... }}}}}</pre> |
| <p>Note 1: The ephemeral termination is added with T.38 codec, to support “autonomous switchover to T.38” for e.g. PVG to PVG calls. At this point the remote GW type is unknown. If the remote side is H.323, then the T.38 codec is removed by the H.323 GW (codec negotiation).</p> <p>Note 2: This example shows 2 media lines in one session descriptor, as implemented in ISN06.2. This example will be updated at end of this feature to display real used SDP syntax.</p> |                                                                                                                                                                                                                             |

## MGCP Support for T.38 fax

Implementation of “Call Server controlled switchover to T.38 mode”, makes use of Fax tone (ft) defined in the Generic Media Package (G). See Basic MGCP Packages [9] in the References section

The MGCP GW does not switch over to T.38, before the remote SDP is received.

- If the remote SDP contains T.38 codec (m=image 1 udptl t38), then “autonomous switchover to T.38” applies.
- If the remote SDP indicates T.38 capability (a=cdsc: 1 image udptl t38), then “Call Server controlled switchover to T.38 mode” applies.

**Note:** According to Reference [9], the MGCP GW detect a fax call by detecting the V.21 fax preamble. The fax tone event SHOULD also be generated when the T.30 CNG tone is detected

## SIP-T Support for T.38 fax

SIP-T/SDP support for T.38 fax call is implemented according ITU T.38 [2] Annex D, Draft Amendment to T.38 [3] Annex E and IETF SIP Support for Real-time Fax [13].

T.38 fax interworking is supported over SIP-T. Support via native SIP is not covered by this activity.

### Fax call CS2K to CS2K

This feature provides and verifies T.38 fax calls for H.323 GW interworking to H.323 GWs, H.248 GWs and MGCP GWs over SIP-T (ETSI ISUP V2+).

The SIP messages SUBSCRIBE and NOTIFY are used, which are defined in IETF RFC 3265 [11].

- With SUBSCRIBE(reqFaxDet), the H.323 GWC requests the remote side to detect fax event and to notify the H.323 side about a fax event.
- With NOTIFY(FaxDet), the H.248 or MGCP GWC notifies the event “fax call detected” to the remote H.323 side.

The content of both messages is proprietary and is needed on interworking between H.323 GWs with H.248 or MGCP GWs. The coding is specified in section “Coding of SIP-T messages SUBSCRIBE and NOTIFY” on page 660.

### Fax call CS2K to other Call Server

**Prerequisite:** The other Call Server with connected GW must support the functionality section “Coding of Session Description Protocol (SDP)” on page 660. Additionally option 1 or option 2 below must be supported:

**Option 1:** The SIP SUBSCRIBE(reqFaxDet) and SIP NOTIFY(FaxDet) message are supported and processed as defined in .

**Option 2:** The SIP SUBSCRIBE(reqFaxDet) and SIP NOTIFY(FaxDet) message are not supported. In this case the other Call Server must support:

- Autonomous fax event detection.
- Upon detection of fax, a Re-INVITE (T.38) message is sent to the far end.
- Receipt of SUBSCRIBE(reqFaxDet) message is ignored or rejected.

No design work is planned to support T.38 interworking with other Call Servers.





G.729 and G.711 capability is indicated to the remote GW with “a=cdsc: 2 audio RTP/AVP 18 8” line in SDP data.

### T.38 parameter in capability description

```
v=0
c=IN IP4 128.96.41.1
a=sgn: 0
  a=cdsc: 1 image udptl t38 - indicates T.38 capability
a=cpar: a=T38FaxVersion: 1
a=cpar: a=T38FaxMaxBuffer:3341
a=cpar: a=T38FaxMaxDatagram:333
a=cpar: a=T38FaxMaxBitRate: 10000
  m=audio 1111 RTP/AVP 18
a=ptime:20
  a=cdsc: 2 audio RTP/AVP 18 8 - indicates G.729 and G.711 capability
a=cpar: a=ptime:20
```

**Note:** For clarity, T.38 parameters are omitted in the subsequent figures.

“SDP sample for H.248 -> H.323 (FS) interworking over SIP-T” on page 661 to “SDP sample for H.248 -> H.323 (FS) interworking over SIP-T” on page 663 show SDP coding examples for interworking H.248 to H.323.

**Note:** SDP coding for H.248 side applies also for non-H.323 e.g. MGCP.

“SDP sample for H.248 -> H.323 (FS) interworking over SIP-T” on page 661 and “SDP sample for H.323 (FS) -> H.248 interworking over SIP-T” on page 662 show SDP coding examples for interworking H.248 GW supporting “autonomous switching to T.38” and H.323 GW supporting “Call Server controlled T.38 switching”. Fast start (FS) applies on H.323 side.

### SDP sample for H.248 -> H.323 (FS) interworking over SIP-T

| H.248 -> H.323: INVITE (SDP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | H.248 <- H.323: 200 OK (SDP)                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>v=0 c=IN IP4 128.96.41.1   m=audio 1111 RTP/AVP 18 (Note 1) a=ptime:20   m=image 1112 udptl t38 (Note 2)</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <pre>v=0 c=IN IP4 ...   a=sgn: 0   a=cdsc: 1 image udptl t38 (Note 3)     m=audio 2222 RTP/AVP 18 (Note 1) a=ptime:20   m=<del>image 0 udptl t38</del> (Note 4)</pre> |
| <p>1: Both sides supports G.729 codec. The voice call is set up with G.729 codec.<br/> 2: Originating H.248 side commits simultaneous support for T.38 and indicates usage of “autonomous T.38 switching”.<br/> 3: Terminating H.323 side indicates T.38 capability (not simultaneous to G.729).<br/> 4: Terminating H.323 does not support “autonomous T.38 switching”. Current ISN07 implementation does not sent “m=image 0 udptl t38” back. Omitting “m=image ...” indicates, that “autonomous T.38 switching” is not supported by terminating side.<br/> 5: Upon detection of fax call, “Call Server controlled T.38 switching” takes place.</p> |                                                                                                                                                                       |

**SDP sample for H.323 (FS) -> H.248 interworking over SIP-T**

| <b>H.323 -&gt; H.248: INVITE (SDP)</b>                                                                                                                                                                            | <b>H.323 &lt;- H.248: 200 OK (SDP)</b>                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 1)<br>m=audio 1111 RTP/AVP 18 (Note 2)<br>a=ptime:20                                                                                           | v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 1)<br>m=audio 2222 RTP/AVP 18 (Note 2)<br>a=ptime:20 |
| 1: Both sides indicates T.38 capability.<br>2: Both sides supports G.729 codec. The voice call is set up with G.729 codec.<br>3: Upon detection of fax call, "Call Server controlled T.38 switching" takes place. |                                                                                                                         |

“SDP sample for H.248 -> H.323 (SS) interworking over SIP-T” on page 662 and “SDP sample for H.323 (SS) -> H.248 interworking over SIP-T” on page 663 show SDP coding example for interworking H.248 GW supporting “autonomous switching to T.38” and H.323 GW supporting “Call Server controlled T.38 switching”. Slow start (SS) applies on H.323 side.

**SDP sample for H.248 -> H.323 (SS) interworking over SIP-T**

| <b>H.248 -&gt; H.323: INVITE (SDP)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>H.248 &lt;- H.323: Ringing (SDP)</b>                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| v=0<br>c=IN IP4 128.96.41.1<br>m=audio 1111 RTP/AVP 18 (Note 1)<br>a=ptime:20<br>m=image 1112 udptl t38 (Note 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 3)<br>m=audio 2222 RTP/AVP 18 (Note 1)<br>a=ptime:20<br><del>m=image 0 udptl t38 (Note 4)</del> |
| H.248 -> H.323: ACK - 200 OK (SDP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                    |
| v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 5)<br>m=audio 1111 RTP/AVP 18 (Note 1)<br>a=ptime:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                    |
| 1: Both sides supports G.729 codec. The voice call is set up with G.729 codec.<br>2: Originating H.248 side commits simultaneous support for T.38 and indicates usage of “autonomous T.38 switching”.<br>3: Terminating H.323 side indicates T.38 capability.<br>4: Terminating H.323 does not support “autonomous T.38 switching”. Current ISN07 implementation does not sent “m=image 0 udptl t38” back. Omitting “m=image ...” indicates, that “autonomous T.38 switching” is not supported by terminating side.<br>5: Originating H.248 side indicates T.38 capability.<br>5: Upon detection of fax call, “Call Server controlled T.38 switching” takes place. |                                                                                                                                                                    |

**SDP sample for H.323 (SS) -> H.248 interworking over SIP-T**

| H.323 -> H.248: INVITE (SDP = empty)                                                                                                                                                                              | H.323 <- H.248: RINGING (SDP)                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| H.323 -> H.248: ACK (SDP)                                                                                                                                                                                         | v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 1)<br>m=audio 2222 RTP/AVP 18 (Note 2)<br>a=ptime:20 |
| v=0<br>c=IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 1)<br>m=audio 1111 RTP/AVP 18 (Note 2)<br>a=ptime:20                                                                                           |                                                                                                                         |
| 1: Both sides indicates T.38 capability.<br>2: Both sides supports G.729 codec. The voice call is set up with G.729 codec.<br>3: Upon detection of fax call, "Call Server controlled T.38 switching" takes place. |                                                                                                                         |

“SDP sample for H.248 -> H.323 (FS) interworking over SIP-T” on page 663 shows SDP coding example for interworking H.248 GW supporting G.729 and G.711 codec with H.323 GW supporting G.729, G.711 and T.38 codec. Fast start (FS) applies on H.323 side.

**SDP sample for H.248 -> H.323 (FS) interworking over SIP-T**

| H.248 -> H.323: INVITE (SDP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | H.248 <- H.323: 200 OK (SDP)                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| v=0<br>c=IN IP4 128.96.41.1<br>m=audio 1111 RTP/AVP 18 8 (Note 1, 2)<br>a=ptime:20                                                                                                                                                                                                                                                                                                                                                                                                           | v=0<br>c= IN IP4 ...<br>a=sgn: 0<br>a=cdsc: 1 image udptl t38 (Note 3)<br>m=audio 2222 RTP/AVP 18 (Note 1)<br>a=ptime:20<br>a=cdsc: 2 audio RTP/AVP 18 8 (Note 4)<br>a=cpar: a=ptime:20 |
| Note 1: Both sides supports G.729 codec. The voice call is set up with G.729 codec.<br>Note 2: Originating H.248 side supports additionally codec G.711 a-law.<br>Note 3: Terminating H.323 side indicates T.38 capability.<br>Note 4: Terminating H.248 side indicates additionally G.729, G.711 a-law capability<br>Note 5: Upon detection of fax call, "Call Server controlled G.729 -> G.711 switching" takes place, because originating side does not indicate/support T.38 capability. |                                                                                                                                                                                         |

**Interworking**

This feature supports “Call Server controlled switchover to T.38 (or to G.711)” for **nodal calls** and for **inter-Call Server calls** over SIP-T (ETSI ISUP V2+) when the originating or terminating agent is H.323.

This feature provides Call Server controlled switchover to T.38 (or G.711) codec depending on T.38 network option:

- If **Netopt** is set to “**T.38**” and both GW support T.38, then upon fax detection, switchover is done from G.729 (or G.711) to T.38 codec.
- If **Netopt** is not set to “**T.38**”, or a GW does not support T.38, then switchover to T.38 does not apply. If the call was set up with G.729 codec, switching is done from G.729 to G.711 codec. If the call was set up with G.711, no switchover occurs.

**Supported fax interworkings for nodal calls and for inter-Call Server calls via SIP-T**

| Terminating side: | H.323 | H.248                                       | MGCP | SIP-T                                |
|-------------------|-------|---------------------------------------------|------|--------------------------------------|
| Originating side: |       |                                             |      |                                      |
| H.323             | 3     | 3                                           | 3    | 3                                    |
| H.248             | 3     | Out of scope<br>for this activity<br>Note 3 |      | 3<br>Note 2                          |
| MGCP              | 3     |                                             |      |                                      |
| SIP-T             | 3     | 3<br>Note 1                                 |      | Out of scope<br>for this<br>activity |

**Note 1:** Provided, if the originating side sends SUBSCRIBE(reqFaxDet) and processes NOTIFY(FaxDet) as defined in section “SIP-T Support for T.38 fax” on page 659.

**Note 2:** Provided, if the terminating side sends SUBSCRIBE(reqFaxDet) and processes NOTIFY(FaxDet) as defined in section “SIP-T Support for T.38 fax” on page 659.

**Note 3:** Calls where only H.248 GWs or MGCP GWs are involved, are out of scope for this feature. “Autonomous switching to T.38 (or to G.711)” may apply for these calls.

T.38 fax interworking to H.323 is provided for currently available protocol agents on H.248 GW: ETSI ISUP, ETSI PRI and ETSI V5.2.

In case of CS2K Hybrid, the interworking between TDM platform and IP platform is provided via ISUP-looparound.

## Call Flows

Description of T.38 functionality is provided via annotated call flows. The description of the first call flow is given in detail and may be applied to other subsequent call flows.

**Note:** Focus of the call flows is to show “Call Server controlled switchover to T.38 mode”. Call control messages (e.g. H.225, IUA, SIP) and Media control messages (e.g. H.245, H.248, MGCP) are not complete. Furtheron TCS-Ack messages have been omitted for clarity.

Mapping between H.248 or H.323 messages and SIP-T messages can be obtained from the call flows. Coding of SIP-T messages SUBSCRIBE and NOTIFY is specified in section “Coding of SIP-T messages SUBSCRIBE and NOTIFY” on page 660. Coding of SDP content is specified in section “Coding of Session Description Protocol (SDP)” on page 660.

In the case that the originating and terminating GW are located on the same Call Server, the SIP-T part is not applicable and shall be neglected.

T.38 fax call flows are presented for:

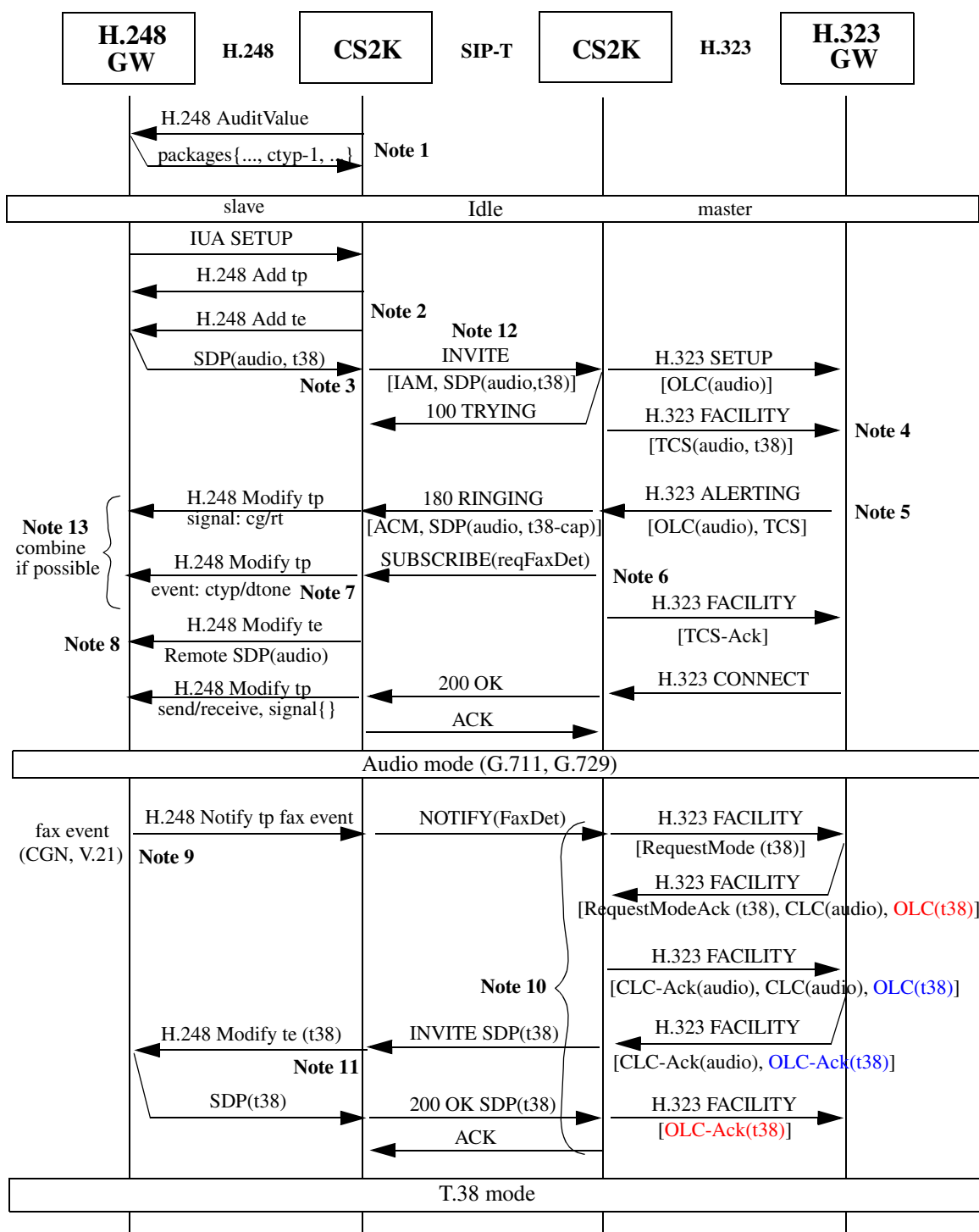
- fast start: H.248(FS) -> H.323(FS) - see Section .
- fast start: H.323(FS) -> H.248 (FS) - see section “Call flow for H.323 to H.248 interworking (fast start)” on page 668.
- fast start: H.323(FS) -> H.323(FS) - see section “Call flow for H.323 to H.323 interworking (fast start)” on page 670.
- slow start: H.248(FS) -> H.323(SS) - see section “Call flow for H.248 to H.323 interworking (slow start)” on page 671.
- slow start: H.323(SS) -> H.248(FS) - see section “Call flow for H.323 to H.248 interworking (slow start)” on page 672.

#### **Call flow for H.248 to H.323 interworking (fast start)**

“[Sample flow for H.248 to H.323 interworking](#)” on page 666 displays a sample messaging of a successful fax call between PRI (H.248 controlled) and H.323. First a voice call is established. After a fax call was detected, “Call Server controlled switchover to T.38” occurs.

Selection: Fast start applies - the H.248 side is “slave”, the H.323 side is “master”. Both sides support “Call Server controlled switchover to T.38” and Netopt is set to “T.38”

## Sample flow for H.248 to H.323 interworking



**Note 1:** The H.248 GWC checks GW T.38 capability via H.248 AuditValue command at GW registration. If GW replies to the AuditValue request with H.248.2 fax package “ctyp-1”, then “Call Server controlled switchover to T.38 mode” is supported by the H.248 GW.

Coding sample of H.248 AuditValue is shown in Figure , on page 657 .

**Note 2:** After adding the physical TDM termination (Add tp), the ephemeral termination (te) is added for a voice call (e.g. G.711 or G.729 codec).

If the Network Option is set to “T.38”, the GWC request “T.38 mode”, by including T.38 codec in Add te request command.

**Note 3:** The H.248 GW replies with local Session Description Protocol (SDP) containing the preferred voice codec and optional with T.38 codec.

Coding sample of H.248 Add te is shown in [“Coding example: Add ephemeral with G.729 and T.38 codec”](#) on page 658.

**Note 4:** The H.323 GWC sends a Terminal Capability Set (TCS) message to the H.323 GW, to indicate that “CS controlled switchover to T.38” is supported by the remote side.

**Note 5:** The H.323 GW supporting “CS controlled switchover to T.38” responds with the preferred audio codec and indicates T.38 capability.

SDP coding samples are available in section “ Coding of Session Description Protocol (SDP)” on page 660.

**Note 6:** The H.323 GWC checks “CS controlled switchover to T.38” capability via H.323 GW profile. If supported, the remote H.248 side is requested to detect fax call.

**Note 7:** If H.248 GW supports “CS controlled switchover to T.38” i.e. AuditValue Reply included “ctyp-1” package, fax event detection (CNG tone, V.21 Preamble) is requested on the physical termination.

Coding sample of H.248 Modify tp event=ctyp/dtone is shown in [“Coding example: Request fax event detection”](#) on page 657.

**Note 8:** The ephemeral termination is modified with the remote SDP. If the remote SDP indicates T.38 capability via “a=cdsc: 1 image udptl t38”, then “CS controlled switchover to T.38” applies for this call. The H.248 GW does not switch over autonomously to T.38 or G.711.

**Note 9:** Upon detection of “fax call”, the H.248 GW notifies the H.248 GWC. The Notification is transferred to the remote H.323 GWC/GW side.

Coding sample of H.248 Notify tp fax call is shown in [“Coding example: Notify fax event V.21 flag” on page 657](#).

**Note 10:** Upon receipt of Notify fax detection, the H.323 GWC sends RequestMode (T.38) to the H.323 GW. The H.323 GWC handles the H.323 CLC and OLC messaging locally. Switchover to T.38 mode is always invoked by the H.323 GWC. The remote side is requested to switch over to T.38 by exchanging SDP(T.38) data.

**Note 11:** Upon receipt of SDP(T.38) data, a H.248 Modify command is sent, which request the ephemeral termination to switch over to T.38.

**Note 12:** The content of SDP uses following abbreviation:

- SDP(audio) for processing of audio media stream.
- SDP(t38) for processing of t38 media stream.
- SDP(audio, t38) for simultaneous processing of audio and t38 media streams.
- SDP(audio, t38-cap) for processing of audio media stream and for t38 capability indication.

**Note 13:** To reduce H.248 messaging, the “H.248 request detect fax tone” shall be sent within other available H.248 messages, if possible:

- combination of “Modify event = ctyp/dtone” and “Modify signal cg/rt” is possible, if ALERTING and SUBSCRIBE messages are sent coincidentally.
- combination of “Add tp” and “Modify event = ctyp/dtone” is possible, if the H.248 GW is the terminator and runs in “master mode”.

The “event = ctyp/dtone” is only requested, if the remote side is H.323, which request fax detection. On H.248 to H.248 interworking or H.248 to MGCP interworking, fax detection event is not requested.

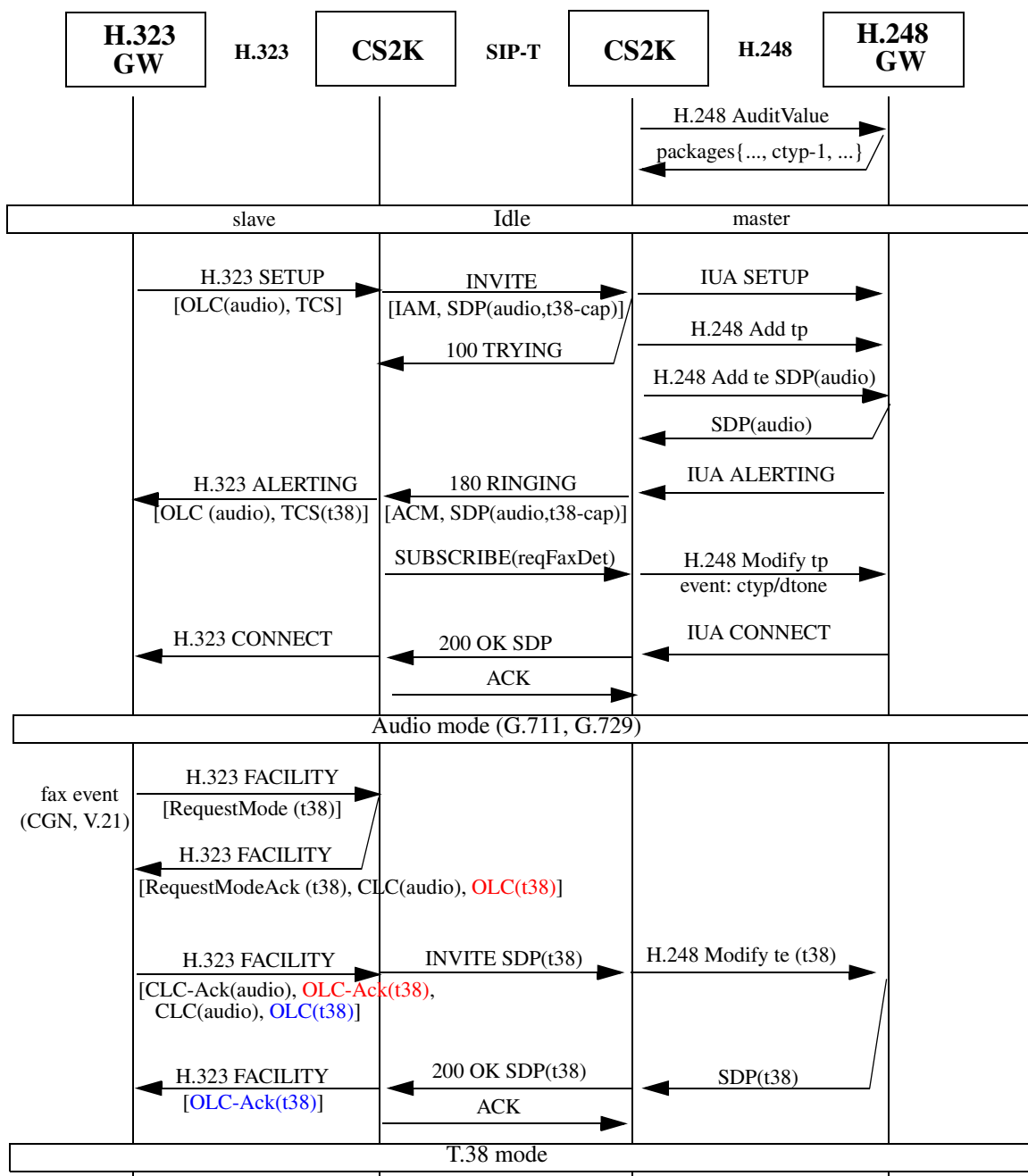
#### **Call flow for H.323 to H.248 interworking (fast start)**

[“Sample flow for H.323 to H.248 interworking” on page 669](#) displays a sample messaging of a successful fax call between H.323 and PRI (H.248 controlled). First a voice call is established. Upon detection of fax call by originating H.323 side, “Call Server controlled switchover to T.38” applies.



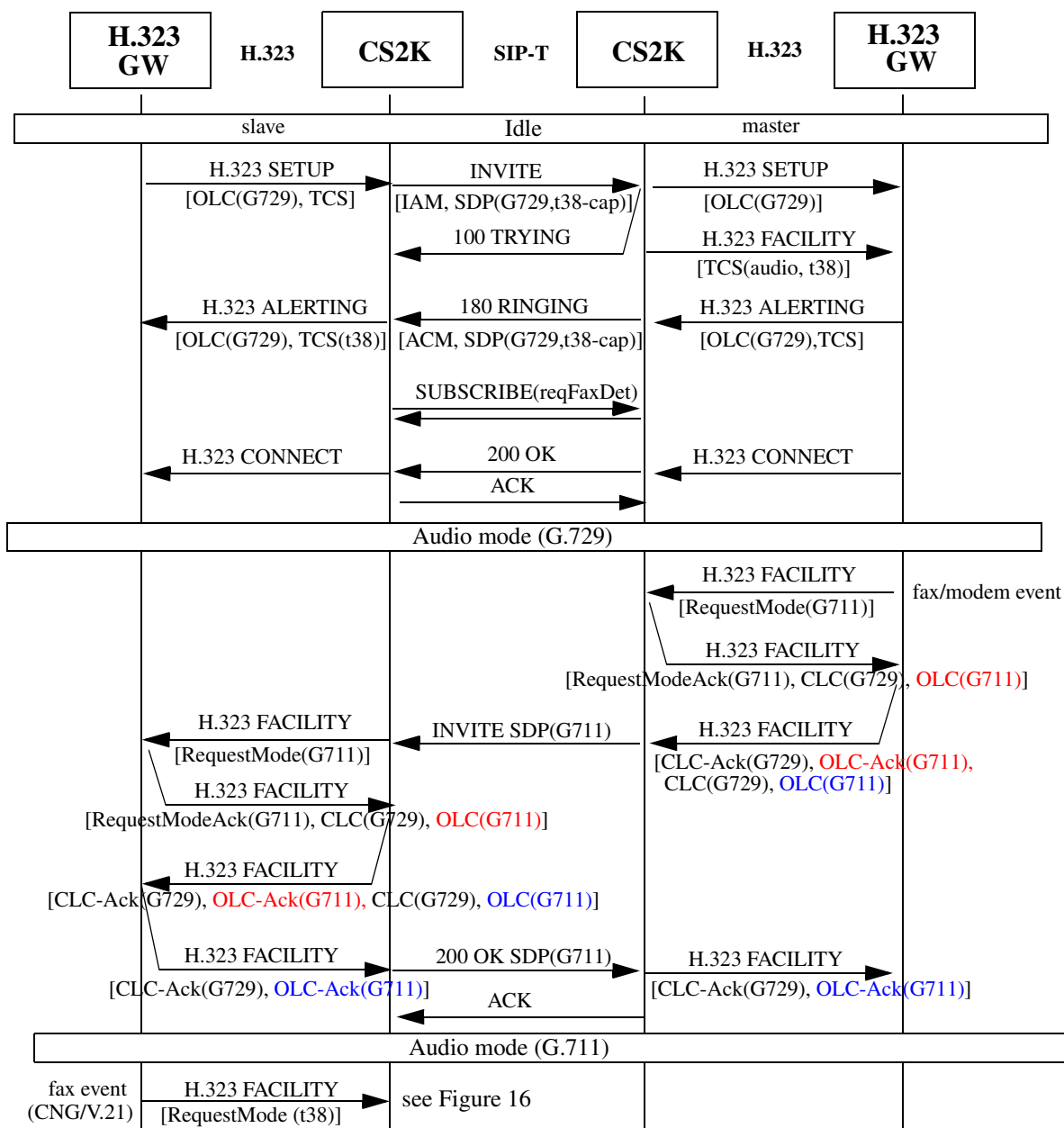
Selection: Fast start applies - the H.323 side is “slave”, the H.248 side is “master”. Both sides supports “Call Server controlled switchover to T.38” and Netopt is set to “T.38”.

#### Sample flow for H.323 to H.248 interworking



**Call flow for H.323 to H.323 interworking (fast start)**

“Sample flow for H.323 to H.323 interworking” on page 670 displays a sample messaging for “Call Server controlled switchover to G.711” between two H.323 GWs. First a voice call with G.729 codec is established. Upon detection of CED tone, switching to G.711 codec is requested by the terminating side in this example. Upon detection of CNG or V.21 preamble a further switching to T.38 codec may take place as displayed in “Sample flow for H.323 to H.248 interworking” on page 669.

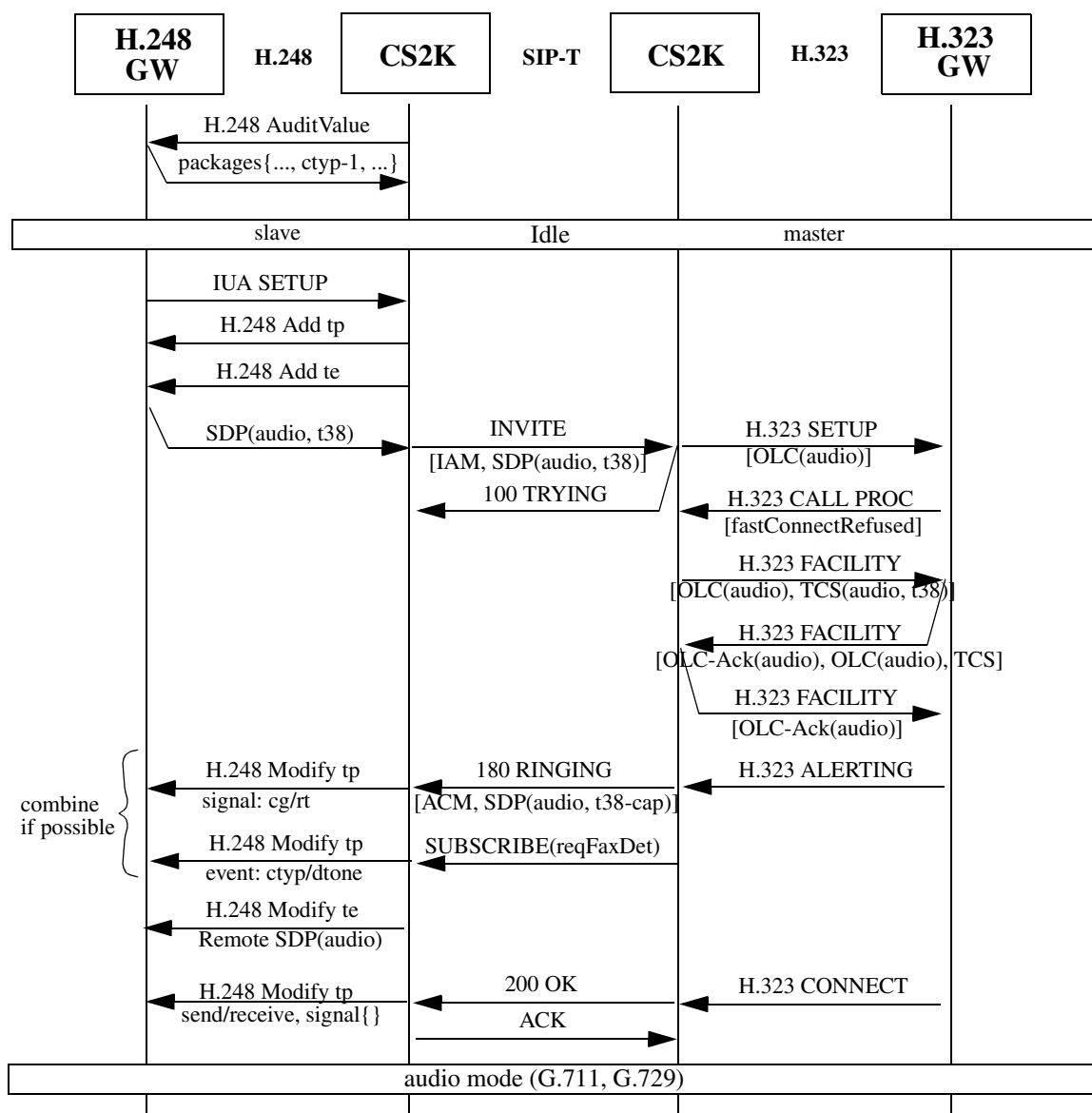
**Sample flow for H.323 to H.323 interworking**

### Call flow for H.248 to H.323 interworking (slow start)

Figure displays a sample messaging of a voice call establishment between PRI (H.248 controlled) and H.323. In case of a fax event, the same sequence applies as displayed in “Sample flow for H.248 to H.323 interworking” on page 666 or “Sample flow for H.323 to H.248 interworking” on page 669.

Selection: Originating side (H.248) starts with fast connect, the terminating side (H.323) rejects fast connect. The H.323 side is “master”, the H.248 side is “slave”. Netopt is set to “T.38”

### Sample flow for H.248 (FS) to H.323 (SS) interworking





## G3FE operation modes

This feature supports fax operation modes specified in ITU-T T.30 [1]. The originating side can invoke a fax call manually or automatically. Same happens on terminating side, call acceptance can be manually or automatically.

Detection of a fax call and subsequent “Call Server controlled switchover to T.38 mode” is complicated by the following facts:

- Sending Calling tone (CNG tone) is mandatory for calling fax devices. However manual calling terminals conforming to 1993 or previous T.30 versions may not transmit this signal.
- Called terminal identification answer tone (CED tone) is mandatory for called fax devices using automatic mode. For manual operation mode the sending of CED is optional.
- Upon receipt of CED tone, it is not clear whether a fax call or a modem call will be established. Because of the time-critical nature of a modem call, it is recommended to switch from G.729 codec to G.711 codec. If a fax call is determined by detection of CNG tone or V.21 preamble, an additional switch to T.38 may occur.
- V.21 Preamble is sent by all G3FE devices except fax devices which use V.8 or V.34 operation mode. These devices may send CNG tone.
- Upon receipt of V.21 Preamble flag, the switchover to T.38 must occur quickly (within ca. 2 sec), otherwise the fax call will fail.

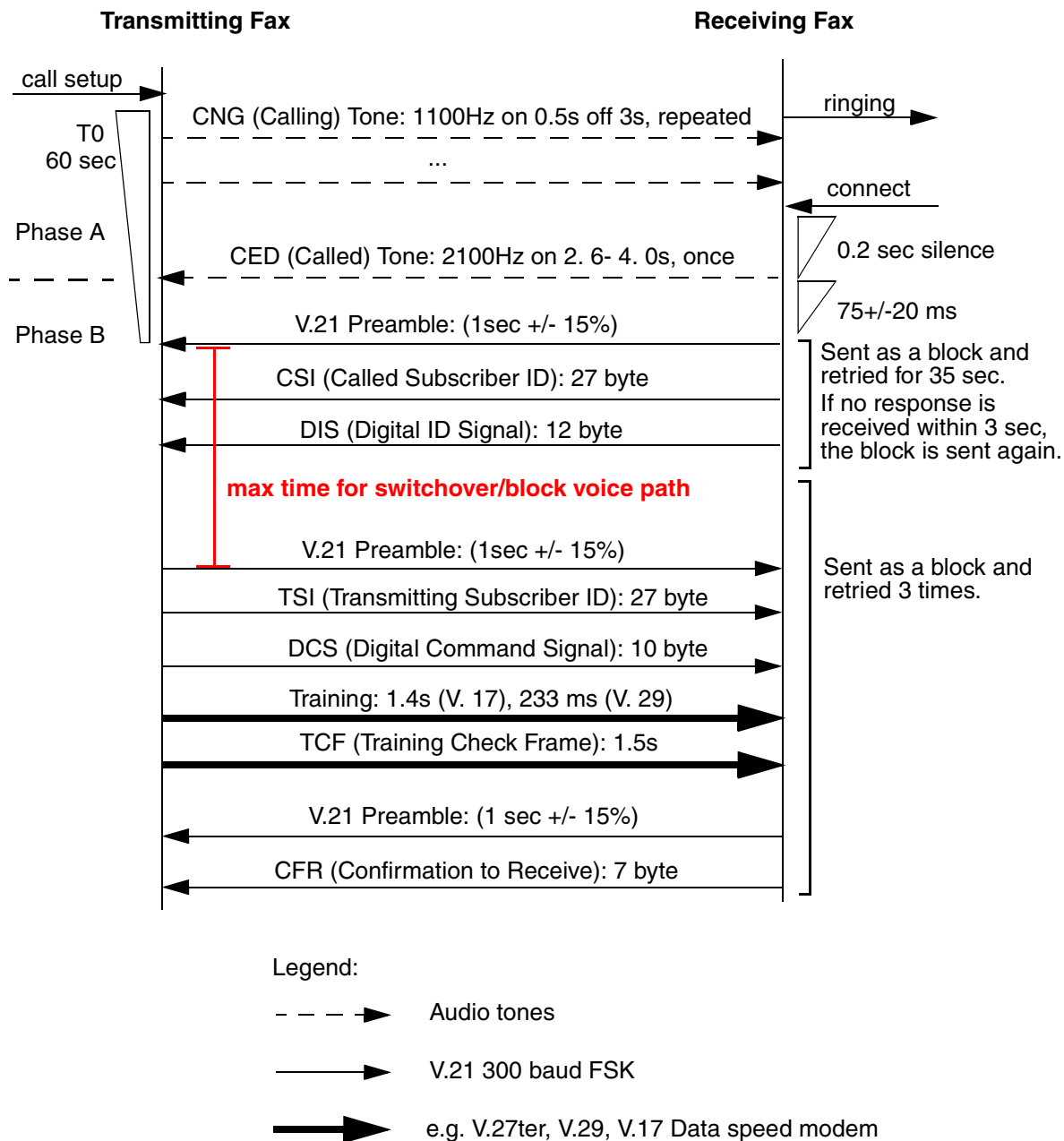
**Note 1:** A GW may identify a fax call by monitoring the physical termination (TDM bearer channel) for CNG tone and V.21 Preamble flags.

**Note 2:** Fax calls, without CNG tone and V.21 Preamble, will not be recognized by the GW.

**Note 3:** H.323 GWs seem to detect a fax call with CED and V.21 Preamble.

[“Establishment of T.30 Fax call \(automatic operation example\)” on page 674](#) display an example of a T.30 fax call establishment. If switchover to T.38 mode is triggered by V.21 Preamble, the switchover must occur before Digital Command Signal (DCS) is transmitted. To prevent the exchange of DIS/DCS during switchover phase, the voice path should be blocked. If no DCS is received on terminating side, V.21/CSI/DIS is sent again after 3 sec.

## Establishment of T.30 Fax call (automatic operation example)



## Hardware Requirements or Dependencies

New hardware is not required.

## Software Requirements or Dependencies

- CM/GWC: ISN07 load
- H.248 GW - supporting H.248.1, H.248.2 ctyp package, T.38 mode.
- H.323 GW - supporting H.323, H.225, H.245 protocol, T.38 mode
- MGCP GW - supporting Generic media package/fax tone (G/ft), T.38 mode

## Limitations and restrictions

- T.38 fax interworking to non-Nortel Call Servers are out of scope for this feature and will not be tested. (**Note 1**)

**Note 1:** Interworking to non-Nortel Call Servers may work, if the non-Nortel Call Server supports the prerequisites as defined in section “Fax call CS2K to other Call Server” on page 659.

- T.38 fax interworking is supported over SIP-T (ETSI ISUP V2+). Native SIP support for T.38 fax interworking is not covered by this feature.
- T.38 fax interworking with MCS 5200 (IMS) is not tested by this feature.
- This feature verifies T.38 fax interworking for H.323 GW on one call leg and H.323 GW or H.248 GW or MGCP GW on the other call leg. Feature verification is done for:
  - H.323 GW: Succession1000M
  - H.323 GW: BCM
  - H.323 GW: Cisco IOS gateway 2600 (**Note 2**)
  - H.248 GW: PVG Passport 15k with VSP3 cards
  - MGCP GW: Mediatrix

**Note 2:** This should also cover support for Cisco IOS gateway 36xx, although it isn't explicitly tested by this feature.

T.38 interworking with other GWs are out of scope and will not be tested within this feature.

- Testing Westell and SBC interoperability is tested by feature ... tbd.
- Interworking to Group 4 fax, Modem and Data Transmissions are out of scope for this feature.
- “Facsimile-only over IP environment” (T.38 Annex D.2.2.3) is out of scope for this feature. This feature addresses “Facsimile and voice over IP

environment” (T.38 Annex D.2.2.4) in which first a voice call is established and then switchover to T.38 mode occurs.

- This feature does not support switching back to voice codec, when a fax call has ended.
- This feature uses the transport layer UDP/IP for T.38 packets (T.38 Annex D.2.3.2). Transport of T.38 packets via TCP/IP is not used by this feature.
- The optional transport of T.38 packets via one bidirectional reliable channel is not used. Instead two logical channels are used. (T.38 Annex B.3.3, D.2.3.2)
- Testing is done on the international CS2K load only.
- Testing T.38 fax interworking to MCS 5200 is not part of this feature.
- T.38 fax interworking to Cable MTAs is out of scope for this feature.
- *Due to the DSP implementation on the BCM, currently BCM calls are not supported over a Media Portal (MP). BCM calls are only supported in the same network segment. A solution is currently estimated for the BCM 3.7 load which is post SN07 content which involves changes to the BCM software implementation.*  
*The deployment of the T.38 functionality is currently only possible with the S1KM/S1K, if used behind a NAT / Firewall.*
- *BCM and S1KM will not request G.711, if the codec is G.729 and a fax is detected, but T.38 is unavailable. Therefore no support for G.729 to G.711 switchover is possible between two H.323 GWs. Solution planned for post SN07 GW loads.*
- *Currently the only supported H.323 GWs are BCM and S1KM. Westell, Cisco and Mediatrix are not included in the IT content and will be tested in the ICAF A00005122 which is currently post SN07 content.*
- *The FN will be updated upon completion of A00005122 including the final restrictions for SN07.*

## Interactions

Not identified.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|                |     |
|----------------|-----|
| Data Schema    | N/A |
| User Interface | N/A |



|                                                 |     |
|-------------------------------------------------|-----|
| Element Management                              | N/A |
| Security                                        | N/A |
| Service Order                                   | N/A |
| Office Parameters                               | N/A |
| Accounting (includes AMA billing)               | N/A |
| Performance (includes operational measurements) | N/A |

## Glossary

| Term  | Description                                                                                                                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BCM   | Business Communication Server (H.323 Gateway)                                                                                                                                                                                                                                                                                                                                   |
| CED   | Called terminal identification answer tone of Fax device (2100 +/- 15 Hz, continuous tone, duration 2.6-4.0 sec) see T.30 chapter 4.1                                                                                                                                                                                                                                           |
| CLC   | Close Logical Channel (H.245 message)                                                                                                                                                                                                                                                                                                                                           |
| CM    | Call Manager, Computing Modules                                                                                                                                                                                                                                                                                                                                                 |
| CNG   | Calling tone of Fax device (1100 +/- 38 Hz, 0.5 sec on, 3.0 sec off, duration 60-120 sec) see T.30 chapter 4.2.                                                                                                                                                                                                                                                                 |
| CS    | Call Server                                                                                                                                                                                                                                                                                                                                                                     |
| CS2K  | Call Server 2000                                                                                                                                                                                                                                                                                                                                                                |
| G3FE  | Group 3 Facsimile Equipment<br>G3FE refers to any entity which presents a communication interface conforming to ITU- T Recommendation T. 30, T. 4, and optionally T. 6. A G3FE may be a traditional G3 facsimile machine, an application with a T. 30 protocol engine or any other possibility mention in the network model for IP Facsimile mentioned in Recommendation T. 38. |
| GW    | Gateway (Signalling Gateway and Media Gateway)                                                                                                                                                                                                                                                                                                                                  |
| GWC   | Gateway Controller                                                                                                                                                                                                                                                                                                                                                              |
| IAF   | Internet Aware Fax device                                                                                                                                                                                                                                                                                                                                                       |
| IMS   | Interactive Multimedia Server<br>New name is Multimedia Communication Server 5200                                                                                                                                                                                                                                                                                               |
| ISDN  | Integrated Services Digital Network                                                                                                                                                                                                                                                                                                                                             |
| ISN07 | International Succession Product Release                                                                                                                                                                                                                                                                                                                                        |
| ISUP  | ISDN User Part                                                                                                                                                                                                                                                                                                                                                                  |

| Term          | Description                                                                                                                                                   |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IUA           | ISDN Q.921-User Adaptation Layer Protocol (IETF)                                                                                                              |
| MCS 5200      | Multimedia Communication Server 5200                                                                                                                          |
| MG            | Media Gateway                                                                                                                                                 |
| MGC           | Media Gateway Controller<br>MGC as seen by IETF consists of Gateway Controller and Call Manager and is therefore equivalent to DMS Communication Server 2000. |
| OLC           | Open Logical Channel (H.245 message)                                                                                                                          |
| PSTN          | Public Switched Telephone Network.                                                                                                                            |
| PVG           | Passport Packet Voice Gateway (Passport15000)                                                                                                                 |
| RFC           | Request For Comments (IETF)                                                                                                                                   |
| RTP           | Real-time Transport Protocol (IETF 1889, 3550)                                                                                                                |
| SBC           | Session Border Controller                                                                                                                                     |
| SDP           | Session Description Protocol (IETF RFC 3266)                                                                                                                  |
| SIP           | Session Initiation Protocol (IETF RFC 3261)                                                                                                                   |
| SIP-T         | Session Initiation Protocol - Telephony<br>ITU-T based standard, that encapsulates ISUP messaging as payload within SIP messages.                             |
| TCS           | Terminal Capability Set message (see H.245 B.2.2)                                                                                                             |
| te            | Ephemeral (RTP/UDP/IP) termination for voice calls<br>Ephemeral (T.38/UDP/IP) termination for fax calls                                                       |
| tp            | Physical (TDM) termination                                                                                                                                    |
| UDP           | User Datagram Protocol (IETF RFC 768)                                                                                                                         |
| UDPTL         | Facsimile UDP Transport Layer protocol (ITU T.38)                                                                                                             |
| V.21 Preamble | Series of flag sequences 01111110 for 1 sec +/- 15%.                                                                                                          |

## References

- [1] ITU-T Recommendation T.30  
Procedures for document facsimile transmission in the general switched telephone network, 04/1999

- [2] ITU-T Recommendation T.38  
Procedures for real-time Group 3 facsimile communications over IP networks, 03/2002
- [3] Draft Amendment 1 to Recommendation T.38 (2002) (for Consent)
- [4] ITU-T Recommendation H.323  
Packet-based multimedia communications systems, 11/2000
- [5] ITU-T Recommendation H.225.0  
Call signalling protocols and media stream packetization for packet-based multimedia communication systems, 11/2000
- [6] ITU-T Recommendation H.245  
Control protocol for multimedia communication, 07/2001
- [7] ITU-T Recommendation H.248.1  
Gateway Control Protocol, 03/2002
- [8] ITU-T Recommendation H.248.2  
Gateway control protocol: Facsimile, text conversation and call discrimination packages, 11/2000
- [9] Basic MGCP Packages  
draft-foster-mgcp-basic-packages-10.txt, February 2003
- [10] Session Initiation Protocol (SIP)  
IETF RFC 3261, June 2002
- [11] Session Initiation Protocol (SIP) - Specific Event Notification  
IETF RFC 3265, June 2002
- [12] Session Initiation Protocol (SIP) - Simple Capability Declaration  
IETF RFC 3407, October 2002
- [13] SIP Support for Real-time Fax: Call Flow Examples and Best Current Practices, draft-ietf-sipping-realtimefax-01.txt, August 2003
- [14] RTP Payload for DTMF Digits, Telephony Tones and Signals  
IETF RFC 2833, May 2000
- [15] Feature A00001895 'H.323 Base Support'  
PLS library FMDOC  
CS2000 Product Specification for ISN06, 19/08/2003  
<http://product-planning.europe.nortel.com/product-description>

## ***Product = CS2000***

### **A00003695 -- ANSI ISUP FGD on CS2K (Int'l PT-IP)**

#### ***Functional Description***

This activity provides ANSI ISUP FGD functionality on CS2K international load. This is done by porting the functionality of existing TDM MMP 17 feature with actid AT.59036475 into the ISN load.

The purpose is to enable CS2K with ISN load to directly interconnect to Inter Exchange Carriers (IEC) in North America.

This activity verifies the following agents interworkings only:

- ANSI ISUP FGD to/from ANSI ISUP FGD
- ANSI ISUP FGD to/from ETSI ISUP V1

#### **Hardware Requirements or Dependencies**

None

#### **Software Requirements or Dependencies**

None

#### **Limitations and restrictions**

Following interworkings are not verified with this activity:

ISUP V2 - ANSI ISUP FGD

ANSI ISUP FGD - ISUP V2

ANSI ISUP+ - ANSI ISUP FGD

ANSI ISUP FGD - ANSI ISUP+

ANSI ISUP FGD - ITU-R2

ITU-R2 - ANSI ISUP FGD

#### **Interactions**

Following interactions will be verified with this activity:

- ANSI ISUP FGD - ANSI ISUP FGD
- ANSI ISUP FGD - ETSI ISUP V1
- ETSI ISUP V1 - ANSI ISUP FGD

## Applicable customer facing sections

The reader is referred to the FN of the original MMP feature (Ref a).

## Glossary

|      |                                                 |
|------|-------------------------------------------------|
| ETSI | European Telecommunications Standards Institute |
| FGD  | Feature Group D                                 |
| ISUP | ISDN User Part                                  |
| ITU  | International Telecommunication Union           |
| IXC  | Inter Exchange Carrier                          |

## References

- a FN document of the activity A59036475.AA18 (in pls fmdoc)

**Reproduced here for convenience.**

## A59036475 -- ISUP FGD (ISDN User Part Feature Group “D”) - Phase 1 (Int’l UA-IP)

### *Functional Description*

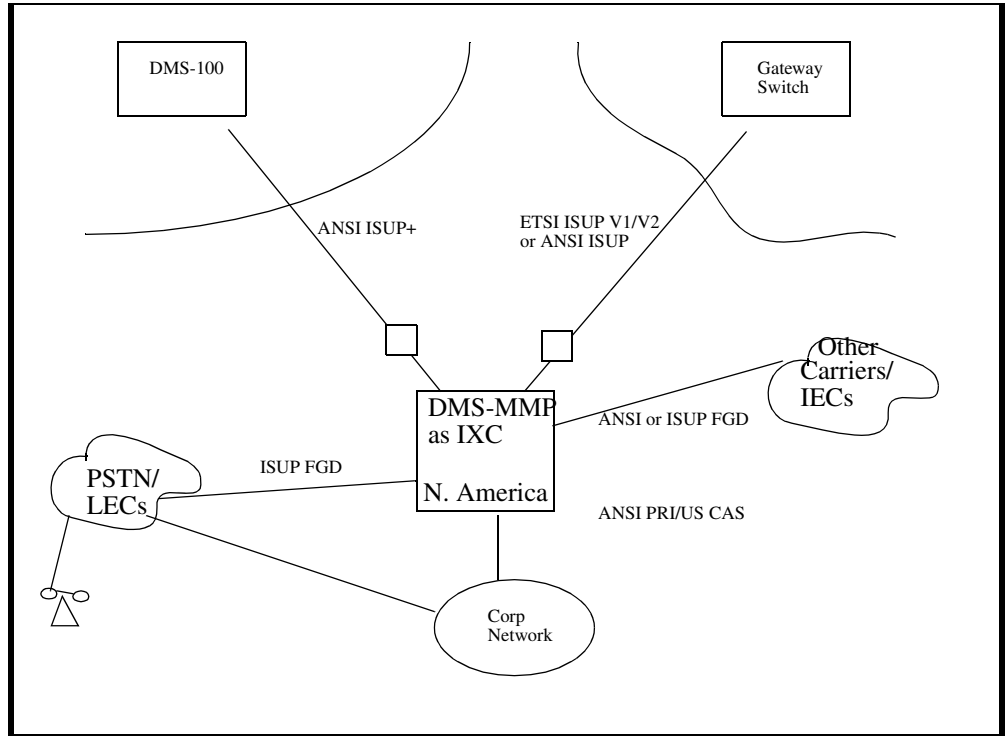
This feature implements ISUP FGD (ISDN User Part Feature Group “D”) on the DMS MMP switch. ISUP FGD will be used in the North American market to access the domestic network. Phase I of this feature includes the protocol, interworking to existing MMP agents, limited specific supplementary services, and limited SS7/ISDNUP services.

This feature will implement the IXC exchange end of the ISUP FGD interface.

This feature will allow service providers to connect into the local network in North America and allow access into their network.

### **Network diagram**

The following figure illustrates the network in which this feature will be utilized.

**Network Overview****Functional Description**

The ISUP FGD protocol will be used to interface the DMS MMP with Local Exchange Carriers (LECs) and other Inter-exchange Carriers (IECs) in North America. This interface provides not only an SS7 transport between such nodes but also includes a set of Equal Access features to allow subscribers to selectively choose a service provider for national and international traffic.

ISUP FGD allows end-users in the North American public network to remotely access the DMS MMP and its services. It also provides the ability for subscribers outside of North America to terminate calls directly into this network.

This feature will allow service providers to connect into the local network in North America and allow access into their network.

**Bearer Services**

ISUP FGD supports the following bearer services:

- Speech
- 3.1 kHz audio
- 64 Kbit/s unrestricted

## Supplementary Services

The supplementary services supported by this implementation in Phase I are as follows:

- **Calling Line Identification Presentation (CLIP):** When this service is subscribed to, information about an incoming call can be presented to the subscriber at the destination. Please refer to a59023300 - CLI Delivery control.
- **Calling Line Identification Restriction (CLIR):** When this service is subscribed to, the ISDN number will not be available to the called user. This will prevent CLIP subscribers from knowing the origin of incoming calls. CLIR can be used permanently or on a per-call basis. The CLIR service can be overridden by privileged users, e.g. police. Please refer to a59023300 - CLI Delivery control
- **Direct Dialling Inward (DDI):** It allows the calling user to call directly, via the public ISDN, a user on a private ISDN by using the public ISDN numbering plan. This will allow a connection to the called user without having to go through the private ISDN's operator.
- **Multiple Subscriber Number (MSN):** This service allows each individual terminal on one access to have one or more DNs. For example, this would allow a calling user to select, via the public network, one distinct terminal out of a multiple choice and to identify the terminal to the public network for other services, such as CLIP. MSN allows the user to select which ISDN terminal they wish to use.
- **Sub addressing (SUB):** The SUB service allows the called (served) user to expand their addressing capacity beyond the one given by the ISDN number. With this sub-address the called user could, for example, route the incoming call to a specific terminal.
- **Terminal Portability (TP) (Suspend/Resume):** Suspend/Resume initiated by the called party is supported. This service allows a user to move terminal from one socket to another within one given basic access during the active state of call. It also allows a user to move a call from one terminal to another within one given basic access during active phase of call. The DMS will transit the suspend and resume message from the originating or terminating network after the ACM has been received from the terminating network.

## Additional SS7 procedures

Additional SS7 procedures for ISUP FGD

- **Phase I:**
  - **Continuity Testing (both manual and per call basis):** ISUP FGD supports continuity testing both manual and per call basis. Continuity Check, validates the speech path on a trunk that has CCS7 signaling. Continuity Check on incoming trunks is facilitated by

applying a loop between the transmit and receive paths of the incoming trunk circuit when the continuity check field in the nature of connection indicator requires continuity check on the circuit concerned. Outgoing continuity check is initiated when the COTREQ field in table TRKSGRP of the terminating trunk group is datafilled to greater than zero. This number represents the percentage of calls on each trunk in that subgroup that should request for a continuity check during call setup.

- **Forward Call Indicator National/International Bit Override:** A new option FCI is provided in table TRKOPTS by this feature ISUP FGD. This option provides the ability to override the FCI-National/International bit in the incoming IAM message and set it to either NATL or INTL regardless of the call type in the outgoing IAM. DMS will first check if the FCI option is on the outgoing trunk, if present this shall be considered, else a check is made if the FCI option is on the incoming trunk and this shall be considered if present.

#### Sample datafill for FCI\_NATL\_INTL\_BIT option in table TRKOPTS

|                              |
|------------------------------|
| TABLE: TRKOPTS               |
| OPTKEY OPTINFO               |
| -----                        |
| ANSI7LPA <b>FCI FCI NATL</b> |
| ANSI7LPB <b>FCI FCI INTL</b> |

## SS7 Parameters

ISUP FGD protocol is based upon the ANSI T1.113 ISUP Specification but also includes additional IAM parameters which are either not included in ANSI specification or are viewed by ANSI to be optional. ISUP FGD is defined by GR-317-CORE, Telcordia and GR-394-CORE Telcordia.

### Parameter Blocking in outgoing IAM

Almost all IAMs sent across an ISUP network contain optional parameters which supply additional information to the subsequent exchange. In some cases, the presence of an optional parameter may cause a different type of switch to reject the message. Additionally, the presence of an optional parameter can invoke processing which is not desired at the next exchange. In both cases it can be necessary to suppress one or more specific parameters. Parameter Blocking provides the capabilities to block any or all of the following parameters from being transmitted to the next switch in the outgoing IAM message, on a per trunk group basis.

The following parameters are required for the ISUP FGD implementation on the DMS MMP. ISUP FGD will optionally block the following parameters from being transmitted to the next switch in the outgoing IAM on a per-trunk group basis.

- Access Transport parameter



- Calling Party Number
- Charge Number
- Carrier Identification Code Parameter
- Carrier Selection Parameter
- Generic Address Parameter
- Generic Name Parameter
- Service Code Parameter
- Jurisdiction Information Parameter
- Hop Counter
- Original Called Party Number
- Originating Line Information
- Redirecting Number
- Redirecting Information
- Transit Network Selection

### Provisioning

The handling of optional IAM parameters will be controlled via datafill in table TRKOPTS and table ISPARM. Table TRKOPTS is the common table to house various options for all kinds of trunks. Table ISPARM supports parameter blocking for optional parameters of IAM messages. The option ISPARM in table TRKOPTS only applies to outgoing trunks and will hold the index into table ISPARM. If the parameters listed above are datafilled to be blocked in table ISPARM, the parameters will be blocked from the outgoing IAM.

The options Access Transport Parameter, Calling Party Number, Hop Counter, Original Called party number, Transit Network Selection, Generic Address, Generic Name, Redirecting Information and redirecting number are currently available in MMP and can be used to block these parameters for ISUP FGD. The parameters like Charge Number (#EB), Carrier Identification Code Parameter (#C5), Carrier Selection Parameter (#EE), Originating Line Information (#EA), Service Code Parameter (#EC) and Jurisdiction Parameter (#C4) can be blocked by using the VALUE\_OF\_PARM option in table ISPARM.

#### Logical tuple layout for option *ISPARM* in table TRKOPTS:

| Key                  | Service | Option     |
|----------------------|---------|------------|
| <trunk_group> ISPARM | ISPARM  | <char_key> |

**Logical tuple layout for table ISPARM:**

| Key        | action  | optparm          | value              |
|------------|---------|------------------|--------------------|
| <char_key> | {BLOCK} | {ATP}            |                    |
|            |         | {OFCI}           |                    |
|            |         | {CGN}            |                    |
|            |         | ...              |                    |
|            |         | {NTWRK_SPEC_FAC} |                    |
|            |         | {DEL_PARM}       |                    |
|            |         | {VALUE_OF_PARM}  | {<parameter code>} |

**Datafill sequence**

First of all it is necessary to enter one or more tuples in table ISPARM. These tuples will define actions for specific profiles of optional IAM parameters.

Afterwards it is possible to add an ISPARM option in table TRKOPTS indexing a specific entry in table ISPARM.

**Datafill example****Sample Datafill for option ISPARM in Table TRKOPTS:**

```
TABLE: TRKOPTS
OPTKEY OPTINFO
-----
KNGA210ISBWE ISPARM ISPARM NO_OFCI
KNGA210ISBWE ISPARM ISPARM NO_JIP
```

**Sample Datafill in Table ISPARM:**

```
TABLE: ISPARM
KEY ACTION
-----
NO_OFCI (BLOCK (ATP) $) $
NO_JIP (BLOCK ( VALUE_OF_PARM 196) $) $
```

Please refer to A59028040: “SS7ATTR equivalence” for more details.

**ISDNUP services****Hop Counter**

ISUP FGD supports Hop Counter. To avoid infinite routing loops, the Hop Counter maintains a “count” of link traversals. If a Hop Counter parameter is received in the incoming IAM, and its value is 1 or greater, the DMS MMP decrements the count by 1. If the decremented (or received) value equals 0, the call is released.

If no Hop Counter is received, the DMS MMP will create a Hop Counter with a starting value 20.

Only the basic functionality of hop counter will be supported.

Hop Counter may be restricted by datafill in table TRKSGRP with the option “NO\_HOP” for outgoing ISUP FGD trunk.

#### Sample Datafill in Table TRKSGRP:

```
TABLE: TRKSGRP
SGRPKEY CARDCODE SGRPVAR SGRPVAR
-----
KNGA210ISBWE 0 DS1SIG C7UP 2W N N UNEQ NONE Q764 THRL 0 DMSNODE
(NO_HOP) $ ISUP2W CIC
```

The Hop Counter Parameter can also be blocked from the outgoing IAM by datafill in table ISPARM for outgoing trunk.

#### Sample Datafill for option ISPARM in Table TRKOPTS:

```
TABLE: TRKOPTS
OPTKEY OPTINFO
-----
KNGA210ISBWE ISPARM ISPARM 1234
```

#### Sample Datafill in Table ISPARM:

```
TABLE: ISPARM
KEY ACTION
-----
1234 (BLOCK (OPT_HOP_COUNTER_PARM) $) $
```

### Equal Access Services

The following ISDNUP services are supported for ISUP FGD:

#### Phase I:

**Calling/Charge Number Handling:** ISUP FGD supports Calling/Charge Number Handling. Because of the interaction between Calling Numbers and Charge Numbers, the DMS-MMP will allow the service provider to specify which of these two parameters will be used for CLI screening, while the “BILLING\_OPTION” field allows the user to specify which address to capture in the AMA billing record, and which will be outpulsed in the outgoing IAM. A mapping function is required when ISUP FGD originations terminate to protocols which do not support both Calling Number and Charge Number parameters. Please refer to a59023556 for more details.

### Inswitch Services

**Phase I:** The following inswitch services are supported by ISUP FGD on DMS MMP in Phase I

**30-Digit Called Party Number Support**

The DMS MMP currently support 30-digit called-party number lengths.

For ISUP originations, if more that 30 digits are received in the incoming IAM message, the call will be released.

**Time Of Day (TOD) Routing**

Time-of-Day Routing allows cost-effective use of facilities available by allowing or denying route choices based on the time of day. The routes can also be varied based on the day of the week or the day of the year, to account for weekends and holidays.

**Called Party Number Digit Manipulation**

Digit manipulation is provided by the DMS MMP in various ways through translations and routing. (For e.g., Table DIGMAN, Table IBNRTE)

**Class of Service Screening**

Class Of Service Screening will allow operators to restrict trunk to trunk calls based on the datafills. The COS value of the originating and terminating trunks are used to determine whether the call is to be allowed/restricted. Class of Service is a value between 0 -1023, that an operator can assign to a trunk group.

The Class of Service Screening is extended to support ISUP FGD.

**Note:** Please refer to activity, a59023338-Class Of Service Screening for more details.

**CLI Screening****CLI Screening, Billing, and Outpulsing**

DMS MMP CLI screening provides the ability to screen International and National addresses, and expands the capacity of the CLI Screening database. Screening of calls is enhanced to allow configurable selection of the address to screen. A configurable selection of the address to bill is also provided.

The CLI Screening functionality is extended to support ISUP FGD.

**Note:** Please refer to MMP15 activity, 59023556 and 59023300 for more details.

**Account Code Collection and Screening**

Account Code Collection provides the ability to collect optional Account code (Acctcode) information on indirect access calling line identification (CLI) or authorization code (Authcode) screened calls, respectively. In addition, functionality is provided to allow such Account codes to be validated (if required) against a table of predetermined codes. Please Refer to A59023153 for more details.

**NOA/TON Mapping**

The NOA in the outgoing IAM shall be set based on the CDN option in the UXLA xxHEAD/xxCODE tables. Office parameter NOA\_UXLA\_CDN\_OPT to be turned ON for CDN option. It can also be set based on SETCDN option which is based on CDNCHAR functionality. The CDNCHAR for ISUP FGD uses IBN7 protocol. For more details refer ANSI ISUP/ IBN7 sections in E164UTIL (Activity 59007530).

If the outgoing trunk is ANSI ISUP or ISUP FGD, and the incoming Called Party Number NOA is National then the outgoing NOA will map to Subscriber number if the Called party digits is less than or equal to 7.

If the outgoing trunk is ANSI ISUP or ISUP FGD and the incoming Called Party Number NOA is National Number Operator Requested, then the outgoing NOA will map to subscriber number operator requested if the Called party number digits is less than or equal to 7.

If the outgoing trunk is ANSI ISUP or ISUP FGD and the incoming Called Party Number NOA is Subscriber number, then the outgoing NOA will map to National number if the called party digits is greater than or equal to 10.

If the outgoing trunk is ANSI ISUP or ISUP FGD and the incoming Called party number NOA is Subscriber Number Operator Requested, then the outgoing NOA will map to National number Operator Requested if the called party digits is greater than or equal to 10.

The NOA set based on SETCDN option has precedence upon the above behaviour.

**Destination OMs**

The OM group TERMDEST provides peg counts and usage measurements for calls which are translated using the xxCODE and xxHEAD tables and terminated to a particular destination.

OM group TERM RTE provides peg counts and usage measurements for calls terminating to a specific route choice for a particular terminating destination.

Please Refer to A59026196-Destination & Route Based OMs for more details.

**Serving Country Code**

Serving Country Code (SCC) denotes the code associated with a trunk, indicating the country which the trunk serves.

The DMS-MMP can convert the incoming Calling Party Number (CgPN) into international format by prefixing it with Serving Country Code (SCC) when a call is between subscribers in two different countries (International call). Also

depending upon the value of the SCC, the country code can be stripped off from the outgoing Called Party Number (CdPN) and Calling Party Number.

Please refer to A59023331 Serving Country Code for details.

### **Q118 Timers**

The SUS/RES timers of the Q.118 are provided in MMP through office parameter LONG\_TIMED\_RELEASE\_DISC\_TIME. For a tandem exchange the time out value for SUS is the maximum of:

- (a)  $\lceil (\text{LONG\_TIMED\_RELEASE\_DISC\_TIME}/10) + 100 \rceil$  seconds
- (b) 254 seconds

The Long Ring Disconnect timer of the Q.118 is not provided in this release.

### **Remote Access**

Remote access is designed for roaming VPN users. It allows them to access the VPN while away from their workplace, e.g. by calling from a hotel or mobile telephone. The user accesses the VPN by dialling a Freephone number or a VPN access code, then entering an authorization code and PIN when prompted to do so. ISUP FGD is supported for MONA and DISA which enables to provide these services.

### **Registered Site Access**

Registered Site Access (RSA) provides users without a dedicated private network connection the ability to dial into the private network via a PSTN connection, with the Calling Line Identity (CLI) of the user being screened to verify validity.

Advantages of RSA are

- The site is able to get connected to the corporate communications network.
- Calls made from sites can be managed more effectively.

A calling subscriber is provided with a Freephone code or NAC to make RSA calls. PSTN routes the call to VPN access node (DMS). Upon receiving the IAM, DMS validates the attempt by verifying the CLI against the table DNSCRN entries. If screening is successful then call will be allowed to continue. ISUP FGD is supported for CLI screening which enables to provide these services.

### **Multiple Announcements for Failure**

This provides a mapping function to allow a single announcement to map to many announcements based upon the Class of Service (COS) assigned to the originating trunk. Thus it provides failure announcements to the end-users/subscribers branded to their particular service provider and in their native language. Please refer to the FN document of 59028846 for more details.

**Default Number**

The default number can be used in many scenarios.

- It is used for overriding the incoming CLI or Charge number regardless of whether CLI or Charge number has been received in the incoming message or not.
- It is also used when the CLI or Charge number parameter has not been received in the incoming trunk.
- It is used when the CLI or Charge number parameter has been received without any digits in the incoming trunk

Table DEFNUM defines the default number CLI or Charge number. The table has fields to set default NPI, NOA, PI and SI. The DEFNUM functionality is extended to cover ISUP FGD originations and terminations.

Please refer to A59028834-CLI Default Number for more details.

**Satellite Override**

The satellite indicator in the Nature of Connection of IAM is overridden based on the datafill in table SATOVER. If the incoming NOC in the ISUP IAM says that one or more satellite hops has occurred then that is used. Otherwise the SAT field is checked to indicate that one previous hop has occurred. The default behaviour is overridden by SATOVER. SATOVER is checked with the incoming and terminating trunk and if OVERRIDE=Y then we can exceed the normal limit. If no then we can't and the route is skipped as normal.

**REL Generation and Mapping**

For an interworking call which is successful, the REL mapping depends on the datafill in table FAILMSG. (Note: Table FAILMSG will not be referenced if the protocol of the incoming and outgoing trunk is the same. ISUP FGD and ANSI ISUP will not be treated as different protocols, since ISUP FGD also uses the Q764 protocol.)

For an unsuccessful call that routes to treatment, DMS will either generate treatment or a Release with values (from table TMTMAP) based on the datafill in table TMTMAP.

**Nature of Connection Mapping for IAM**

The fields in the Nature of Connection in the IAM are mapped based on the incoming data and the table datafill for the outgoing trunk.

Satellite Indicator: - This value is encoded based on incoming information and the datafill in TRKSGRP field SAT for the outgoing trunk.

Continuity Check Indicator: - This value is encoded based on incoming information and datafill in TRKSGRP field CONTCHK and field COT for the outgoing trunk.

Echo Control Device Indicator:- This value is encoded on incoming information and datafill in table TRKSGRP field ESUPR and ECSTAT for the outgoing trunk.

### National / International Agency for ETSI ISUP V2 trunks

ETSI ISUP V2 trunks are referred to as “National Agency” if the COFFTYP in TRKGRP is NATL and “International Agency” if COFFTYP is INTL.

Examples of both is given below:

```
TABLE: TRKGRP
GRPKEY GRPINFO
-----
KNGA280EIBWE IBNT2 0 NPDGP NCRT KINGSA 0 MIDL 10 N ANSDISC 0 Y N N N N N N 0
0 N 0 1 0 1 N N N N N N N N NATL $

KNGA1042E2BWE IBNT2 0 NPDGP NCRT KINGSA 0 MIDL 10 N ANSDISC 0 Y N N N N N N
0 0 N 0 1 0 1 N N N N N N N N INTL $
```

### Redirection Behaviour if outgoing leg is ANSI ISUP or ISUP FGD

Redirecting Number will not be sent out unless the incoming IAM message contains a redirection information parameter with the redirection counter greater than one.

### Agent Interworking

ISUP FGD feature supports the following interworkings:

- Phase I:
  - ISUP FGD
  - ANSI ISUP +
  - ETSI ISUP V1
  - ETSI ISUP V2
  - ITU R2 (ISUP FGD will support FDCP R2)

[ Note: Sample datafill for FDCP R2

Table TRKSGRP

SGRPKEY CARDCODE SGRPVAR SGRPVAR

-----

ITUR2LPA 0 P30CAS FST N NILTYPE N 2W N NIL ITUR2CH **FDCP** ITUPROT ITUTRMT

ITUR2\_VR ITUR2\_TM MFC LNK NOVERLAP STAND \$

]



## Implementation Description

### ISUP FGD Supported Messages

The following messages are supported by ISUP FGD

#### ISUP FGD Supported Messages

| Acronym | Message                                         | Supported by ISUP FGD                      |                                 |
|---------|-------------------------------------------------|--------------------------------------------|---------------------------------|
|         |                                                 | ISUP FGD Processed or generated by DMS MMP | Tandemed by DMS MMP if received |
| ACM     | Address Complete Message                        | 3                                          |                                 |
| ANM     | Answer Message                                  | 3                                          |                                 |
| BLO     | Blocking Message                                | 3                                          |                                 |
| BLA     | Blocking Acknowledgment Message                 | 3                                          |                                 |
| CPG     | Call Progress Message                           |                                            | ✓ <sup>a</sup>                  |
| CGB     | Circuit Group Blocking Message                  | 3                                          |                                 |
| CGBA    | Circuit Group Blocking Acknowledgment Message   | 3                                          |                                 |
| GRS     | Circuit Group Reset Message                     | 3                                          |                                 |
| GRA     | Circuit Group Reset Acknowledgment              | 3                                          |                                 |
| CGU     | Circuit Group Unblocking Message                | 3                                          |                                 |
| CGUA    | Circuit Group Unblocking Acknowledgment Message | 3                                          |                                 |
| CQM     | Circuit Query Message                           | 3                                          |                                 |
| CQR     | Circuit Query Response Message                  | 3                                          |                                 |
| CRA     | Circuit Reservation Acknowledgment Message      | 3 <sup>b</sup>                             |                                 |
| CRM     | Circuit Reservation Message                     | 3 <sup>c</sup>                             |                                 |
| CVT     | Circuit Validation Test Message                 | 3                                          |                                 |
| CVR     | Circuit Validation Response Message             | 3                                          |                                 |
| CFN     | Confusion Message                               |                                            | 3                               |
| COT     | Continuity Message                              | 3                                          |                                 |

**ISUP FGD Supported Messages**

| Acronym          | Message                                        | Supported by ISUP FGD                      |                                 |
|------------------|------------------------------------------------|--------------------------------------------|---------------------------------|
|                  |                                                | ISUP FGD Processed or generated by DMS MMP | Tandemed by DMS MMP if received |
| IAM              | Initial Address Message                        | 3                                          |                                 |
| LPA              | Loopback Acknowledgment Message                | 3                                          |                                 |
| REL              | Release Message                                | 3                                          |                                 |
| RLC              | Release Complete Message                       | 3                                          |                                 |
| RSC              | Reset Circuit Message                          | 3                                          |                                 |
| RES <sup>d</sup> | Resume Message                                 | 3                                          |                                 |
| SUS <sup>e</sup> | Suspend Message                                | 3                                          |                                 |
| UBL              | Unblocking Message                             | 3                                          |                                 |
| UBA              | Unblocking Acknowledgment Message              | 3                                          |                                 |
| UCIC             | Unequipped Circuit Identification Code Message | 3                                          |                                 |

a. CPG message is tandemed only if received in the backward direction.

b. CRA - Acknowledgement for CRM.

c. CRM generated when EAEO to AT uses inband signalling and outgoing circuit to IXC uses SS7 signalling. DMS does not generate this message.

d. RES message is only supported in the backward direction in DMS MMP.

e. SUS message is only supported in the backward direction in DMS MMP.

### ISUP FGD Supported Parameters

The supported parameters are listed in the table below. Any ISUP parameters not listed in the table are not supported by ISUP FGD on DMS MMP.

#### ISUP FGD Supported Parameters

| Parameter                                        | Code           | Supported in Messages <sup>a</sup> | Supported by ISUP FGD             |                     |
|--------------------------------------------------|----------------|------------------------------------|-----------------------------------|---------------------|
|                                                  |                |                                    | Processed or generated by DMS MMP | Tandemed by DMS MMP |
| Access transport                                 | 00000011 (#03) | ACM, ANM, IAM, REL, CPG            |                                   | 3                   |
| Automatic congestion level                       | 00100111 (#27) | REL                                | ✓ <sup>b</sup>                    |                     |
| Backward call indicators                         | 00010001 (#11) | ACM(M), ANM, CPG                   | 3                                 |                     |
| Called party number                              | 00000100 (#04) | IAM(M)                             | 3                                 |                     |
| Calling party number                             | 00001010 (#0A) | IAM                                | 3                                 |                     |
| Calling party's category                         | 00001001 (#09) | IAM(M)                             | 3                                 |                     |
| Carrier identification code Parameter            | 11000101 (#C5) | IAM                                |                                   | 3                   |
| Carrier selection                                | 11101110 (#EE) | IAM                                |                                   | 3                   |
| Cause indicators                                 | 00010010 (#12) | ACM, REL(M), CPG, CFN(M)           | 3                                 |                     |
| Charge number                                    | 11101011 (#EB) | IAM                                | 3                                 |                     |
| Circuit group characteristics indicator          | 11100101 (#E5) | CVR(M)                             | 3                                 |                     |
| Circuit group supervision message type indicator | 00010101 (#15) | CGB(M), CGBA(M), CGU(M), CGUA(M)   | 3                                 |                     |
| Circuit state indicator                          | 00100110 (#26) | CQR(M)                             | 3                                 |                     |
| Circuit validation response indicator            | 11100110 (#E6) | CVR(M)                             | 3                                 |                     |
| Continuity indicator                             | 00010000 (#10) | COT(M)                             | 3                                 |                     |
| Event information                                | 00100100 (#24) | CPG(M)                             |                                   | 3 <sup>c</sup>      |

**ISUP FGD Supported Parameters**

| Parameter                         | Code           | Supported in Messages <sup>a</sup>                                                    | Supported by ISUP FGD             |                     |
|-----------------------------------|----------------|---------------------------------------------------------------------------------------|-----------------------------------|---------------------|
|                                   |                |                                                                                       | Processed or generated by DMS MMP | Tandemed by DMS MMP |
| Forward call indicators           | 00000111 (#07) | IAM(M)                                                                                | 3                                 |                     |
| Generic address                   | 11000000 (#C0) | IAM                                                                                   |                                   | 3                   |
| Generic name                      | 11000111 (#C7) | IAM                                                                                   |                                   | 3                   |
| Hop Counter                       | 00111101 (#3D) | IAM                                                                                   | 3                                 |                     |
| Jurisdiction information          | 11000100 (#C4) | IAM                                                                                   |                                   | 3                   |
| Nature of connection indicators   | 00000110 (#06) | IAM(M), CRM(M)                                                                        | 3                                 |                     |
| Optional backward call indicators | 00101001 (#29) | ACM, CPG                                                                              |                                   | 3                   |
| Original called number            | 00101000 (#28) | IAM                                                                                   |                                   | 3                   |
| Originating line information      | 11101010 (#EA) | IAM                                                                                   |                                   | 3                   |
| Range and status                  | 00010110 (#16) | CGB(M),<br>CGBA(M),<br>CGU(M),<br>CGUA(M),<br>GRS(M),<br>GRA(M),<br>CQM(M),<br>CQR(M) | 3                                 |                     |
| Redirecting number                | 00001011 (#0B) | IAM                                                                                   |                                   | 3                   |
| Service code                      | 11101100 (#EC) | IAM                                                                                   |                                   | 3                   |
| Suspend/Resume indicators         | 00100010 (#22) | SUS(M), RES(M)                                                                        | 3                                 |                     |
| Transit network selection         | 00100011 (#23) | IAM                                                                                   |                                   | 3                   |
| User service information          | 00011101 (#1D) | IAM(M)                                                                                | 3 <sup>d</sup>                    |                     |

a. A message marked with (M) indicates its parameter is mandatory. Otherwise, the parameter is optional.

b. ACL if received will be blocked by DMS.

c. Event Information parameter is tandemed if received in a CPG message.

- d. Multirate connections are not supported. Only USI representations of speech, 3.1 kHz audio and 64 kbit/s data supported.

### Agency Provisioning - Table TRKOPTS

Table TRKOPTS is datafilled to provision ISUP FGD trunk.

A sample datafill on DMS MMP to make an ANSI ISUP IBN trunk as ISUP FGD is shown below:

```
TABLE: TRKOPTS
OPTKEY OPTINFO
-----
ANSI7LP1 FGD FGD IXC
ANSI7LP2 FGD FGD IXC
```

The datafill in Table TRKGRP and TRKSGRP is same as IBN trunks for ANSI ISUP. A sample example is shown below:

```
TABLE: TRKGRP
GRPKEY GRPINFO
-----
ANSI7LP1 IBNT2 0 STDTK NCRT IDCGRP 0 MIDL 511 N ANSDISC 0 Y N N N N
Y N 0 0 N 0 0 0 0 N N N N N N N N NATL $

TABLE: TRKSGRP
SGRPKEY CARDCODE SGRPVAR SGRPVAR
-----
ANSI7LP1 0 DS1SIG C7UP 2W N N UNEQ NONE Q764 THRH 0 DMS (MBG NONE)
$ ANSI72W CIC
```

ISUP FGD will use the same TMRKEY in table C7UPTMR and hence the same timers as that of ANSI ISUP. A sample datafill is shown below:

```
TABLE: C7UPTMR
TMRKEY C7UPDIR TMRS OPTIONS
-----
ANSI72W 2W Q764 13 2 25 6 60 10 180 20 200 13 60 2 32 3 600 $
```

## Message Flow Description

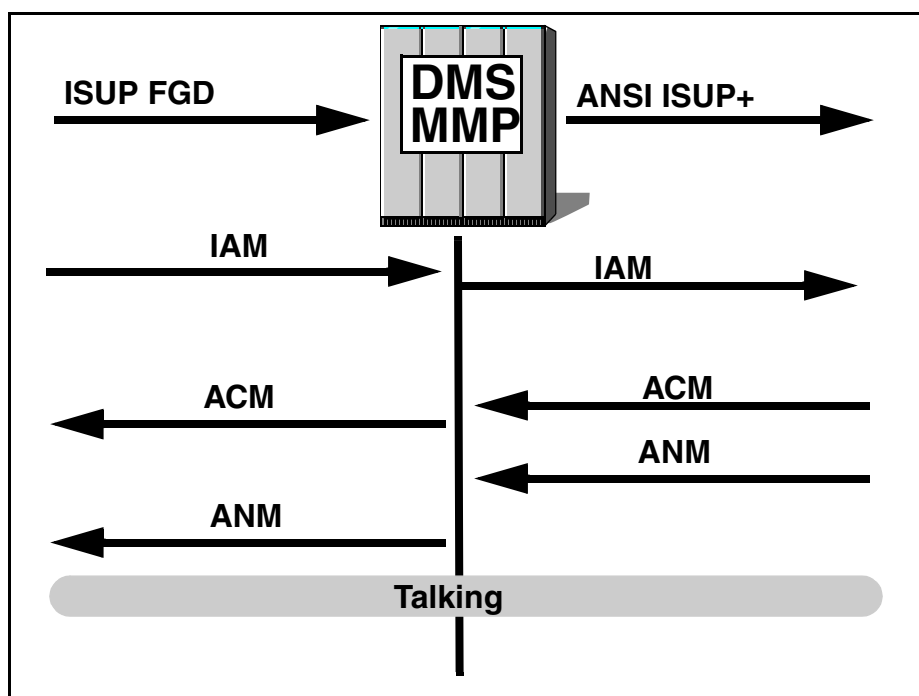
The following section provide detail message and parameter mappings of some common interworking issues.

- ISUP FGD <=> ANSI ISUP+
- ISUP FGD <=> ETSI ISUP V1
- ISUP FGD <=> ETSI ISUP V2
- ISUP FGD <=> ITU-R2
- ISUP FGD <=> ISUP FGD

## ISUP FGD To ANSI ISUP+

### Normal Call Setup

#### Normal Call Setup



#### Message Mappings ISUP FGD -> ANSI ISUP+

| ISUP FGD Message | Trigger Direction | ANSI ISUP+ Message |
|------------------|-------------------|--------------------|
| IAM              | ⇒                 | IAM                |
| ACM              | ⇐                 | ACM                |
| ANM              | ⇐                 | ANM                |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM         |                                  |                                                              | dir | ANSI ISUP+ IAM                                          |                                               |                                   |
|----------------------|----------------------------------|--------------------------------------------------------------|-----|---------------------------------------------------------|-----------------------------------------------|-----------------------------------|
| ISUP FGD Parameter   | Field in Parameter               | Field Value                                                  |     | Field Value                                             | Field in Parameter                            | ANSI ISUP+ Parameter              |
| Nature of Connection | Satellite Indicator              | 00 - no satellite circuit in the connection                  | ⇒   | 00 - no satellite circuit in the connection             | Satellite Indicatorr                          | Nature of Connection <sup>a</sup> |
|                      |                                  | 01 - one satellite circuit in the connection                 | ⇒   | 01 - one satellite circuit in the connection            |                                               |                                   |
|                      |                                  | 10 - two satellite circuits in the connection (default)      | ⇒   | 10 - two satellite circuits in the connection           |                                               |                                   |
|                      |                                  | 11 - three or more satellite circuits in the connection      | ⇒   | 11 - three or more satellite circuits in the connection |                                               |                                   |
|                      | Continuity Check Ind.            | 00 - continuity check not required (default)                 | ⇒   | 00 - continuity check not required                      | Continuity Check Ind.                         |                                   |
|                      |                                  | 01 - continuity check required on this circuit               | ⇒   | 10 - continuity check performed on a previous circuit   |                                               |                                   |
|                      |                                  | 10 - continuity check performed on a previous circuit        | ⇒   | 10 - continuity check performed on a previous circuit   |                                               |                                   |
|                      |                                  | 11 - spare                                                   | ⇒   | 00 - continuity check not required                      |                                               |                                   |
|                      | Echo Control Device              | 0 - outgoing half echo control device not included (default) | ⇒   | 0 - outgoing half echo suppressor not included          | Echo Control Device Indicator                 |                                   |
|                      |                                  | 1 - outgoing half echo control device included               |     | 1 - Half echo control device included                   |                                               |                                   |
| Forward Call Ind.    | National/International Call Ind. | 0 - call to be treated as a national call (default)          | ⇒   | 0 - Incoming National Call                              | National/International Call Ind. <sup>b</sup> | Forward Call Ind.                 |
|                      |                                  | 1 - call to be treated as an international call              | ⇒   | 1 - incoming international call                         |                                               |                                   |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM           |                                |                                                                                                         |     | ANSI ISUP+ IAM                                                                                          |                                |                        |
|------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------|--------------------------------|------------------------|
| ISUP FGD Parameter     | Field in Parameter             | Field Value                                                                                             | dir | Field Value                                                                                             | Field in Parameter             | ANSI ISUP+ Parameter   |
| Forward Call Indicator | End-to-End Method Indicator    | 00 - no end-to-end method available                                                                     | ⇒   | 00 - no end-to-end method available                                                                     | End-to-End Method Indicator    | Forward Call Indicator |
|                        |                                | 01 - pass along method available                                                                        |     | 01 - pass along method available                                                                        |                                |                        |
|                        |                                | 10 - SCCP method available                                                                              |     | 10 - SCCP method available                                                                              |                                |                        |
|                        |                                | 11 - pass along and SCCP methods available                                                              |     | 11 - pass along and SCCP methods available                                                              |                                |                        |
|                        | Interworking Ind.              | 0 - no interworking encountered                                                                         | ⇒   | 0 - no interworking encountered                                                                         | Interworking Ind.              |                        |
|                        |                                | 1 - interworking encountered (default)                                                                  | ⇒   | 1 - interworking encountered                                                                            |                                |                        |
|                        | IAM Segmentation indicator     | 0 - no indication                                                                                       | ⇒   | 0 - no indication                                                                                       | IAM Segmentation Indicator     |                        |
|                        |                                | 1 - additional information has been received and incorporated into call setup                           |     | 1 - additional information is being sent in an unsolicited information message                          |                                |                        |
|                        | ISDN User Part Ind.            | 0 - ISDN user part not used all the way (default)                                                       | ⇒   | 0 - ISDN user part not used all the way                                                                 | ISDN User Part Ind.            |                        |
|                        |                                | 1 - ISDN user part used all the way                                                                     | ⇒   | 1 - ISDN user part used all the way                                                                     |                                |                        |
|                        | ISDN User Part Preference Ind. | 00 - ISDN user part preferred all the way (default)                                                     | ⇒   | 00 - ISDN user part preferred all the way                                                               | ISDN User Part Preference Ind. |                        |
|                        |                                | 01 - ISDN user part not required all the way                                                            | ⇒   | 01 - ISDN user part not required all the way                                                            |                                |                        |
|                        |                                | 10 - ISDN user part required all the way                                                                | ⇒   | 10 - ISDN user part required all the way                                                                |                                |                        |
|                        |                                | 11 - spare                                                                                              | ⇒   | 00 - ISDN User Part preferred all the way                                                               |                                |                        |
|                        | ISDN Access Ind.               | 0 - origination access non-ISDN (default)                                                               | ⇒   | 0 - origination access non-ISDN                                                                         | ISDN Access Ind.               |                        |
|                        |                                | 1 - originating access ISDN                                                                             | ⇒   | 1 - originating access ISDN                                                                             |                                |                        |
|                        | SCCP Method Indicator          | 00 - no indication (default)                                                                            | ⇒   | 00 - no indication                                                                                      | SCCP Method Indicator          |                        |
|                        |                                | 01 - connectionless method available (No procedure specified for U.S. networks)                         | ⇒   | 01 - connectionless method available (No procedure specified for U.S. networks)                         |                                |                        |
|                        |                                | 10 - connection oriented method available (No procedure specified for U.S. networks)                    | ⇒   | 10 - connection oriented method available (No procedure specified for U.S. networks)                    |                                |                        |
|                        |                                | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. network) | ⇒   | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. network) |                                |                        |



**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM             |                                 |                                            | dir | ANSI ISUP+ IAM                                                                           |                                 |                                                                                                                                                      |
|--------------------------|---------------------------------|--------------------------------------------|-----|------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISUP FGD Parameter       | Field in Parameter              | Field Value                                |     | Field Value                                                                              | Field in Parameter              | ANSI ISUP+ Parameter                                                                                                                                 |
| Calling Party Category   | N/A                             | 00000000- calling party's category unknown | ⇒   | 0000000 - calling party's category unknown                                               | N/A                             | Calling Party Category                                                                                                                               |
|                          |                                 | 00001010 - ordinary calling subscriber     | ⇒   | 00001010 - ordinary calling subscriber                                                   |                                 |                                                                                                                                                      |
|                          |                                 | 00001101 - test call                       | ⇒   | 00001101 - test call                                                                     |                                 |                                                                                                                                                      |
|                          |                                 | All other values - treat as 0              | ⇒   | 0000000 - calling party's category unknown                                               |                                 |                                                                                                                                                      |
| User service information | Information Transfer Capability | 00000 - Speech                             | ⇒   | 00000 - Speech                                                                           | Information Transfer Capability | User Services Information                                                                                                                            |
|                          |                                 | 01000 - 64kbit/s Unrestricted              | ⇒   | 01000 - Unrestricted Digital info.                                                       |                                 |                                                                                                                                                      |
|                          |                                 | 10000 - 3.1 kHz Audio                      | ⇒   | 10000 - 3.1 kHz Audio                                                                    |                                 |                                                                                                                                                      |
|                          |                                 | All other values                           | ⇒   | (BCNI treatment)                                                                         |                                 |                                                                                                                                                      |
| Called Party Number      | Odd/Even Ind.                   | 0 - even number of address signals         | ⇒   | Encoding is based on the number of CdPN digits to encode after translations is performed | Odd/Even Ind.                   | Called Party Number ( <i>Fields within this parameter will be set based on translations unless there is only one possible value for that field</i> ) |
|                          |                                 | 1 - odd number of address signals          |     |                                                                                          |                                 |                                                                                                                                                      |

## Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking

| ISUP FGD IAM        |                        |                                                                                                | dir | ANSI ISUP+ IAM                                                                                                                 |                        |                                                                                                                                                      |
|---------------------|------------------------|------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISUP FGD Parameter  | Field in Parameter     | Field Value                                                                                    |     | Field Value                                                                                                                    | Field in Parameter     | ANSI ISUP+ Parameter                                                                                                                                 |
| Called Party Number | Nature of Address Ind. | 0000000 - spare                                                                                | ⇒   | (DMS-MMP translations determines the Nature of Address value that is outpulsed.) [ Datafill as described in "NOA/TON Mapping"] | Nature of Address Ind. | Called Party Number ( <i>Fields within this parameter will be set based on translations unless there is only one possible value for that field</i> ) |
|                     |                        | 0000001 - subscriber number                                                                    |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 0000010- spare, reserved for national use                                                      |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 0000011 - national (significant) number                                                        |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 0000100 - international number                                                                 |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 0000101 to 1110000 spare                                                                       |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110001 - subscriber number, operator requested (0+ call)                                      |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110010 - national number, operator requested (0+ call)                                        |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110011 - international number, operator requested (0+ call)                                   |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110100 - no address present, operator requested [0-, 10XXX+0(0) or 00- call]                  |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110101 - no address present, cut-through to carrier                                           |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110110 - 950+ call from local exchange carrier public station or hotel/motel line or non-EAEO |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1110111 - Test Line Test code                                                                  |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1111000 - 1111110 - reserved for network specific use                                          |     |                                                                                                                                |                        |                                                                                                                                                      |
|                     |                        | 1111111 - reserved                                                                             |     |                                                                                                                                |                        |                                                                                                                                                      |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM        |                    |                                       | dir | ANSI ISUP+ IAM                        |                          |                      |
|---------------------|--------------------|---------------------------------------|-----|---------------------------------------|--------------------------|----------------------|
| ISUP FGD Parameter  | Field in Parameter | Field Value                           |     | Field Value                           | Field in Parameter       | ANSI ISUP+ Parameter |
| Called Party Number | Numbering Plan     | 000- unknown                          | ⇒   | 001 - ISDN (telephony) numbering plan | Numbering Plan Indicator | Called Party Number  |
|                     |                    | 001 - ISDN (telephony) numbering plan | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     |                    | 010 - spare                           | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     |                    | 011 - reserved                        | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     |                    | 100 - reserved                        | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     |                    | 101 - private numbering plan          | ⇒   | 101 - private numbering plan          |                          |                      |
|                     |                    | 110 - spare                           | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     |                    | 111 - spare                           | ⇒   | 001 - ISDN (telephony) numbering plan |                          |                      |
|                     | Address Signals    | 0000 - digit 0                        | ⇒   | Determined by MMP translations.       | Address Signals          |                      |
|                     |                    | 0001 - digit 1                        | ⇒   |                                       |                          |                      |
|                     |                    | 0010 - digit 2                        | ⇒   |                                       |                          |                      |
|                     |                    | 0011 - digit 3                        | ⇒   |                                       |                          |                      |
|                     |                    | 0100 - digit 4                        | ⇒   |                                       |                          |                      |
|                     |                    | 0101 - digit 5                        | ⇒   |                                       |                          |                      |
|                     |                    | 0110 - digit 6                        | ⇒   |                                       |                          |                      |
|                     |                    | 0111 - digit 7                        | ⇒   |                                       |                          |                      |
|                     |                    | 1000 - digit 8                        | ⇒   |                                       |                          |                      |
|                     |                    | 1001 - digit 9                        | ⇒   |                                       |                          |                      |
|                     |                    | 1111 - reserved                       | ⇒   |                                       |                          |                      |

## Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking

| ISUP FGD IAM         |                                      |                                                           | dir | ANSI ISUP+ IAM                                              |                                      |                      |
|----------------------|--------------------------------------|-----------------------------------------------------------|-----|-------------------------------------------------------------|--------------------------------------|----------------------|
| ISUP FGD Parameter   | Field in Parameter                   | Field Value                                               |     | Field Value                                                 | Field in Parameter                   | ANSI ISUP+ Parameter |
| Calling Party Number | Odd/Even Ind.                        | 0 - even number of address signals                        | ⇒   | Encoding is based on the number of CgPN digits to encode    | Odd/Even Ind.                        | Calling Party Number |
|                      |                                      | 1 - odd number of address signals                         |     |                                                             |                                      |                      |
|                      | Nature of Address Ind.               | 0000000 - spare                                           | ⇒   | 0000011 - unique national (significant) number <sup>c</sup> | Nature of Address Ind.               |                      |
|                      |                                      | 0000001 - unique subscriber number                        |     | 0000001 - unique subscriber number                          |                                      |                      |
|                      |                                      | 0000010 - spare, reserved for national use                |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 0000011 - unique national (significant) number            |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 0000100 - unique international number                     |     | 0000100 - unique international number                       |                                      |                      |
|                      |                                      | 0000101 to - spare<br>1110000                             |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 1110001 - non-unique subscriber number                    |     | 1110001 - non-unique subscriber number                      |                                      |                      |
|                      |                                      | 1110010 - spare, reserved for national use                |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 1110011 - non-unique national (significant) number        |     | 1110011 - non-unique national (significant) number          |                                      |                      |
|                      |                                      | 1110100 - non-unique international number                 |     | 1110100 - non-unique international number                   |                                      |                      |
|                      |                                      | 1110101 - spare                                           |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 1110110 - spare                                           |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 1110111 - Test Line Test Code                             |     | 1110111 - Test Line Test Code                               |                                      |                      |
|                      |                                      | 1111000 to<br>1111110 - Reserved for network-specific use |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      |                                      | 1111111 - spare                                           |     | 0000011 - unique national (significant) number              |                                      |                      |
|                      | Address Presentation Restricted Ind. | 00 - presentation allowed (default)                       | ⇒   | 00 - presentation allowed                                   | Address Presentation Restricted Ind. |                      |
|                      |                                      | 01 - presentation restricted                              |     | 01 - presentation restricted                                |                                      |                      |
|                      |                                      | All other values                                          |     | 01 - presentation restricted                                |                                      |                      |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM         |                             |                                              | dir | ANSI ISUP+ IAM                                   |                             |                      |
|----------------------|-----------------------------|----------------------------------------------|-----|--------------------------------------------------|-----------------------------|----------------------|
| ISUP FGD Parameter   | Field in Parameter          | Field Value                                  |     | Field Value                                      | Field in Parameter          | ANSI ISUP+ Parameter |
| Calling Party Number | Numbering Plan              | 000 - unknown                                | ⇒   | 001 - ISDN (telephony) numbering                 | Numbering Plan Indicator    | Calling Party Number |
|                      |                             | 001 - ISDN (telephony) numbering             |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      |                             | 010 -spare                                   |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      |                             | 011 - reserved (ITU-T: Data numbering plan)  |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      |                             | 100 - reserved (ITU-T: Telex Numbering Plan) |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      |                             | 101 - private numbering plan                 |     | 101 - private numbering plan                     |                             |                      |
|                      |                             | 110 - spare                                  |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      |                             | 111 - spare                                  |     | 001 - ISDN (telephony) numbering                 |                             |                      |
|                      | Address Signals             | 0000 - digit 0                               | ⇒   | 0000 - digit 0                                   | Address Signals             |                      |
|                      |                             | 0001 - digit 1                               |     | 0001 - digit 1                                   |                             |                      |
|                      |                             | 0010 - digit 2                               |     | 0010 - digit 2                                   |                             |                      |
|                      |                             | 0011 - digit 3                               |     | 0011 - digit 3                                   |                             |                      |
|                      |                             | 0100 - digit 4                               |     | 0100 - digit 4                                   |                             |                      |
|                      |                             | 0101 - digit 5                               |     | 0101 - digit 5                                   |                             |                      |
|                      |                             | 0110 - digit 6                               |     | 0110 - digit 6                                   |                             |                      |
|                      |                             | 0111 - digit 7                               |     | 0111 - digit 7                                   |                             |                      |
|                      |                             | 1000 - digit 8                               |     | 1000 - digit 8                                   |                             |                      |
|                      |                             | 1001 - digit 9                               |     | 1001 - digit 9                                   |                             |                      |
|                      |                             | 1010 - spare                                 |     | 0000 - digit 0                                   |                             |                      |
|                      |                             | 1111 - reserved                              |     | 1111 - ST                                        |                             |                      |
| Hop counter          | Hop counter parameter field | 00000 - 11111                                | ⇒   | Detailed description available in “ Hop Counter” | Hop Counter Parameter Field | Hop Counter          |

## Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking

| ISUP FGD IAM                                           |                             |                                                    | dir | ANSI ISUP+ IAM                                     |                             |                                 |
|--------------------------------------------------------|-----------------------------|----------------------------------------------------|-----|----------------------------------------------------|-----------------------------|---------------------------------|
| ISUP FGD Parameter                                     | Field in Parameter          | Field Value                                        |     | Field Value                                        | Field in Parameter          | ANSI ISUP+ Parameter            |
| Redirecting Number                                     | Odd/Even Indicator          | 0 - even number of address digits                  | ⇒   | 0 - even number of address digits                  | Odd/Even Indicator          | Redirecting Number <sup>d</sup> |
|                                                        |                             | 1 - odd number of address digits                   | ⇒   | 1 - odd number of address digits                   |                             |                                 |
|                                                        | Nature of Address Indicator | 0000000 - spare or unknown, default                | ⇒   | 0000011 - unique national (significant) number     | Nature of Address Indicator |                                 |
|                                                        |                             | 0000001 - unique subscriber number                 | ⇒   | 0000001 - unique subscriber number                 |                             |                                 |
|                                                        |                             | 0000010 - spare, reserved for national use         | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 0000011 - unique national (significant) number     | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 0000100 - unique international number              | ⇒   | 0000100 - unique international number              |                             |                                 |
|                                                        |                             | 0000101 to 1110000 - spare                         | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 1110001 - non-unique subscriber number             | ⇒   | 1110001 - non-unique subscriber number             |                             |                                 |
|                                                        |                             | 1110010 - spare, reserved for national use         | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 1110011 - non-unique national (significant) number | ⇒   | 1110011 - non-unique national (significant) number |                             |                                 |
|                                                        |                             | 1110100 - non-unique international number          | ⇒   | 1110100 - non-unique international number          |                             |                                 |
|                                                        |                             | 1110101 - spare                                    | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 1110110 - spare                                    | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                                                        |                             | 1110111 - test line test code                      | ⇒   | 1110111 - test line test code                      |                             |                                 |
| 1111000 to 1111110 - reserved for network specific use | ⇒                           | 0000011 - unique national (significant) number     |     |                                                    |                             |                                 |
| 1111111 - spare                                        | ⇒                           | 0000011 - unique national (significant) number     |     |                                                    |                             |                                 |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM       |                                    |                                                                     | dir | ANSI ISUP+ IAM                                                      |                                           |                      |
|--------------------|------------------------------------|---------------------------------------------------------------------|-----|---------------------------------------------------------------------|-------------------------------------------|----------------------|
| ISUP FGD Parameter | Field in Parameter                 | Field Value                                                         |     | Field Value                                                         | Field in Parameter                        | ANSI ISUP+ Parameter |
| Redirecting Number | Numbering Plan                     | 000 - unknown                                                       | ⇒   | 001 - ISDN (telephony) numbering plan                               | Numbering Plan Indicator                  | Redirecting Number   |
|                    |                                    | 001 - ISDN (telephony) numbering plan (CCITT Rec. E.164 (E.163))    | ⇒   |                                                                     |                                           |                      |
|                    |                                    | 010 - spare                                                         | ⇒   |                                                                     |                                           |                      |
|                    |                                    | 011 - reserved (CCITT: Data numbering plan)                         | ⇒   |                                                                     |                                           |                      |
|                    |                                    | 100 - reserved (CCITT: Telex numbering plan)                        | ⇒   |                                                                     |                                           |                      |
|                    |                                    | 101 - private numbering plan                                        | ⇒   | 101 - private numbering plan                                        |                                           |                      |
|                    |                                    | 110 - spare                                                         | ⇒   | 001 - ISDN (telephony) numbering plan                               |                                           |                      |
|                    |                                    | 111 - spare                                                         | ⇒   |                                                                     |                                           |                      |
|                    | Presentation Restriction Indicator | 00 - presentation allowed                                           | ⇒   | 00 - presentation allowed                                           | Address Presentation Restricted Indicator |                      |
|                    |                                    | 01 - presentation restricted                                        | ⇒   | 01 - presentation restricted                                        |                                           |                      |
|                    |                                    | 10 - number not available                                           | ⇒   |                                                                     |                                           |                      |
|                    |                                    | 11 - spare                                                          | ⇒   |                                                                     |                                           |                      |
|                    | Screening Indicator                | 00 - network provided                                               | ⇒   | No Mapping                                                          |                                           |                      |
|                    |                                    | 01 - user provided, passed network screening                        | ⇒   | No Mapping                                                          |                                           |                      |
|                    |                                    | 10 - user provided, failed network screening                        | ⇒   | No Mapping                                                          |                                           |                      |
|                    |                                    | 11 - user provided, not screened                                    | ⇒   | No Mapping                                                          |                                           |                      |
|                    | Address Information                | 0000 - digit 0                                                      | ⇒   | 0000 - digit 0                                                      | Address Signal                            | Redirecting Number   |
|                    |                                    | 0001 - digit 1                                                      | ⇒   | 0001 - digit 1                                                      |                                           |                      |
|                    |                                    | 0010 - digit 2                                                      | ⇒   | 0010 - digit 2                                                      |                                           |                      |
|                    |                                    | 0011 - digit 3                                                      | ⇒   | 0011 - digit 3                                                      |                                           |                      |
|                    |                                    | 0100 - digit 4                                                      | ⇒   | 0100 - digit 4                                                      |                                           |                      |
|                    |                                    | 0101 - digit 5                                                      | ⇒   | 0101 - digit 5                                                      |                                           |                      |
|                    |                                    | 0110 - digit 6                                                      | ⇒   | 0110 - digit 6                                                      |                                           |                      |
|                    |                                    | 0111 - digit 7                                                      | ⇒   | 0111 - digit 7                                                      |                                           |                      |
|                    |                                    | 1000 - digit 8                                                      | ⇒   | 1000 - digit 8                                                      |                                           |                      |
|                    |                                    | 1001 - digit 9                                                      | ⇒   | 1001 - digit 9                                                      |                                           |                      |
|                    |                                    | 1111 - reserved                                                     | ⇒   | 1111 - reserved                                                     |                                           |                      |
| Redirecting Number | Filler                             | 0000 (inserted after the last address signal if digit count is odd) |     | 0000 (inserted after the last address signal if digit count is odd) | Filler                                    | Redirecting Number   |

**Parameter Mappings for IAM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD IAM                          |                    |             | dir | ANSI ISUP+ IAM                        |                    |                      |
|---------------------------------------|--------------------|-------------|-----|---------------------------------------|--------------------|----------------------|
| ISUP FGD Parameter                    | Field in Parameter | Field Value |     | Field Value                           | Field in Parameter | ANSI ISUP+ Parameter |
| Access Transport                      |                    |             | ⇒   | Access Transport                      |                    |                      |
| Generic Address                       |                    |             | ⇒   | Generic Address                       |                    |                      |
| Transit Network Selection             |                    |             | ⇒   | Transit Network Selection             |                    |                      |
| Charge Number                         |                    |             | ⇒   | Charge Number                         |                    |                      |
| Originating Line Information          |                    |             | ⇒   | Origination Line Information          |                    |                      |
| Carrier Selection                     |                    |             | ⇒   | Carrier Selection Information         |                    |                      |
| Service Code                          |                    |             | ⇒   | Service Code Indicator                |                    |                      |
| Carrier Identification Code Parameter |                    |             | ⇒   | Carrier Identification Code Parameter |                    |                      |
| Jurisdiction Information              |                    |             | ⇒   | Jurisdiction                          |                    |                      |
| Original Called Number                |                    |             | ⇒   | Original Called Number                |                    |                      |
| Generic Name                          |                    |             | ⇒   | No Mapping                            |                    |                      |

- a. Please refer to Section "Nature of Connection Mapping for IAM" on page 691.
- b. Please refer to Section "Additional SS7 procedures" on page 683.
- c. Field is set according to the length of calling party number
- d. The redirection information parameter is to be present with the redirection counter greater than 1.



**Parameter Mappings for ACM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD ACM       |                                   |                                               | dir | ANSI ISUP+ ACM                             |                                   |                      |
|--------------------|-----------------------------------|-----------------------------------------------|-----|--------------------------------------------|-----------------------------------|----------------------|
| ISUP FGD Parameter | Field in Parameter                | Field Value                                   |     | Field Value                                | Field in Parameter                | ANSI ISUP+ Parameter |
| Backward Call Ind. | Charge Indicator                  | 00 - no indication                            | ⇐   | 00 - no indication                         | Charge Indicator                  | Backward Call Ind.   |
|                    |                                   | 01 - no charge                                | ⇐   | 01 - no charge                             |                                   |                      |
|                    |                                   | 10 - charge                                   | ⇐   | 10 - charge                                |                                   |                      |
|                    |                                   | 00 - no indication                            | ⇐   | 11 - spare                                 |                                   |                      |
|                    | Called Party's Status Indicator   | 00 - no indication                            | ⇐   | 00 - no Indication                         | Called Party's Status Indicator   |                      |
|                    |                                   | 01 - subscriber free                          | ⇐   | 01 - subscriber free                       |                                   |                      |
|                    |                                   | 10 - connect when free                        | ⇐   | 10 - connect when free                     |                                   |                      |
|                    |                                   | 11 - excessive delay                          | ⇐   | 11 - excessive delay                       |                                   |                      |
|                    | Called Party's Category Indicator | 00 - no indication                            | ⇐   | 00 - no indication                         | Called Party's Category Indicator |                      |
|                    |                                   | 01 - ordinary (non-payphone) subscriber       | ⇐   | 01 - ordinary subscriber                   |                                   |                      |
|                    |                                   | 10 - payphone                                 | ⇐   | 10 - payphone                              |                                   |                      |
|                    |                                   | 00 - no indication                            | ⇐   | 11 - spare                                 |                                   |                      |
|                    | End-to-End Method Indicator       | 00 - no end-to-end method available (default) | ⇐   | 00 - no end-to-end method available        | End-to-End Method Indicator       |                      |
|                    |                                   | 01 - pass along method available              |     | 01 - Pass along method available           |                                   |                      |
|                    |                                   | 10 - SCCP method available                    |     | 10 - SCCP method available                 |                                   |                      |
|                    |                                   | 11 - pass along and SCCP methods available    |     | 11 - pass along and SCCP methods available |                                   |                      |

**Parameter Mappings for ACM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD ACM                      |                               |                                                                               | dir | ANSI ISUP+ ACM                                                                |                               |                          |
|-----------------------------------|-------------------------------|-------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------|-------------------------------|--------------------------|
| ISUP FGD Parameter                | Field in Parameter            | Field Value                                                                   |     | Field Value                                                                   | Field in Parameter            | ANSI ISUP+ Parameter     |
| Backward Call Indicators          | Interworking Ind.             | 0 - no interworking encountered                                               | ⇐   | 0 - no interworking encountered                                               | Interworking Ind.             | Backward Call Indicators |
|                                   |                               | 1 - interworking encountered                                                  | ⇐   | 1 - interworking encountered                                                  |                               |                          |
|                                   | IAM Segmentation Ind.         | 0 - no indication                                                             | ⇐   | 0 - no indication                                                             | IAM Segmentation Ind.         |                          |
|                                   |                               | 1 - additional information has been received and incorporated into call-setup | ⇐   | 1 - additional information has been received and incorporated into call-setup |                               |                          |
|                                   | ISDN User Part Indicator      | 0 - ISDN User Part not used all the way                                       | ⇐   | 0 - ISDN User Part not used all the way                                       | ISDN User Part Indicator      |                          |
|                                   |                               | 1 - ISDN User Part used all the way                                           | ⇐   | 1 - ISDN User Part used all the way                                           |                               |                          |
|                                   | Holding Ind.                  | 0 - holding not required                                                      | ⇐   | 0 - holding not required                                                      | Holding Ind.                  |                          |
|                                   |                               |                                                                               | ⇐   | 1 - holding required                                                          |                               |                          |
|                                   | ISDN Access Ind.              | 0 - terminating access non-ISDN                                               | ⇐   | 0 - terminating access non-ISDN                                               | ISDN Access Ind.              |                          |
|                                   |                               | 1 - terminating access ISDN                                                   | ⇐   | 1 - terminating access ISDN                                                   |                               |                          |
|                                   | Echo Control Device Indicator | 0 - incoming half echo control device not included                            | ⇐   | 0 - incoming half echo control device not included                            | Echo Control Device Indicator |                          |
|                                   |                               | 1 - incoming half echo control device included                                | ⇐   | 1 - incoming half echo control device not included                            |                               |                          |
|                                   | SCCP Method Ind.              | 00 - no indication                                                            | ⇐   | 00 - no indication                                                            | SCCP Method Ind.              |                          |
|                                   |                               |                                                                               | ⇐   | 01 - connectionless method available                                          |                               |                          |
|                                   |                               |                                                                               | ⇐   | 10 - connection oriented method available                                     |                               |                          |
|                                   |                               |                                                                               | ⇐   | 11 - connectionless and connection oriented methods available                 |                               |                          |
| Access Transport                  |                               |                                                                               | ⇐   | Access Transport                                                              |                               |                          |
| No Mapping                        |                               |                                                                               | ⇐   | Business Group                                                                |                               |                          |
| Call Reference                    |                               |                                                                               | ⇐   | Call Reference                                                                |                               |                          |
| Cause Indicators                  |                               |                                                                               | ⇐   | Cause Indicators                                                              |                               |                          |
| Connection Request                |                               |                                                                               | ⇐   | Connection Request                                                            |                               |                          |
| Information Indicators            |                               |                                                                               | ⇐   | Information Indicators                                                        |                               |                          |
| Network Transport Parameters      |                               |                                                                               | ⇐   | Network Transport Parameter                                                   |                               |                          |
| No Mapping                        |                               |                                                                               | ⇐   | Notification Indicator                                                        |                               |                          |
| Optional Backward Call Indicators |                               |                                                                               | ⇐   | Optional Backward Call Indicators                                             |                               |                          |

**Parameter Mappings for ACM - ISUP FGD to ANSI ISUP+ interworking**

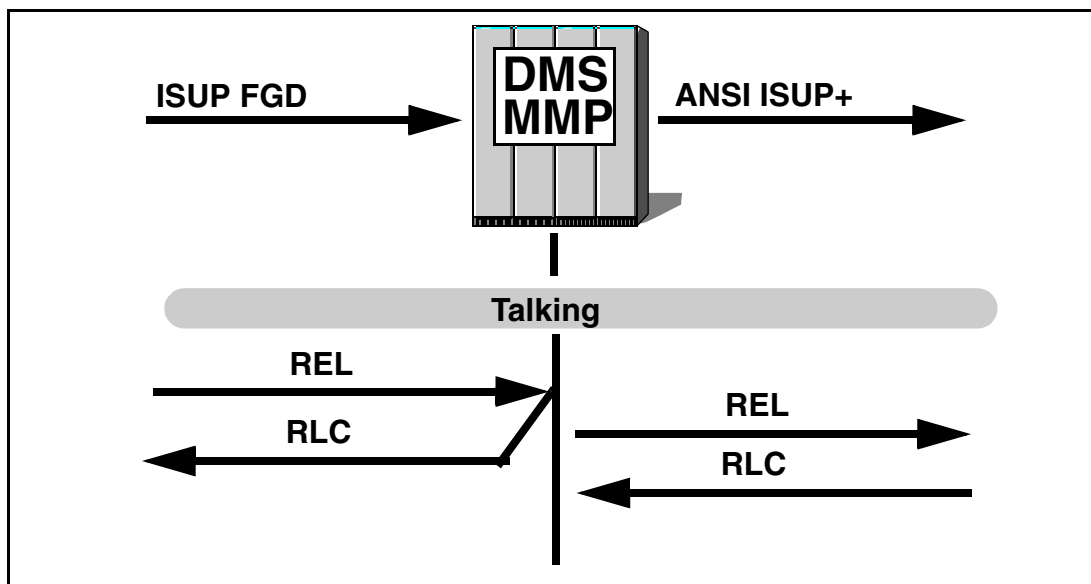
| ISUP FGD ACM            |                    |             | dir | ANSI ISUP+ ACM          |                    |                      |
|-------------------------|--------------------|-------------|-----|-------------------------|--------------------|----------------------|
| ISUP FGD Parameter      | Field in Parameter | Field Value |     | Field Value             | Field in Parameter | ANSI ISUP+ Parameter |
| Redirection Information |                    |             | ⇐   | Redirection Information |                    |                      |

**Parameter Mappings for ANM - ISUP FGD to ANSI ISUP+ interworking**

| ISUP FGD ANM                             |                    |             | dir | ANSI ISUP+ ANM                    |                    |                      |
|------------------------------------------|--------------------|-------------|-----|-----------------------------------|--------------------|----------------------|
| ISUP FGD Parameter                       | Field in Parameter | Field Value |     | Field Value                       | Field in Parameter | ANSI ISUP+ Parameter |
| Access Transport                         |                    |             | ⇐   | Access Transport                  |                    |                      |
| Backward Call Indicators [ same as ACM ] |                    |             | ⇐   | Backward Call Indicators          |                    |                      |
| No Mapping                               |                    |             | ⇐   | Business Group                    |                    |                      |
| Call Reference                           |                    |             | ⇐   | Call Reference                    |                    |                      |
| Connection Request                       |                    |             | ⇐   | Connection Request                |                    |                      |
| Information Indicators                   |                    |             | ⇐   | Information Indicators            |                    |                      |
| Network Transport Parameter              |                    |             | ⇐   | Network Transport Parameter       |                    |                      |
| No Mapping                               |                    |             | ⇐   | Notification Indicator            |                    |                      |
| Optional Backward Call Indicators        |                    |             | ⇐   | Optional Backward Call Indicators |                    |                      |

## Normal Call Clearing

ISUP FGD -> ANSI ISUP+: Calling Party Clear



### Calling Party Clear Message Mappings

| ISUP FGD Message | Trigger Direction | ANSI ISUP+ Message      |
|------------------|-------------------|-------------------------|
| REL              | ⇒                 | REL                     |
| RLC              | ⇐                 | No Trigger <sup>a</sup> |
| No Mapping       | ⇐                 | RLC                     |

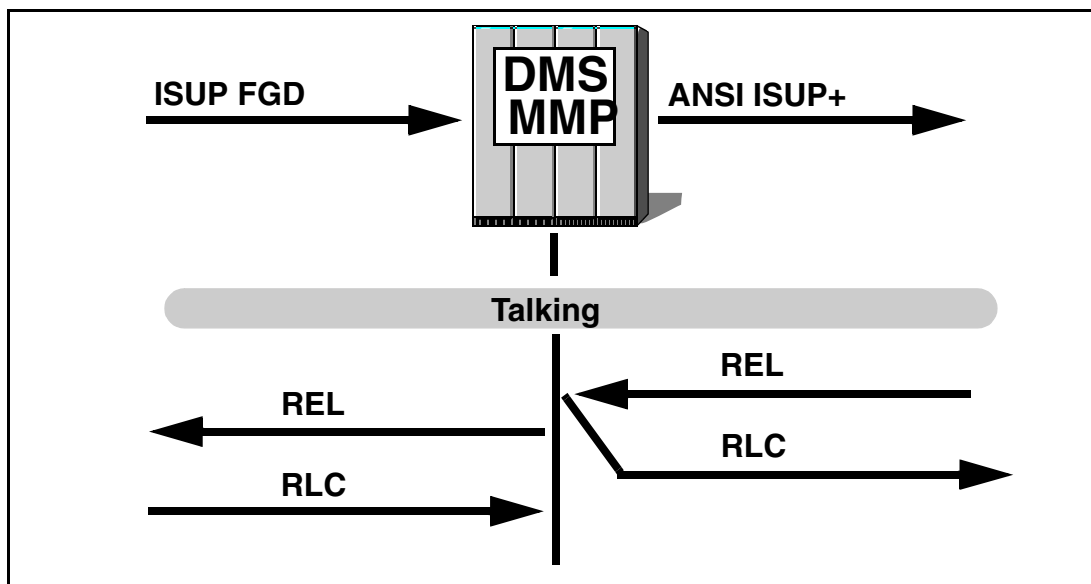
a. RLC triggered by receipt of REL message.

### Parameter Mapping for forward REL - ISUP FGD to ANSI ISUP+ interworking

| ISUP FGD REL               |       |             | dir | ANSI ISUP+ REL                                                            |       |           |
|----------------------------|-------|-------------|-----|---------------------------------------------------------------------------|-------|-----------|
| Parameter                  | Field | Field Value |     | Field Value                                                               | Field | Parameter |
| Cause Indicator            |       |             | ⇒   | Cause Indicator [ Mapping as described in “ REL Generation and Mapping” ] |       |           |
| Automatic Congestion Level |       |             | ⇒   | No Mapping                                                                |       |           |
| Access Transport           |       |             | ⇒   | Access Transport                                                          |       |           |

## Called Party Clear

ISUP FGD-> ANSI ISUP+: Called Party Clear



### Called Party Clear Message Mapping

| ISUP FGD Message        | Trigger Direction | ANSI ISUP+ Message |
|-------------------------|-------------------|--------------------|
| REL                     | ←                 | REL                |
| No Trigger <sup>a</sup> | ⇒                 | RLC                |
| RLC                     | ⇒                 | No Mapping         |

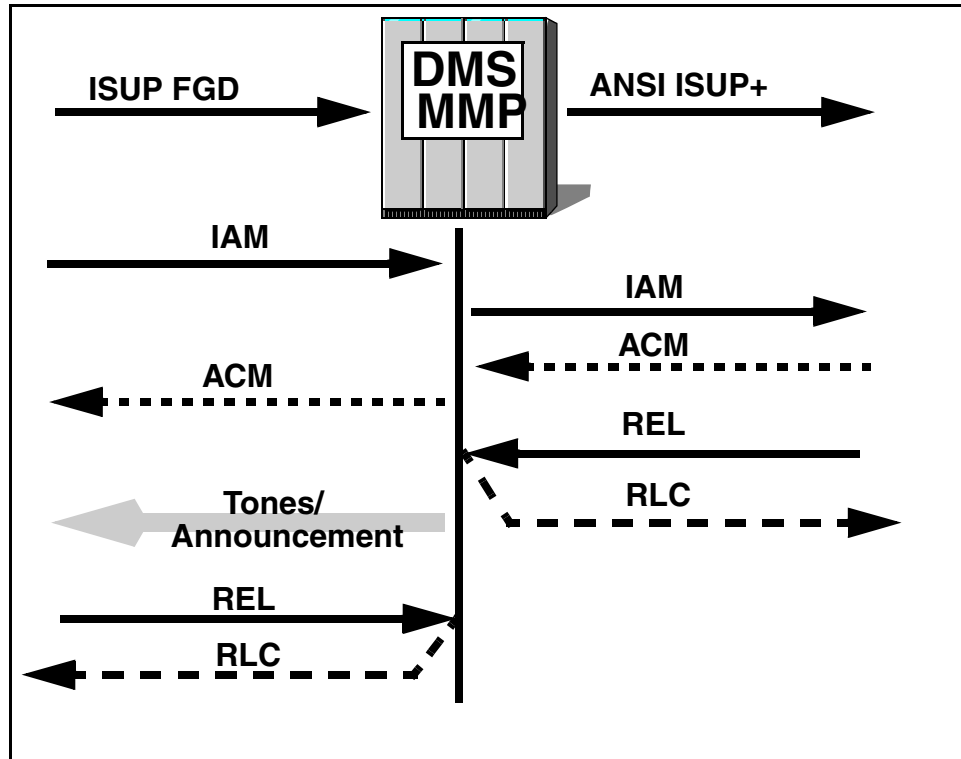
a. RLC triggered by receipt of REL message.

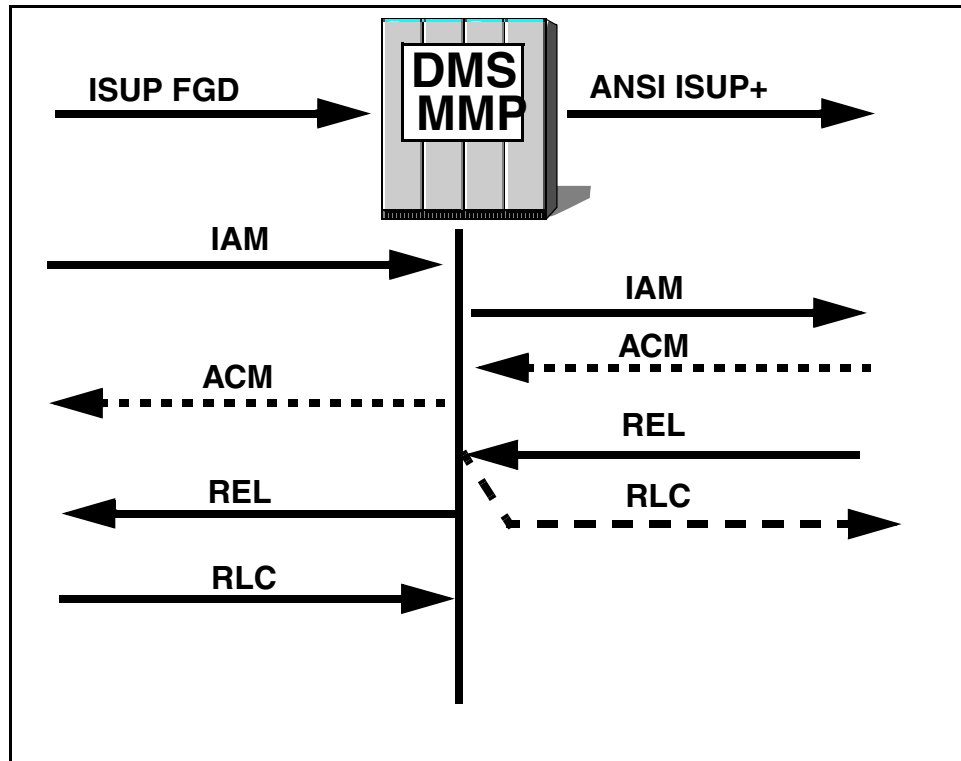
### Parameter Mapping for backward REL - ISUP FGD to ANSI ISUP+ interworking

| ISUP FGD REL                                                              |       |             | dir | ANSI ISUP+ REL             |       |           |
|---------------------------------------------------------------------------|-------|-------------|-----|----------------------------|-------|-----------|
| Parameter                                                                 | Field | Field Value |     | Field Value                | Field | Parameter |
| Cause Indicator [ Mapping as described in “ REL Generation and Mapping” ] |       |             | ←   | Cause Indicators           |       |           |
| Access Transport                                                          |       |             | ←   | Access Transport           |       |           |
| No Mapping                                                                |       |             | ←   | Automatic Congestion Level |       |           |
| Call Reference                                                            |       |             | ←   | Call Reference             |       |           |
| Charge Number                                                             |       |             | ←   | Charge number              |       |           |
| Generic Address                                                           |       |             | ←   | Generic Address            |       |           |

**Unsuccessful Call Attempt**

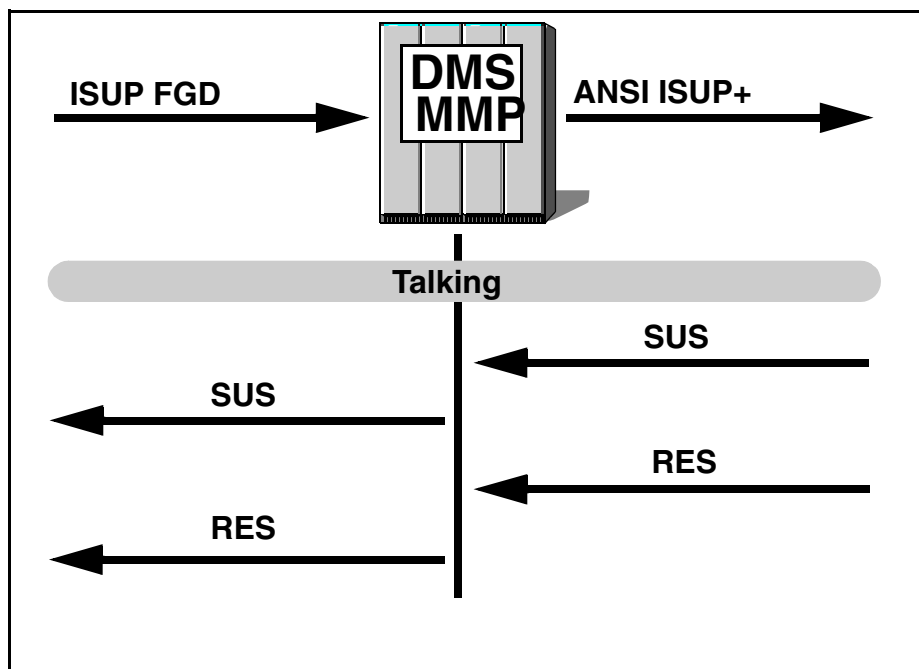
Please refer to Section “REL Generation and Mapping” on page 691.

**ISUP FGD to ANSI ISUP+ Unsuccessful Call Attempt - Tones/Announcements**

**ISUP FGD to ANSI ISUP+ Unsuccessful Call Attempt - Generation of Release Message**

## Suspend/Resume

### ISUP FGD to ANSI ISUP+ Suspend with Resume



### Message/Signal Mappings

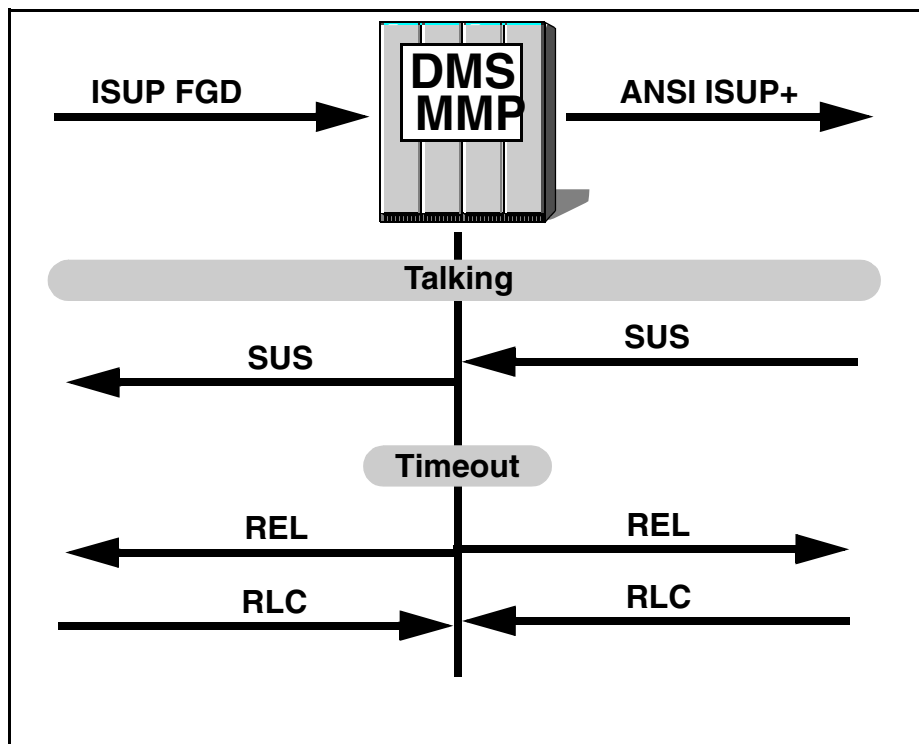
| ISUP Message | Trigger | ISUP Message |
|--------------|---------|--------------|
| SUS          | ←       | SUS          |
| RES          | ←       | RES          |

### Message Parameter Field Mappings

| ISUP FGD SUS/RES          |                     |                                | dir | ANSI ISUP+ SUS/RES            |                     |                           |
|---------------------------|---------------------|--------------------------------|-----|-------------------------------|---------------------|---------------------------|
| ISUP FGD Parm             | Field in Parameter  | Field Value                    |     | Field Value                   | Field in Parameter  | ANSI ISUP+ Param          |
| Suspend/Resume Indicators | Suspend/Resume Ind. | 0 - ISDN Subscriber initiated  | ⇐   | 0 - ISDN subscriber initiated | Suspend/Resume Ind. | Suspend/Resume Indicators |
|                           |                     | 1 - network initiated(default) | ⇐   | 1 - network initiated         |                     |                           |
|                           | Spare               | 0000000                        | ⇐   | Spare                         |                     |                           |
| Call Reference            |                     |                                | ⇐   | Call Reference                |                     |                           |



## ISUP FGD to ANSI ISUP+: Suspend Timer Time-out



## Message/Signal Mappings

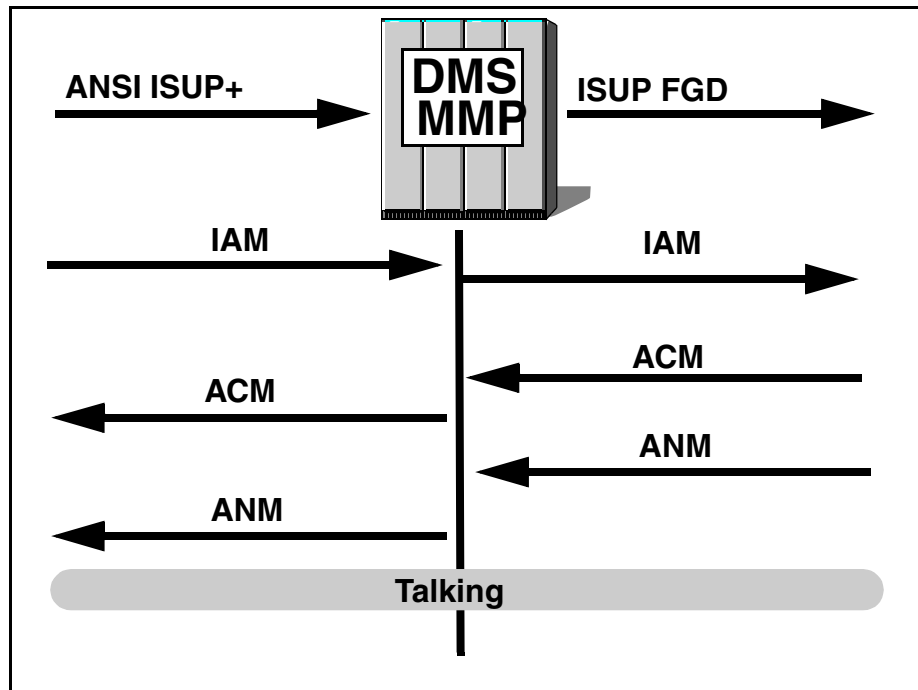
| ISUP Message            | Trigger | ISUP Message            |
|-------------------------|---------|-------------------------|
| SUS                     | ←       | SUS                     |
| REL                     | ←       | No Trigger <sup>a</sup> |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| RLC                     | ⇒       | No Mapping              |
| No Mapping              | ←       | RLC                     |

a. REL messages triggered by timeout of Suspend timer.

## ANSI ISUP+ To ISUP FGD

### Normal Call Setup

#### ANSI ISUP+ -> ISUP FGD Normal Call Setup



#### Message Mappings

| ANSI ISUP+ Message | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| IAM                | ⇒                 | IAM              |
| ACM                | ⇐                 | ACM              |
| ANM                | ⇐                 | ANM              |

## Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ IAM       |                       |                                                         | dir | ISUP FGD IAM                                                                                                   |                               |                                   |
|----------------------|-----------------------|---------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------|
| ANSI ISUP+ Parameter | Field in Parameter    | Field Value                                             |     | Field Value                                                                                                    | Field in Parameter            | ISUP FGD Parameter                |
| Nature of Connection | Satellite Indicator   | 00 - no satellite circuit in the connection             | ⇒   | 00 - no satellite circuit in the connection                                                                    | Satellite Indicator           | Nature of Connection <sup>a</sup> |
|                      |                       | 01 - one satellite circuit in the connection            | ⇒   | 01 - one satellite circuit in the connection                                                                   |                               |                                   |
|                      |                       | 10 - two satellite circuits in the connection           | ⇒   | 10 - two satellite circuits in the connection                                                                  |                               |                                   |
|                      |                       | 11 - three or more satellite circuits in the connection | ⇒   | 11 - three or satellite circuits in the connection                                                             |                               |                                   |
|                      | Continuity Check Ind. | 00 - continuity check not required                      | ⇒   | 00 - continuity check not required (Table TRKSGRP (COTREQ field) can override this mapping)                    | Continuity Check Ind.         |                                   |
|                      |                       | 01 - Continuity check required on this circuit          | ⇒   | 01 - continuity check required on this circuit (Table TRKSGRP (COTREQ field) can override this mapping)        |                               |                                   |
|                      |                       | 10 - continuity check performed on a previous circuit   | ⇒   | 10 - continuity check performed on a previous circuit (Table TRKSGRP (COTREQ field) can override this mapping) |                               |                                   |
|                      |                       | 11 - Spare, treated as 00                               | ⇒   | 00 - continuity check not required (Table TRKSGRP (COTREQ field) can override this mapping)                    |                               |                                   |
|                      | Echo Control Device   | 0 - outgoing half echo control device not included      | ⇒   | 0 - outgoing half echo suppressor not included                                                                 | Echo Control Device Indicator |                                   |
|                      |                       | 1 - Half echo control device included                   |     | 1 - outgoing half echo suppressor included                                                                     |                               |                                   |

## Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ IAM       |                                  |                                                                                | dir | ISUP FGD IAM                                                                  |                                               |                    |
|----------------------|----------------------------------|--------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------|-----------------------------------------------|--------------------|
| ANSI ISUP+ Parameter | Field in Parameter               | Field Value                                                                    |     | Field Value                                                                   | Field in Parameter                            | ISUP FGD Parameter |
| Forward Call Ind.    | National/International Call Ind. | 0 - Incoming National call                                                     | ⇒   | 0 - call to be treated as an national call                                    | National/International Call Ind. <sup>b</sup> | Forward Call Ind.  |
|                      |                                  | 1 -Incoming International call                                                 | ⇒   | 1 - call to be treated as an international call                               |                                               |                    |
|                      | End-to-End Method Indicator      | 00 - no end-to-end method available                                            | ⇒   | 00 - no end-to-end method available                                           | End-to-End Method Indicator                   |                    |
|                      |                                  | 01 - Pass along method available                                               | ⇒   | 01 - pass along method available                                              |                                               |                    |
|                      |                                  | 10 - SCCP method available                                                     | ⇒   | 10 - SCCP method available                                                    |                                               |                    |
|                      |                                  | 11 - SCCP and Pass along methods available                                     | ⇒   | 11 - pass along and SCCP methods available                                    |                                               |                    |
|                      | Interworking Ind.                | 0 - no interworking encountered                                                | ⇒   | 0 - no interworking encountered                                               | Interworking Ind.                             |                    |
|                      |                                  | 1 - interworking encountered                                                   | ⇒   | 1 - interworking encountered                                                  |                                               |                    |
|                      | IAM Segmentation Ind.            | 0 - no indication                                                              | ⇒   | 0 - no indication                                                             | IAM Segmentation indicator.                   |                    |
|                      |                                  | 1 - additional information is being sent in an unsolicited information message | ⇒   | 1 - additional information has been received and incorporated into call setup |                                               |                    |
|                      | ISDN User Part Ind.              | 0 - ISDN user part not used all the way                                        | ⇒   | 0 - ISDN user part not used all the way                                       | ISDN User Part Ind.                           |                    |
|                      |                                  | 1 - ISDN user part used all the way                                            | ⇒   | 1 - ISDN user part used all the way                                           |                                               |                    |
|                      | ISDN User Part Preference Ind.   | 00 - ISDN user part preferred all the way                                      | ⇒   | 00 - ISDN user part preferred all the way                                     | ISDN User Part Preference Ind.                |                    |
|                      |                                  | 01 - ISDN user part not required all the way                                   | ⇒   | 01 - ISDN user part not required all the way                                  |                                               |                    |
|                      |                                  | 10 - ISDN user part required all the way                                       | ⇒   | 10 - ISDN user part required all the way                                      |                                               |                    |
|                      |                                  | 11 - spare                                                                     | ⇒   | 00 - ISDN user part preferred all the way                                     |                                               |                    |
|                      | ISDN Access Ind.                 | 0 - origination access non-ISDN                                                | ⇒   | 0 - origination access non-ISDN                                               | ISDN Access Ind.                              |                    |
|                      |                                  | 1 - originating access ISDN                                                    | ⇒   | 1 - originating access ISDN                                                   |                                               |                    |
|                      | SCCP Method Indicator            | 00 - no indication                                                             | ⇒   | 00 - no indication                                                            | SCCP Method Indicator                         |                    |
|                      |                                  | 01 - connectionless method available                                           |     | 01 - connectionless method available                                          |                                               |                    |
|                      |                                  | 10 - connection oriented method available                                      |     | 10 - connection oriented method available                                     |                                               |                    |
|                      |                                  | 11 - connectionless and connection oriented method available                   |     | 11 - connectionless and connection oriented method available                  |                                               |                    |

## Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ IAM         |                                 |                                                                                                   | dir | ISUP FGD IAM                                |                    |                                 |
|------------------------|---------------------------------|---------------------------------------------------------------------------------------------------|-----|---------------------------------------------|--------------------|---------------------------------|
| ANSI ISUP+ Parameter   | Field in Parameter              | Field Value                                                                                       |     | Field Value                                 | Field in Parameter | ISUP FGD Parameter              |
| Calling Party Category | N/A                             | 00000000 - Calling Party's Category is unknown                                                    | ⇒   | 00000000 - calling party's category unknown | N/A                | Calling Party Category          |
|                        |                                 | 00000001- operator, language French                                                               | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00000010- operator, language English                                                              | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00000011- operator, language German                                                               | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00000100- operator, language Russian                                                              | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00000101- operator, language Spanish                                                              | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00000110 to 00001000 - available to Admin for selecting a particular language by mutual agreement | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00001001 - Reserved (See CCITT Rec. Q.104)                                                        | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00001010 - ordinary calling subscriber                                                            | ⇒   | 00001010 - ordinary calling subscriber      |                    |                                 |
|                        |                                 | 00001011 - calling subscriber with priority                                                       | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00001100 - data call                                                                              | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00001101 - test call                                                                              | ⇒   | 00001101 - test call                        |                    |                                 |
|                        |                                 | 00001110 - spare                                                                                  | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | 00001111 - payphone                                                                               | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
|                        |                                 | All other values                                                                                  | ⇒   | 00000000 - calling party's category unknown |                    |                                 |
| User Service Info.     | Information Transfer Capability | 00000 - Speech                                                                                    | ⇒   | 00000 - Speech                              | N/A                | Transmission Medium Requirement |
|                        |                                 | 01000 - Unrestricted Digital info.                                                                | ⇒   | 01000 - 64kbit/s Unrestricted               |                    |                                 |
|                        |                                 | 10000 - 3.1 kHz Audio                                                                             | ⇒   | 10000 - 3.1 kHz Audio                       |                    |                                 |
|                        |                                 | All other values                                                                                  | ⇒   | (BCNI treatment)                            |                    |                                 |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM       |                        |                                                        | dir | ISUP FGD IAM                                                                                                                    |                        |                                                                                                                                                      |
|----------------------|------------------------|--------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANSI ISUP+ Parameter | Field in Parameter     | Field Value                                            |     | Field Value                                                                                                                     | Field in Parameter     | ISUP FGD Parameter                                                                                                                                   |
| Called Party Number  | Odd/Even Ind.          | 0 - even number of address signals                     | ⇒   | Encoding is based on the number of CdPN digits to encode after translations are performed.                                      | Odd/Even Ind.          | Called Party Number ( <i>Fields within this parameter will be set based on translations unless there is only one possible value for that field</i> ) |
|                      |                        | 1 - odd number of address signals                      |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      | Nature of Address Ind. | 0000000 - spare                                        | ⇒   | (DMS-MMP translations determines the Nature of Address value that is outpulsed.) [ Datafill as described in “ NOA/TON Mapping”] | Nature of Address Ind. |                                                                                                                                                      |
|                      |                        | 0000001 - subscriber number                            |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 0000010 - spare, reserved for national use             |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 0000011 - national (significant) number                |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 0000100 - international number                         |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 0000101 to 1110001 - spare                             |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 1110010 - 1110110 - Reserved                           |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 1110111 - test line test code                          |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 1111000 to 1111110 - reserved for network specific use |     |                                                                                                                                 |                        |                                                                                                                                                      |
|                      |                        | 1111111 - spare                                        |     |                                                                                                                                 |                        |                                                                                                                                                      |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM       |                          |                                                                                                             | dir | ISUP FGD IAM                                                                                                |                          |                     |
|----------------------|--------------------------|-------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|
| ANSI ISUP+ Parameter | Field in Parameter       | Field Value                                                                                                 |     | Field Value                                                                                                 | Field in Parameter       | ISUP FGD Parameter  |
| Called Party Number  | Numbering Plan Indicator | 000 - Unknown                                                                                               | ⇒   | 000 - Unknown                                                                                               | Numbering Plan Indicator | Called Party Number |
|                      |                          | 001 - ISDN (telephony) numbering plan                                                                       | ⇒   | 001 - ISDN numbering plan                                                                                   |                          |                     |
|                      |                          | 010 - spare                                                                                                 | ⇒   | 000 - Unknown                                                                                               |                          |                     |
|                      |                          | 011 - reserved (ITU-T: Data numbering plan)                                                                 | ⇒   | 000 - Unknown                                                                                               |                          |                     |
|                      |                          | 100 - reserved (ITU-T: Telex numbering plan)                                                                | ⇒   | 000 - Unknown                                                                                               |                          |                     |
|                      |                          | 101 - Private numbering plan                                                                                | ⇒   | 101 - Private numbering plan                                                                                |                          |                     |
|                      |                          | All other values                                                                                            | ⇒   | 000 - Unknown                                                                                               |                          |                     |
|                      | Address Signals          | 0000 - digit 0                                                                                              | ⇒   | Determined by MMP translations.                                                                             | Address Signals          |                     |
|                      |                          | 0001 - digit 1                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0010 - digit 2                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0011 - digit 3                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0100 - digit 4                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0101 - digit 5                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0110 - digit 6                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 0111 - digit 7                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 1000 - digit 8                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 1001 - digit 9                                                                                              |     |                                                                                                             |                          |                     |
|                      |                          | 1111 - ST (Reserved)                                                                                        |     |                                                                                                             |                          |                     |
|                      | Filler                   | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | ⇒   | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filler                   |                     |

## Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ IAM       |                        |                                                        | dir | ISUP FGD IAM                                                |                        |                      |
|----------------------|------------------------|--------------------------------------------------------|-----|-------------------------------------------------------------|------------------------|----------------------|
| ANSI ISUP+ Parameter | Field in Parameter     | Field Value                                            |     | Field Value                                                 | Field in Parameter     | ISUP FGD Parameter   |
| Calling Party Number | Odd/Even Ind.          | 0 - even number of address signals                     | ⇒   | Encoding is based on the number of CgPN digits to encode.   | Odd/Even Ind.          | Calling Party Number |
|                      |                        | 1 - odd number of address signals                      |     |                                                             |                        |                      |
|                      | Nature of Address Ind. | 0000000 - spare                                        | ⇒   | 0000011 - unique national (significant) number <sup>c</sup> | Nature of Address Ind. |                      |
|                      |                        | 0000001 - unique subscriber number                     |     | 0000001 - unique subscriber number                          |                        |                      |
|                      |                        | 0000010 - spare, reserved for national use             |     | 0000011 - unique national (significant) number              |                        |                      |
|                      |                        | 0000011 - unique national (significant) number         |     | 0000011 - unique national (significant) number              |                        |                      |
|                      |                        | 0000100 - unique international number                  |     | 0000100 - unique international number                       |                        |                      |
|                      |                        | 0000101 to 1110000 - spare                             |     | 0000011 - unique national (significant) number              |                        |                      |
|                      |                        | 1110001 - non-unique subscriber number                 |     | 1110001 - non-unique subscriber number                      |                        |                      |
|                      |                        | 1110010 - spare, reserved for national use             |     | 0000011 - unique national (significant) number              |                        |                      |
|                      |                        | 1110011 - non-unique national (significant) number     |     | 1110011 - non-unique national (significant) number          |                        |                      |
|                      |                        | 1110100 - non-unique international number              |     | 1110100 - non-unique international number                   |                        |                      |
|                      |                        | 1110101 - spare                                        |     | 1110011 - non-unique national (significant) number          |                        |                      |
|                      |                        | 1110110 - spare                                        |     | 1110011 - non-unique national (significant) number          |                        |                      |
|                      |                        | 1110111 - test line test code                          |     | 1110111 - test line test code                               |                        |                      |
|                      |                        | 1111000 to 1111110 - reserved for network specific use |     | 1110011 - non-unique national (significant) number          |                        |                      |
|                      |                        | 1111111 - spare                                        |     | 1110011 - non-unique national (significant) number          |                        |                      |



## Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ IAM                        |                                      |                                                                                                             | dir                                   | ISUP FGD IAM                                                                                                |                                      |                      |
|---------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------|
| ANSI ISUP+ Parameter                  | Field in Parameter                   | Field Value                                                                                                 |                                       | Field Value                                                                                                 | Field in Parameter                   | ISUP FGD Parameter   |
| Calling Party Number                  | Numbering Plan Ind.                  | 000 - Unknown                                                                                               | ⇒                                     | 000 - Unknown                                                                                               | Numbering Plan Indicator             | Calling Party Number |
|                                       |                                      | 001 - ISDN (telephony) numbering plan                                                                       | ⇒                                     | 001 - ISDN numbering plan                                                                                   |                                      |                      |
|                                       |                                      | 010 - spare                                                                                                 | ⇒                                     | 000 - Unknown                                                                                               |                                      |                      |
|                                       |                                      | 011 - reserved (ITU-T: Data numbering plan)                                                                 | ⇒                                     | 000 - Unknown                                                                                               |                                      |                      |
|                                       |                                      | 100 - reserved (ITU-T: Telex numbering plan)                                                                | ⇒                                     | 000 - Unknown                                                                                               |                                      |                      |
|                                       |                                      | 101 - Private numbering plan                                                                                | ⇒                                     | 101 - Private numbering plan                                                                                |                                      |                      |
|                                       |                                      | All other values                                                                                            | ⇒                                     | 000 - Unknown                                                                                               |                                      |                      |
|                                       | Address Presentation Restricted Ind. | 00 - presentation allowed                                                                                   | ⇒                                     | 00 - presentation allowed                                                                                   | Address Presentation Restricted Ind. |                      |
|                                       |                                      | 01 - presentation restricted (default)                                                                      |                                       | 01 - presentation restricted (default)                                                                      |                                      |                      |
|                                       |                                      | All other values                                                                                            | ⇒                                     | 01 - presentation restricted (default)                                                                      |                                      |                      |
|                                       | Screening Indicator                  |                                                                                                             | ⇒                                     | No Mapping                                                                                                  |                                      |                      |
|                                       | Address Signals                      | 0000 - digit 0                                                                                              | ⇒                                     | 0000 - digit 0                                                                                              | Address Signals                      |                      |
|                                       |                                      | 0001 - digit 1                                                                                              |                                       | 0001 - digit 1                                                                                              |                                      |                      |
|                                       |                                      | 0010 - digit 2                                                                                              |                                       | 0010 - digit 2                                                                                              |                                      |                      |
|                                       |                                      | 0011 - digit 3                                                                                              |                                       | 0011 - digit 3                                                                                              |                                      |                      |
|                                       |                                      | 0100 - digit 4                                                                                              |                                       | 0100 - digit 4                                                                                              |                                      |                      |
|                                       |                                      | 0101 - digit 5                                                                                              |                                       | 0101 - digit 5                                                                                              |                                      |                      |
|                                       |                                      | 0110 - digit 6                                                                                              |                                       | 0110 - digit 6                                                                                              |                                      |                      |
|                                       |                                      | 0111 - digit 7                                                                                              |                                       | 0111 - digit 7                                                                                              |                                      |                      |
|                                       |                                      | 1000 - digit 8                                                                                              |                                       | 1000 - digit 8                                                                                              |                                      |                      |
|                                       |                                      | 1001 - digit 9                                                                                              |                                       | 1001 - digit 9                                                                                              |                                      |                      |
|                                       | Filler                               | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | ⇒                                     | In case of an odd number of address signals, the filler code 0000 is inserted after the last address signal | Filler                               |                      |
| Access Transport                      |                                      | ⇒                                                                                                           | Access Transport                      |                                                                                                             |                                      |                      |
| Business Group                        |                                      | ⇒                                                                                                           | Business Group                        |                                                                                                             |                                      |                      |
| Call Reference                        |                                      | ⇒                                                                                                           | Call Reference                        |                                                                                                             |                                      |                      |
| Carrier Identification Code Parameter |                                      | ⇒                                                                                                           | Carrier Identification Code Parameter |                                                                                                             |                                      |                      |
| Carrier Selection Information         |                                      | ⇒                                                                                                           | Carrier Selection                     |                                                                                                             |                                      |                      |
| Charge Number                         |                                      | ⇒                                                                                                           | Charge Number                         |                                                                                                             |                                      |                      |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM                 |                             |                          | dir | ISUP FGD IAM                   |                             |                    |
|--------------------------------|-----------------------------|--------------------------|-----|--------------------------------|-----------------------------|--------------------|
| ANSI ISUP+ Parameter           | Field in Parameter          | Field Value              |     | Field Value                    | Field in Parameter          | ISUP FGD Parameter |
| Connection Request             |                             |                          | ⇒   | Connection Request             |                             |                    |
| Egress Service                 |                             |                          | ⇒   | No mapping                     |                             |                    |
| Generic Address                |                             |                          | ⇒   | Generic Address                |                             |                    |
| Generic Digits                 |                             |                          | ⇒   | Generic digits                 |                             |                    |
| Hop Counter                    | Hop Counter Parameter Field | 00000 to 11111 - 0 to 31 | ⇒   | Described in “ Hop Counter”.   | Hop Counter Parameter Field | Hop Counter        |
| Information Request Indicators |                             |                          | ⇒   | Information Request Indicators |                             |                    |
| Jurisdiction                   |                             |                          | ⇒   | Jurisdiction Information       |                             |                    |
| Network Transport              |                             |                          | ⇒   | Network Transport              |                             |                    |
| Original Called Number         |                             |                          | ⇒   | Original Called Number         |                             |                    |
| Originating Line Information   |                             |                          | ⇒   | Originating Line Information   |                             |                    |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM       |                             |                                                        | dir | ISUP FGD IAM                                       |                             |                                 |
|----------------------|-----------------------------|--------------------------------------------------------|-----|----------------------------------------------------|-----------------------------|---------------------------------|
| ANSI ISUP+ Parameter | Field in Parameter          | Field Value                                            |     | Field Value                                        | Field in Parameter          | ISUP FGD Parameter              |
| Redirecting Number   | Odd/Even Indicator          | 0 - even number of address signals                     | ⇒   | 0 - even number of address signals                 | Odd/Even Indicator          | Redirecting Number <sup>d</sup> |
|                      |                             | 1 - odd number of address signals                      | ⇒   | 1 - odd number of address signals                  |                             |                                 |
|                      | Nature of Address Indicator | 0000000 - spare                                        | ⇒   | 0000011 - unique national (significant) number     | Nature of Address Indicator |                                 |
|                      |                             | 0000001 - unique subscriber number                     | ⇒   | 0000001 - unique subscriber number                 |                             |                                 |
|                      |                             | 0000010 - spare, reserved for national use             | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 0000011 - unique national (significant) number         | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 0000100 - unique international number                  | ⇒   | 0000100 - unique international number              |                             |                                 |
|                      |                             | 0000101 to 1110000 - spare                             | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 1110001 - non-unique subscriber number                 | ⇒   | 1110001 - non-unique subscriber number             |                             |                                 |
|                      |                             | 1110010 - spare, reserved for national use             | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 1110011 - non-unique national (significant) number     | ⇒   | 1110011 - non-unique national (significant) number |                             |                                 |
|                      |                             | 1110100 - non-unique international number              | ⇒   | 1110100 - non-unique international number          |                             |                                 |
|                      |                             | 1110101 - spare                                        | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 1110110 - spare                                        | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 1110111 - test line test code                          | ⇒   | 1110111 - test line test code                      |                             |                                 |
|                      |                             | 1111000 to 1111110 - reserved for network specific use | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |
|                      |                             | 1111111 - spare                                        | ⇒   | 0000011 - unique national (significant) number     |                             |                                 |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM               |                                      |                                                                 | dir | ISUP FGD IAM                                                    |                                    |                    |                     |                    |
|------------------------------|--------------------------------------|-----------------------------------------------------------------|-----|-----------------------------------------------------------------|------------------------------------|--------------------|---------------------|--------------------|
| ANSI ISUP+ Parameter         | Field in Parameter                   | Field Value                                                     |     | Field Value                                                     | Field in Parameter                 | ISUP FGD Parameter |                     |                    |
| Redirecting Number           | Numbering Plan Indicator             | 000 - Unknown                                                   | ⇒   | 001 - ISDN (telephony) numbering plan                           | Numbering Plan                     | Redirecting Number |                     |                    |
|                              |                                      | 001 - ISDN (telephony) numbering plan                           | ⇒   | 001 - ISDN (telephony) numbering plan                           |                                    |                    |                     |                    |
|                              |                                      | 010 - spare                                                     | ⇒   | 001 - ISDN (telephony) numbering plan                           |                                    |                    |                     |                    |
|                              |                                      | 011 - reserved (ITU-T: Data numbering plan)                     | ⇒   | 001 - ISDN (telephony) numbering plan                           |                                    |                    |                     |                    |
|                              |                                      | 100 - reserved (ITU-T: Telex numbering plan)                    | ⇒   | 001 - ISDN (telephony) numbering plan                           |                                    |                    |                     |                    |
|                              |                                      | 101 - Private numbering plan                                    | ⇒   | 101 - private numbering plan                                    |                                    |                    |                     |                    |
|                              |                                      | All other values                                                | ⇒   | 001 - ISDN (telephony) numbering plan                           |                                    |                    |                     |                    |
|                              | Address Presentation Restricted Ind. | 00 - presentation allowed                                       | ⇒   | 00 - presentation allowed                                       | Presentation Restriction Indicator |                    |                     |                    |
|                              |                                      | 01 - presentation restricted (default)                          |     | 01 - presentation restricted (default)                          |                                    |                    |                     |                    |
|                              |                                      | All other values                                                |     | 01 - presentation restricted (default)                          |                                    |                    |                     |                    |
|                              | Address Signal                       | 0000 - digit 0                                                  | ⇒   | 0000 - digit 0                                                  | Address Information                |                    |                     |                    |
|                              |                                      | 0001 - digit 1                                                  | ⇒   | 0001 - digit 1                                                  |                                    |                    |                     |                    |
|                              |                                      | 0010 - digit 2                                                  | ⇒   | 0010 - digit 2                                                  |                                    |                    |                     |                    |
|                              |                                      | 0011 - digit 3                                                  | ⇒   | 0011 - digit 3                                                  |                                    |                    |                     |                    |
|                              |                                      | 0100 - digit 4                                                  | ⇒   | 0100 - digit 4                                                  |                                    |                    |                     |                    |
|                              |                                      | 0101 - digit 5                                                  | ⇒   | 0101 - digit 5                                                  |                                    |                    |                     |                    |
|                              |                                      | 0110 - digit 6                                                  | ⇒   | 0110 - digit 6                                                  |                                    |                    |                     |                    |
|                              |                                      | 0111 - digit 7                                                  | ⇒   | 0111 - digit 7                                                  |                                    |                    |                     |                    |
|                              |                                      | 1000 - digit 8                                                  | ⇒   | 1000 - digit 8                                                  |                                    |                    |                     |                    |
|                              |                                      | 1001 - digit 9                                                  | ⇒   | 1001 - digit 9                                                  |                                    |                    |                     |                    |
|                              | Filler                               | 0000 (inserted after last address signal if digit count is odd) | ⇒   | 0000 (inserted after last address signal if digit count is odd) | Filler                             |                    |                     |                    |
|                              |                                      |                                                                 |     | ⇒                                                               | 00 - user provided, not screened   |                    | Screening Indicator | Redirecting Number |
|                              | Transit Network Selection            |                                                                 |     | ⇒                                                               | Transit Network Selection          |                    |                     |                    |
| Redirection Information      |                                      |                                                                 | ⇒   | Redirection information                                         |                                    |                    |                     |                    |
| Service Activation Parameter |                                      |                                                                 | ⇒   | Service Activation Parameter                                    |                                    |                    |                     |                    |
| Service Code Indicator       |                                      |                                                                 | ⇒   | Service Code                                                    |                                    |                    |                     |                    |
| Special Processing Request   |                                      |                                                                 | ⇒   | Special Processing Request                                      |                                    |                    |                     |                    |

**Parameter Mappings for IAM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ IAM       |                    |             | dir | ISUP FGD IAM |                    |                    |
|----------------------|--------------------|-------------|-----|--------------|--------------------|--------------------|
| ANSI ISUP+ Parameter | Field in Parameter | Field Value |     | Field Value  | Field in Parameter | ISUP FGD Parameter |
| Transaction Request  |                    |             | ⇒   | No Mapping   |                    |                    |

- a. Please refer to Section “Nature of Connection Mapping for IAM” on page 691.[]
- b. Please refer to Section “Additional SS7 procedures” on page 683.
- c. Field is set according to the length of calling party number
- d. The redirection information parameter is to be present with the redirection counter greater than 1

## Parameter Mapping for ACM - ANSI ISUP+ to ISUP FGD Interworking

| ANSI ISUP+ ACM       |                                   |                                                                               | dir | ISUP FGD ACM                                                                  |                                   |                    |
|----------------------|-----------------------------------|-------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------|-----------------------------------|--------------------|
| ANSI ISUP+ Parameter | Field in Parameter                | Field Value                                                                   |     | Field Value                                                                   | Field in Parameter                | ISUP FGD Parameter |
| Backward Call Ind.   | Charge Indicator                  | 00 - no indication                                                            | ⇐   | 00 - no indication                                                            | Charge Indicator                  | Backward Call Ind. |
|                      |                                   | 01 - no charge                                                                | ⇐   | 01 - no charge                                                                |                                   |                    |
|                      |                                   | 10 -charge                                                                    | ⇐   | 10 - charge                                                                   |                                   |                    |
|                      |                                   | 00 - no indication                                                            | ⇐   | 11 - spare                                                                    |                                   |                    |
|                      | Called Party's Status Indicator   | 00 - no indication                                                            | ⇐   | 00 - no indication                                                            | Called Party's Status Indicator   |                    |
|                      |                                   | 01 - subscriber free                                                          | ⇐   | 01 - subscriber free                                                          |                                   |                    |
|                      |                                   | 10 - connect when free                                                        | ⇐   | 10 - connect when free                                                        |                                   |                    |
|                      |                                   | 11 - excessive delay                                                          | ⇐   | 11 - excessive delay                                                          |                                   |                    |
|                      | Called Party's Category Indicator | 00 - no indication                                                            | ⇐   | 00 - no indication                                                            | Called Party's Category Indicator |                    |
|                      |                                   | 01 - ordinary subscriber                                                      | ⇐   | 01 - ordinary (non-payphone) subscriber                                       |                                   |                    |
|                      |                                   | 10 - payphone                                                                 | ⇐   | 10 - payphone                                                                 |                                   |                    |
|                      |                                   | 00 - no indication                                                            | ⇐   | 11 - spare                                                                    |                                   |                    |
|                      | End-to-End Method Indicator       | 00 - no end-to-end method available                                           | ⇐   | 00 - no end-to-end method available                                           | End-to-End Method Indicator       |                    |
|                      |                                   | 01 - pass along method available                                              | ⇐   | 01 - pass along method available                                              |                                   |                    |
|                      |                                   | 10 - SCCP method available                                                    | ⇐   | 10 - SCCP method available                                                    |                                   |                    |
|                      |                                   | 11 - pass along and SCCP methods available                                    | ⇐   | 11 - pass along and SCCP methods available                                    |                                   |                    |
|                      | Interworking Ind.                 | 0 - no interworking encountered                                               | ⇐   | 0 - no interworking encountered                                               | Interworking Ind.                 |                    |
|                      |                                   | 1 - interworking encountered                                                  | ⇐   | 1 - interworking encountered                                                  |                                   |                    |
|                      | IAM Segmentation Ind.             | 0 - no indication                                                             | ⇐   | 0 - no indication                                                             | IAM Segmentation Ind.             |                    |
|                      |                                   | 1 - additional information has been received and incorporated into call setup | ⇐   | 1 - additional information has been received and incorporated into call setup |                                   |                    |
|                      | ISDN User Part Indicator          | 0 - ISDN User Part not used all the way                                       | ⇐   | 0 - ISDN User Part not used all the way                                       | ISDN User Part Indicator          |                    |
|                      |                                   | 1 - ISDN User Part used all the way                                           | ⇐   | 1 - ISDN User Part used all the way                                           |                                   |                    |
|                      | Holding Ind.                      | 0 - holding not required                                                      | ⇐   | 0 - holding not required                                                      | Holding Ind.                      |                    |
|                      |                                   |                                                                               | ⇐   | 1 - holding required                                                          |                                   |                    |

**Parameter Mapping for ACM - ANSI ISUP+ to ISUP FGD Interworking**

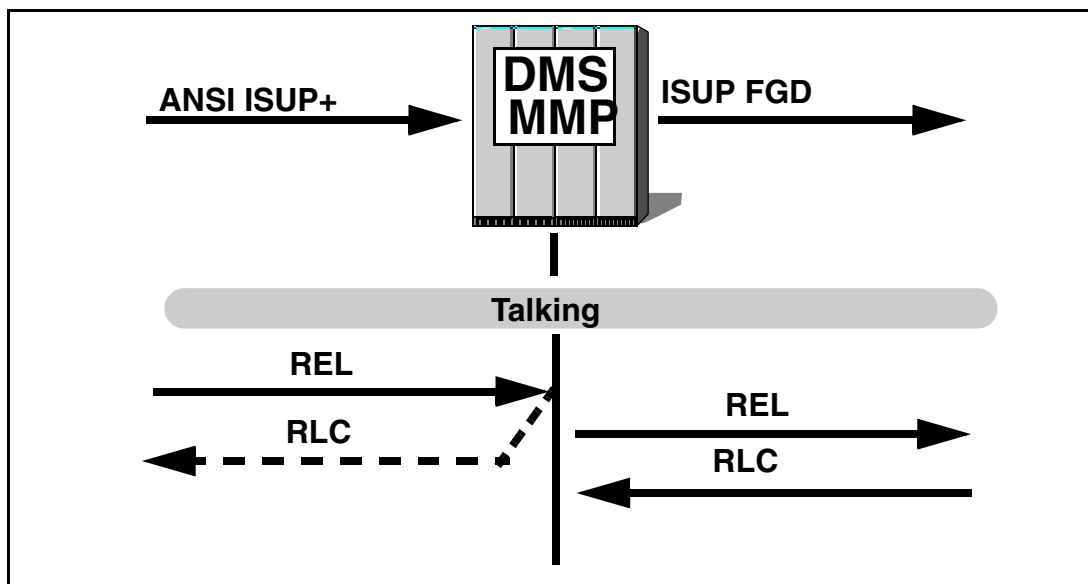
| ANSI ISUP+ ACM           |                                  |                                                                                                 | dir | ISUP FGD ACM                                                  |                                  |                          |  |  |
|--------------------------|----------------------------------|-------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------|----------------------------------|--------------------------|--|--|
| ANSI ISUP+ Parameter     | Field in Parameter               | Field Value                                                                                     |     | Field Value                                                   | Field in Parameter               | ISUP FGD Parameter       |  |  |
| Backward Call Indicators | ISDN Access Ind.                 | 0 - terminating access non-ISDN                                                                 | ⇐   | 0 - terminating access non-ISDN                               | ISDN Access Ind.                 | Backward Call Indicators |  |  |
|                          |                                  | 1 - terminating access ISDN                                                                     | ⇐   | 1 - terminating access ISDN                                   |                                  |                          |  |  |
|                          | Echo Control Device Indicator    | 0 - incoming half echo control device not included                                              | ⇐   | 0 - incoming half echo control device not included            | Echo Control Device Indicator    |                          |  |  |
|                          |                                  | 1 - incoming half echo control device included                                                  | ⇐   | 1 - incoming half echo control device included                |                                  |                          |  |  |
|                          | SCCP Method Ind.                 | 00 - no indication                                                                              | ⇐   | 00 - no indication                                            | SCCP Method Ind.                 |                          |  |  |
|                          |                                  | 01 - connectionless method available (No procedure specified for U.S. networks)                 | ⇐   | 01 - connectionless method available                          |                                  |                          |  |  |
|                          |                                  | 10 - connection oriented method available (No procedure specified for U.S. networks)            | ⇐   | 10 - connection oriented method available                     |                                  |                          |  |  |
|                          |                                  | 11 - connectionless and connection oriented available (No procedure specified for U.S networks) | ⇐   | 11 - connectionless and connection oriented methods available |                                  |                          |  |  |
|                          | Access Transport                 |                                                                                                 |     | ⇐                                                             | Access Transport                 |                          |  |  |
|                          | Optional Backward Call Indicator |                                                                                                 |     | ⇐                                                             | Optional Backward Call Indicator |                          |  |  |
| Cause Indicators         |                                  |                                                                                                 | ⇐   | Cause Indicators                                              |                                  |                          |  |  |

**Parameter Mapping for ANM - ANSI ISUP+ to ISUP FGD Interworking**

| ANSI ISUP+ ANM           |                    |             | dir | ISUP FGD ANM             |                    |                    |
|--------------------------|--------------------|-------------|-----|--------------------------|--------------------|--------------------|
| ANSI ISUP+ Parameter     | Field in Parameter | Field Value |     | Field Value              | Field in Parameter | ISUP FGD Parameter |
| Backward Call Indicators |                    |             | ⇐   | Backward Call Indicators |                    |                    |
| Access Transport         |                    |             | ⇐   | Access Transport         |                    |                    |

## Normal Call Clearing

ANSI ISUP+ -> ISUP FGD normal call clearing



## Calling Party Clear Message Mapping

| ANSI ISUP+ Message | Trigger Direction | ISUP FGD Message        |
|--------------------|-------------------|-------------------------|
| REL                | ⇒                 | REL                     |
| RLC                | ⇐                 | No Trigger <sup>a</sup> |
| No Mapping         | ⇐                 | RLC                     |

*a. - RLC triggered by receipt of REL message.*

## Calling Party Clear Parameter Mapping

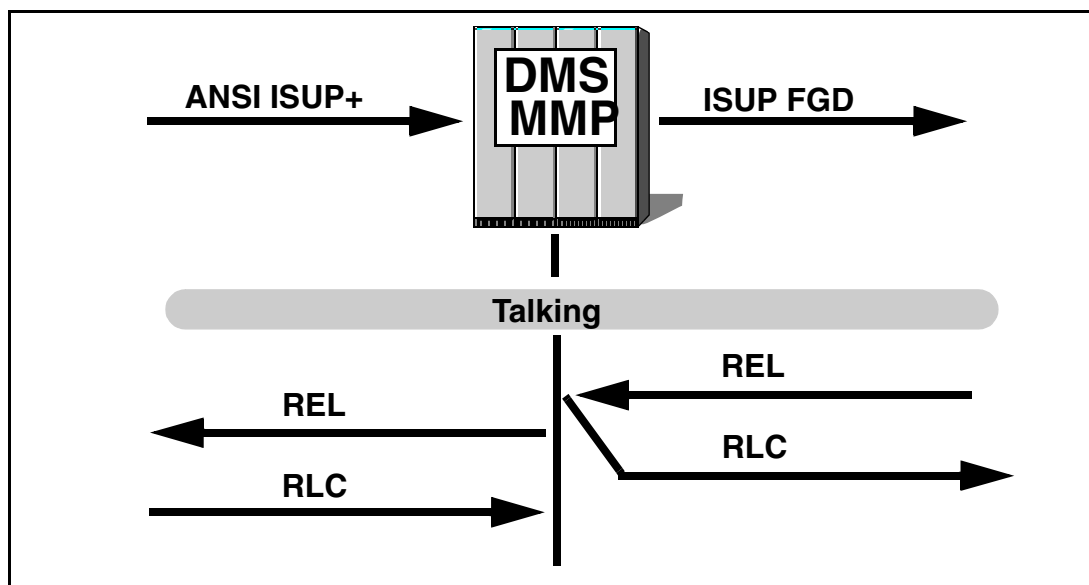
| ANSI ISUP+ REL             |                    |             | dir | ISUP FGD REL                                                              |                    |                |
|----------------------------|--------------------|-------------|-----|---------------------------------------------------------------------------|--------------------|----------------|
| ANSI ISUP+ Param           | Field in Parameter | Field Value |     | Field Value                                                               | Field in Parameter | ISUP FGD Param |
| Cause Indicators           |                    |             | ⇒   | Cause Indicators [ Mapping as described in “REL Generation and Mapping” ] |                    |                |
| Access Transport           |                    |             | ⇒   | Access Transport                                                          |                    |                |
| Automatic Congestion Level |                    |             | ⇒   | No Mapping                                                                |                    |                |
| Call Reference             |                    |             | ⇒   | Call Reference                                                            |                    |                |
| Charge number              |                    |             | ⇒   | Charge Number                                                             |                    |                |



### Calling Party Clear Parameter Mapping

| ANSI ISUP+ REL   |                    |             | dir | ISUP FGD REL    |                    |                |
|------------------|--------------------|-------------|-----|-----------------|--------------------|----------------|
| ANSI ISUP+ Param | Field in Parameter | Field Value |     | Field Value     | Field in Parameter | ISUP FGD Param |
| Generic Address  |                    |             | ⇒   | Generic Address |                    |                |

### ANSI ISUP+ -> ISUP FGD: Called Party Clear



| ANSI ISUP+ Message      | Trigger Direction | ISUP FGD Message |
|-------------------------|-------------------|------------------|
| REL                     | ⇐                 | REL              |
| No Trigger <sup>a</sup> | ⇒                 | RLC              |
| RLC                     | ⇒                 | No Mapping       |

a. RLC triggered by receipt of REL message.

### Called Party Clear Message Mapping

#### Parameter Mapping for backward REL - ANSI ISUP+ to ISUP FGD Interworking

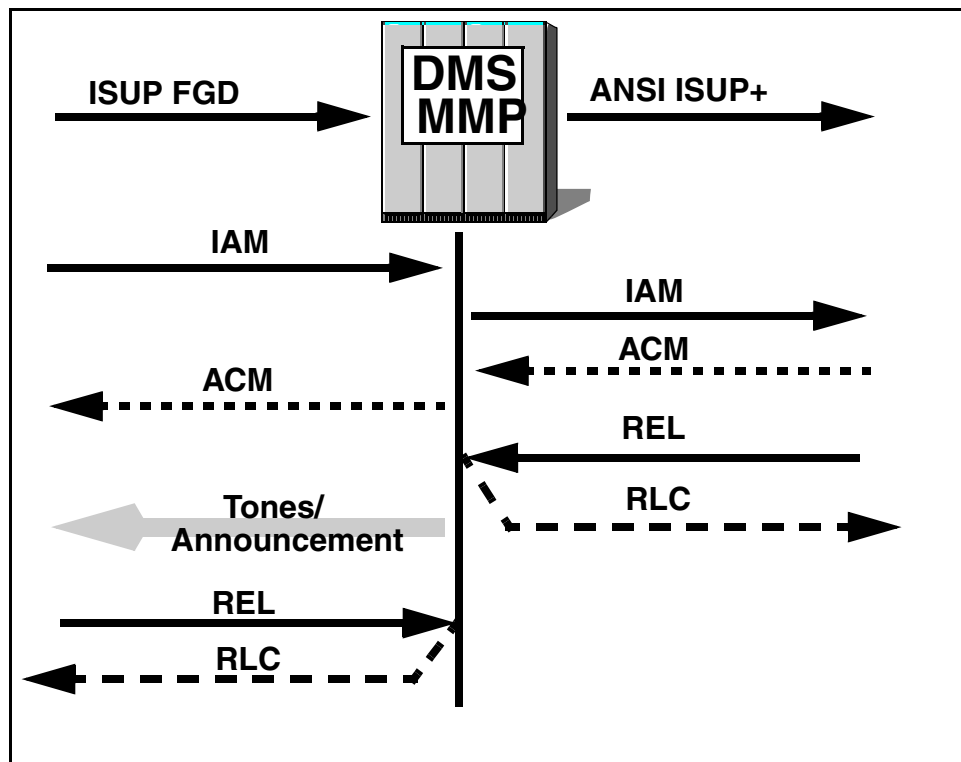
| ANSI ISUP+ REL                                                            |       |             | dir | ISUP FGD REL     |       |           |
|---------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|-----------|
| Parameter                                                                 | Field | Field Value |     | Field Value      | Field | Parameter |
| Cause Indicators [ Mapping as described in "REL Generation and Mapping" ] |       |             | ⇐   | Cause Indicators |       |           |

| ANSI ISUP+ REL   |       |             | dir | ISUP FGD REL               |       |           |
|------------------|-------|-------------|-----|----------------------------|-------|-----------|
| Parameter        | Field | Field Value |     | Field Value                | Field | Parameter |
| Access Transport |       |             | ←   | Access Transport           |       |           |
| No Mapping       |       |             | ←   | Automatic Congestion Level |       |           |

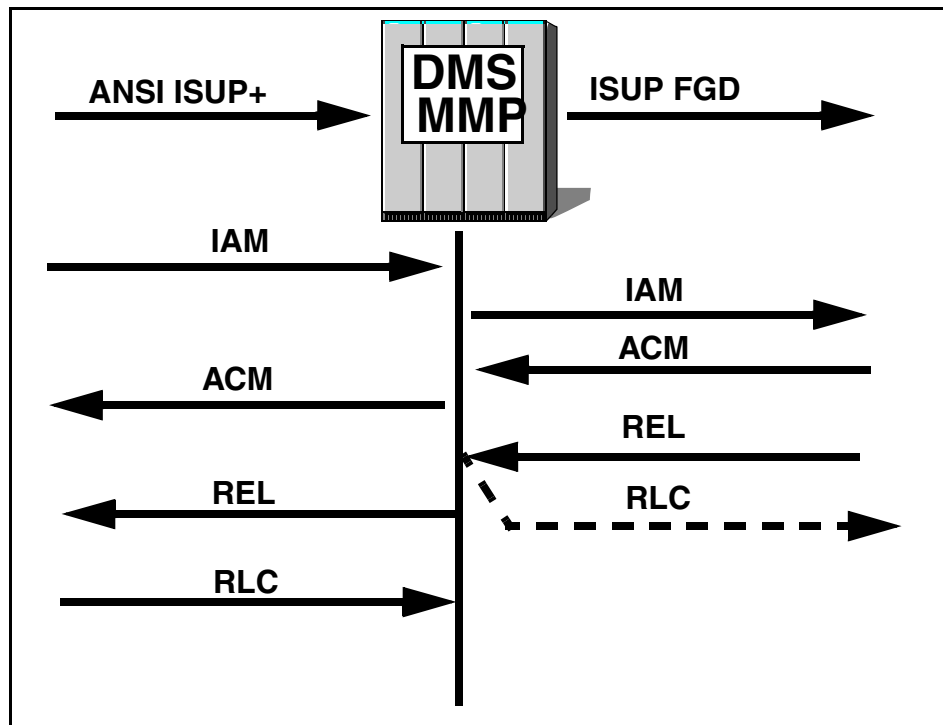
### Unsuccessful Call Attempt

Please refer to Section “REL Generation and Mapping” on page 691.

#### ANSI ISUP+ -> ISUP FGD Unsuccessful Call Attempt - Tones/Announcements

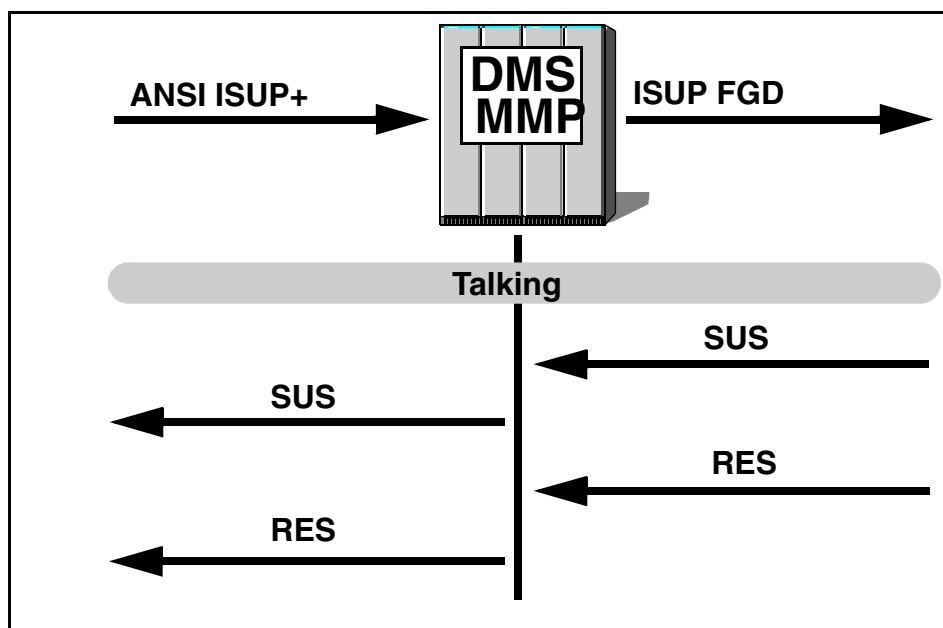


## ANSI ISUP+ -&gt; ISUP FGD Unsuccessful Call Attempt - Generation of Release Message



## Suspend/Resume

## ANSI ISUP+ -&gt; ISUP FGD Suspend with Resume



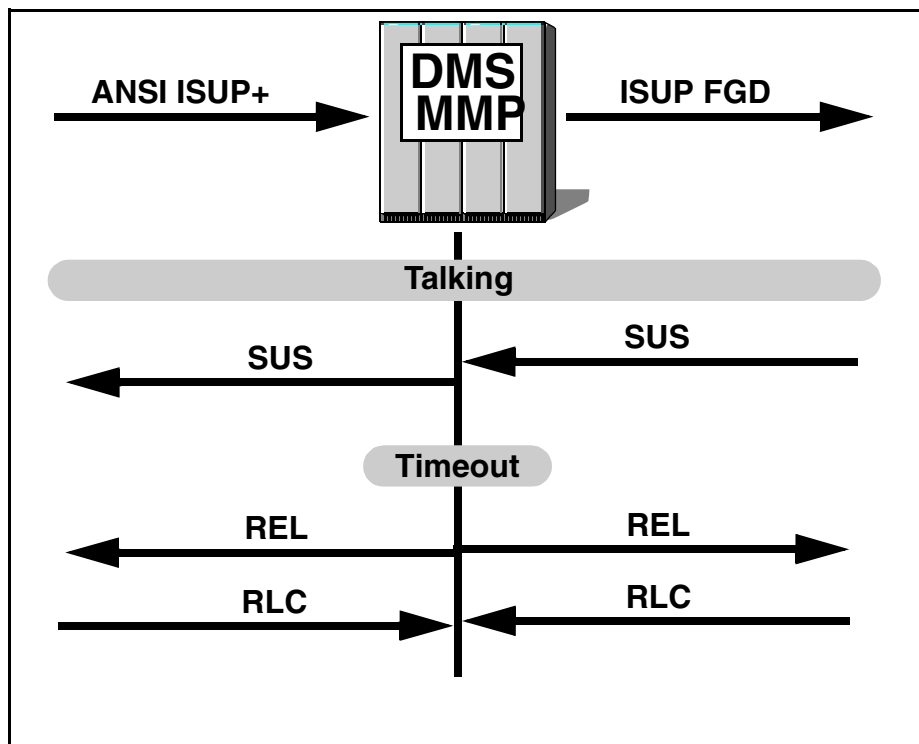
**Message/Signal Mappings**

| ISUP Message | Trigger | ISUP Message |
|--------------|---------|--------------|
| SUS          | ←       | SUS          |
| RES          | ←       | RES          |

**Message Parameter Field Mappings**

| ANSI ISUP+ SUS/RES        |                     |                               | dir | ISUP FGD SUS/RES              |                     |                           |
|---------------------------|---------------------|-------------------------------|-----|-------------------------------|---------------------|---------------------------|
| ANSI ISUP+ Param          | Field in Parameter  | Field Value                   |     | Field Value                   | Field in Parameter  | ISUP FGD Param            |
| Suspend/Resume Indicators | Suspend/Resume Ind. | 0 - ISDN subscriber initiated | ⇐   | 0 - ISDN subscriber initiated | Suspend/Resume Ind. | Suspend/Resume Indicators |
|                           |                     | 1 - network initiated         | ⇐   | 1 - network initiated         |                     |                           |
|                           | Spare               | 0000000                       | ⇐   | Spare                         |                     |                           |

## ANSI ISUP+ to ISUP FGD: Suspend Timer Time-out



## Message/Signal Mappings

| ANSI ISUP+ Message      | Trigger | ISUP FGD Message        |
|-------------------------|---------|-------------------------|
| SUS                     | ←       | SUS                     |
| No Trigger <sup>1</sup> | ⇒       | REL                     |
| REL                     | ←       | No Trigger <sup>2</sup> |
| No Mapping              | ←       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

<sup>1</sup> - REL triggered by time-out of Suspend timer.

<sup>2</sup> - REL triggered by time-out of Suspend timer.

## Overlap Call Setup

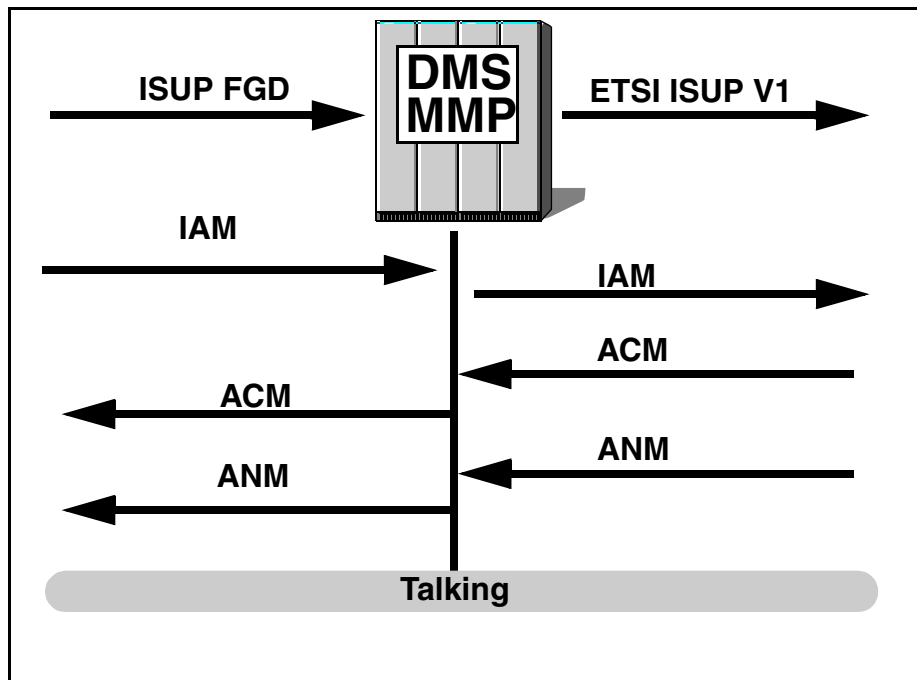
ANSI ISUP+ and ISUP FGD do not support overlap

## ISUP FGD -> ETSI ISUP V1 Interworking

### Normal Call Setup

The following tables show the ISUP FGD to ETSI ISUP V1 detailed message mapping. They include all the possible ISUP FGD parameters, and details how they are mapped to their corresponding ETSI ISUP V1 counterparts.

#### ISUP FGD to ETSI ISUP V1: Normal Call Setup



#### Message Mappings

| ISUP FGD Message | Trigger Direction | ETSI ISUP V1 Message |
|------------------|-------------------|----------------------|
| IAM              | ⇒                 | IAM                  |
| ACM              | ⇐                 | ACM                  |
| ANM              | ⇐                 | ANM                  |

**Parameter Mapping - ISUP FGD IAM to ETSI ISUP V1 IAM**

| ISUP FGD IAM                    |                            |                                                       | Dir | ETSI ISUP V1 IAM                                      |                               |                                              |
|---------------------------------|----------------------------|-------------------------------------------------------|-----|-------------------------------------------------------|-------------------------------|----------------------------------------------|
| Parameter                       | Field                      | Field Value                                           |     | Field Value                                           | Field                         | Parameter                                    |
| Nature of connection indicators | Satellite indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | 00 - No Satellite Circuit in the Connection           | Satellite indicator           | Nature of connection indicators <sup>a</sup> |
|                                 |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | 01 - One Satellite Circuit in the Connection          |                               |                                              |
|                                 |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | 10 - Two Satellite Circuit in the Connection          |                               |                                              |
|                                 |                            | 11 -Three Satellite Circuit in the Connection         | ⇒   | 10 - Two Satellite Circuit in the Connection          |                               |                                              |
|                                 | Continuity check indicator | 00 - Continuity Check not Required                    | ⇒   | 00 - Continuity Check not Required                    | Continuity check indicator    |                                              |
|                                 |                            | 01 - Continuity Check Required on This Circuit        | ⇒   | 10 - continuity check performed on a previous circuit |                               |                                              |
|                                 |                            | 10 - continuity check performed on a previous circuit | ⇒   | 10 - continuity check performed on a previous circuit |                               |                                              |
|                                 |                            | 11 - spare                                            | ⇒   | 00 - Continuity Check not Required                    |                               |                                              |
|                                 | Echo Suppressor indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | 0 - Outgoing Half Echo Control Device not Included    | Echo Control Device Indicator |                                              |
|                                 |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | 1 - Outgoing Half Echo Control Device Included        |                               |                                              |

| ISUP FGD IAM             |                                        |                                                                                                          | Dir | ETSI ISUP V1 IAM                             |                                                     |                          |
|--------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------|-----|----------------------------------------------|-----------------------------------------------------|--------------------------|
| Parameter                | Field                                  | Field Value                                                                                              |     | Field Value                                  | Field                                               | Parameter                |
| Forward Call Indicator   | National/Inter national Call Indicator | 0 - incoming national call                                                                               | ⇒   | 0 - incoming national call                   | National/Inter national Call Indicator <sup>b</sup> | Forward Call Indicator   |
|                          |                                        | 1 - incoming International call                                                                          | ⇒   | 1- incoming international                    |                                                     |                          |
|                          | End to End Method Indicator            | 00 - No End to End Method Available                                                                      | ⇒   | 00 - No End to End Method Available          | End to End Method Indicator                         |                          |
|                          |                                        | 01 - pass along method available                                                                         | ⇒   |                                              |                                                     |                          |
|                          |                                        | 10 - SCCP method available                                                                               | ⇒   |                                              |                                                     |                          |
|                          |                                        | 11 - pass along and SCCP methods available                                                               | ⇒   |                                              |                                                     |                          |
|                          | Interworking Indicator                 | 0 - No Interworking Encountered (SS7 all the way)                                                        | ⇒   | 0 - No Interworking Encountered              | Interworking Indicator                              |                          |
|                          |                                        | 1 -Interworking Encountered                                                                              | ⇒   | 1 -Interworking Encountered                  |                                                     |                          |
|                          | IAM Segmentation indicator             | 0 - no indication                                                                                        | ⇒   | 0 - No End to End information available      | End-to-End Information Indicator                    |                          |
|                          |                                        | 1 - additional information has been received and incorporated into call setup                            | ⇒   |                                              |                                                     |                          |
|                          | ISDN User Part Indicator               | 0 - ISDN User Part not used all the way                                                                  | ⇒   | 0 - ISDN User Part not used all the way      | ISDN User Part Indicator                            |                          |
|                          |                                        | 1 - ISDN User Part used all the way                                                                      | ⇒   | 1- ISDN User Part used all the way           |                                                     |                          |
|                          | ISDN User Part Preference Indicator    | 00 - ISDN User Part Preferred All the Way                                                                | ⇒   | 00 - ISDN User Part Preferred All the Way    | ISDN User Part Preference Indicator <sup>a</sup>    |                          |
|                          |                                        | 01 - ISDN User Part not Required All the Way                                                             | ⇒   | 01 - ISDN User Part not Required All the Way |                                                     |                          |
|                          |                                        | 10 - ISDN User Part Required All the Way                                                                 | ⇒   | 10 - ISDN User Part Required All the Way     |                                                     |                          |
|                          |                                        | 11 - Spare                                                                                               | ⇒   | 00 - ISDN User Part Preferred All the Way    |                                                     |                          |
|                          | ISDN Access Indicator                  | 0 - Originating Access Non-ISDN                                                                          | ⇒   | 0 - Originating Access Non-ISDN              | ISDN Access Indicator                               |                          |
|                          |                                        | 1 - Originating Access ISDN                                                                              | ⇒   | 1 - Originating Access ISDN                  |                                                     |                          |
|                          | SCCP Mode Indicator                    | 00 - no indication                                                                                       | ⇒   | 00 - no indication                           | SCCP Mode Indicator                                 |                          |
|                          |                                        | 01 - connectionless method available (No procedure specified for U.S. networks)                          | ⇒   |                                              |                                                     |                          |
|                          |                                        | 10 - connection oriented method available (No procedure specified for U.S. networks)                     | ⇒   |                                              |                                                     |                          |
|                          |                                        | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. networks) | ⇒   |                                              |                                                     |                          |
| Calling Party's Category | N/A                                    | 00000000 - calling party's category's unknown                                                            | ⇒   | 00001010 - Ordinary Calling Subscriber       | N/A                                                 | Calling Party's Category |
|                          |                                        | 00001010 - Ordinary Calling Subscriber                                                                   | ⇒   | 00001010 - Ordinary Calling Subscriber       |                                                     |                          |
|                          |                                        | 00001101 - Test Call                                                                                     | ⇒   | 00001101 - Test Call                         |                                                     |                          |
|                          |                                        | all other values - treat as 0                                                                            | ⇒   | 00001010 - Ordinary Calling Subscriber       |                                                     |                          |



| ISUP FGD IAM                                     |                                    |                                        | Dir                    | ETSI ISUP V1 IAM                                 |                                    |                          |
|--------------------------------------------------|------------------------------------|----------------------------------------|------------------------|--------------------------------------------------|------------------------------------|--------------------------|
| Parameter                                        | Field                              | Field Value                            |                        | Field Value                                      | Field                              | Parameter                |
| User Service Information                         | Extension Indicator                | 1 - not extended (last octet)          | ⇒                      | 1 - last octet                                   | Extension Indicator                | User Service Information |
|                                                  | Coding Standard                    | 00 - CCITT                             | ⇒                      | 00 - CCITT                                       | Coding Standard                    |                          |
|                                                  | Information transfer capability    | 00000 - speech                         | ⇒                      | 00000 - speech                                   | Information transfer capability    |                          |
|                                                  |                                    | 01000 - 64Kbps Unrestricted            |                        | 01000 - 64kbps Unrestricted                      |                                    |                          |
|                                                  |                                    | 10000 - 3.1 kHz audio                  | ⇒                      | 10000 - 3.1 kHz audio                            |                                    |                          |
|                                                  |                                    | All other values                       |                        | BCNI treatment                                   |                                    |                          |
|                                                  | Transfer Mode                      | 00 - circuit mode                      | ⇒                      | 00 - circuit mode                                | Transfer Mode                      |                          |
|                                                  | Information transfer rate          | 10000 - 64 Kbit/s                      | ⇒                      | 10000 - 64 kbit/s                                | Information transfer rate          |                          |
|                                                  | User layer protocol identification | 01 - user information layer 1 protocol | ⇒                      | 01 - user information layer 1 protocol           | User layer protocol identification |                          |
| User information layer 1 protocol identification | 00010 - <i>u</i> - law             | ⇒                                      | 00010 - <i>u</i> - law | User information layer 1 protocol identification |                                    |                          |

| ISUP FGD IAM        |                             |                                                                                                | Dir | ETSI ISUP V1 IAM                                                     |                             |                                  |
|---------------------|-----------------------------|------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------|-----------------------------|----------------------------------|
| Parameter           | Field                       | Field Value                                                                                    |     | Field Value                                                          | Field                       | Parameter                        |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                                                              | ⇒   | Based on the number of Called Party Number address signals encoded   | Odd Even Indicator          | Called Party Number <sup>c</sup> |
|                     |                             | 1 - Odd Number Of Address Digits                                                               | ⇒   |                                                                      |                             |                                  |
|                     | Nature of Address Indicator | 0000000 - Spare                                                                                | ⇒   | Based on translations [ Datafill as described in “ NOA/TON Mapping”] | Nature of Address Indicator |                                  |
|                     |                             | 0000001 - Subscriber number                                                                    | ⇒   |                                                                      |                             |                                  |
|                     |                             | 0000010 - Spare, Reserve for national Use                                                      | ⇒   |                                                                      |                             |                                  |
|                     |                             | 0000011 - National Number                                                                      | ⇒   |                                                                      |                             |                                  |
|                     |                             | 0000100 - International Number                                                                 | ⇒   |                                                                      |                             |                                  |
|                     |                             | 0000101 to 1110000 - Spare                                                                     | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110001 - subscriber number, operator requested (0+ call)                                      | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110010 - National number, operator requested (0+ call)                                        | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110011 - International number, operator requested (0+ call)                                   | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110100 - no address present, operator requested (0- ,10XXX+0(0), or 00- call)                 | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110101 - no address present, cut-through call to carrier                                      | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110110 - 950+ call from local exchange carrier public station or hotel/motel line or non-EAEO | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1110111 - Test Line Test code                                                                  | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1111000 - to 1111110 - reserved for network specific use                                       | ⇒   |                                                                      |                             |                                  |
|                     |                             | 1111111 - reserved                                                                             | ⇒   |                                                                      |                             |                                  |
|                     | Numbering plan              | 000 - Unknown                                                                                  | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                | Numbering Plan Indicator    |                                  |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan                                                          | ⇒   |                                                                      |                             |                                  |
|                     |                             | 010 - Spare                                                                                    | ⇒   |                                                                      |                             |                                  |
|                     |                             | 011 - reserved (CCITT: Data numbering plan)                                                    | ⇒   |                                                                      |                             |                                  |
|                     |                             | 100 - reserved (CCITT: Telex numbering plan)                                                   | ⇒   |                                                                      |                             |                                  |
|                     |                             | 101 - private numbering plan                                                                   | ⇒   |                                                                      |                             |                                  |
|                     |                             | 110 - spare                                                                                    | ⇒   |                                                                      |                             |                                  |
|                     |                             | 111 - spare                                                                                    | ⇒   |                                                                      |                             |                                  |

| ISUP FGD IAM        |                     |                 | Dir | ETSI ISUP V1 IAM                |                |                                  |
|---------------------|---------------------|-----------------|-----|---------------------------------|----------------|----------------------------------|
| Parameter           | Field               | Field Value     |     | Field Value                     | Field          | Parameter                        |
| Called Party Number | Address information | 0000 - Digit 0  | ⇒   | Determined by MMP translations. | Address signal | Called Party Number <sup>b</sup> |
|                     |                     | 0001 - Digit 1  | ⇒   |                                 |                |                                  |
|                     |                     | 0010 - Digit 2  | ⇒   |                                 |                |                                  |
|                     |                     | 0011 - Digit 3  | ⇒   |                                 |                |                                  |
|                     |                     | 0101 - Digit 4  | ⇒   |                                 |                |                                  |
|                     |                     | 0101 - Digit 5  | ⇒   |                                 |                |                                  |
|                     |                     | 0110 - Digit 6  | ⇒   |                                 |                |                                  |
|                     |                     | 0111 - Digit 7  | ⇒   |                                 |                |                                  |
|                     |                     | 1000 - Digit 8  | ⇒   |                                 |                |                                  |
|                     |                     | 1001 - Digit 9  | ⇒   |                                 |                |                                  |
|                     |                     | 1111 - reserved | ⇒   |                                 |                |                                  |

| ISUP FGD IAM         |                             |                                                          | Dir | ETSI ISUP V1 IAM                                                    |                             |                                   |
|----------------------|-----------------------------|----------------------------------------------------------|-----|---------------------------------------------------------------------|-----------------------------|-----------------------------------|
| Parameter            | Field                       | Field Value                                              |     | Field Value                                                         | Field                       | Parameter                         |
| Calling Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                        | ⇒   | Based on the number of Calling Party Number address signals encoded | Odd Even Indicator          | Calling Party Number <sup>d</sup> |
|                      |                             | 1 - Odd Number of Address Digits                         | ⇒   |                                                                     |                             |                                   |
|                      | Nature of Address Indicator | 0000000 - Spare                                          | ⇒   | 0000100 - International Number                                      | Nature of Address Indicator |                                   |
|                      |                             | 0000001 - unique subscriber number                       | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 0000010 - Spare, Reserve for national Use                | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 0000011 - unique national number                         | ⇒   | 0000011 - national Number                                           |                             |                                   |
|                      |                             | 0000100 - unique international number                    | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 0000101 to 1110000 - Spare                               | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110001 - non-unique subscriber number,                  | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110010 - spare, reserved for national use               | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110011 - non-unique national number                     | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110100 - non-unique international number                | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110101 - spare                                          | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110110 - spare                                          | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1110111 - Test Line Test code                            | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1111000 - to 1111110 - reserved for network specific use | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      |                             | 1111111 - spare                                          | ⇒   | 0000100 - International Number                                      |                             |                                   |
|                      | Numbering plan              | 000 - Unknown                                            | ⇒   | 001 - ISDN (Telephony) Numbering Plan                               | Numbering Plan Indicator    |                                   |
|                      |                             | 001 - ISDN (Telephony) Numbering Plan                    | ⇒   |                                                                     |                             |                                   |
|                      |                             | 010 - Spare                                              | ⇒   |                                                                     |                             |                                   |
|                      |                             | 011 - reserved (CCITT: Data numbering plan)              | ⇒   |                                                                     |                             |                                   |
|                      |                             | 100 - reserved (CCITT: Telex numbering plan)             | ⇒   |                                                                     |                             |                                   |
|                      |                             | 101 - private numbering plan                             | ⇒   |                                                                     |                             |                                   |
|                      |                             | 110 - spare                                              | ⇒   |                                                                     |                             |                                   |
|                      |                             | 111 - spare                                              | ⇒   |                                                                     |                             |                                   |

| ISUP FGD IAM                          |                                                   |                              | Dir         | ETSI ISUP V1 IAM             |                                           |                                   |
|---------------------------------------|---------------------------------------------------|------------------------------|-------------|------------------------------|-------------------------------------------|-----------------------------------|
| Parameter                             | Field                                             | Field Value                  |             | Field Value                  | Field                                     | Parameter                         |
| Calling Party Number                  | Pres. (Address presentation restricted indicator) | 00 - presentation allowed    | ⇒           | 00 - presentation allowed    | Address presentation restricted indicator | Calling Party Number <sup>c</sup> |
|                                       |                                                   | 01 - presentation restricted | ⇒           | 01 - presentation restricted |                                           |                                   |
|                                       | Address information                               | 0000 - Digit 0               | ⇒           | 0000 - Digit 0               | Address signal                            |                                   |
|                                       |                                                   | 0001 - Digit 1               | ⇒           | 0001 - Digit 1               |                                           |                                   |
|                                       |                                                   | 0010 - Digit 2               | ⇒           | 0010 - Digit 2               |                                           |                                   |
|                                       |                                                   | 0011 - Digit 3               | ⇒           | 0011 - Digit 3               |                                           |                                   |
|                                       |                                                   | 0100 - Digit 4               | ⇒           | 0100 - Digit 4               |                                           |                                   |
|                                       |                                                   | 0101 - Digit 5               | ⇒           | 0101 - Digit 5               |                                           |                                   |
|                                       |                                                   | 0110 - Digit 6               | ⇒           | 0110 - Digit 6               |                                           |                                   |
|                                       |                                                   | 0111 - Digit 7               | ⇒           | 0111 - Digit 7               |                                           |                                   |
|                                       |                                                   | 1000 - Digit 8               | ⇒           | 1000 - Digit 8               |                                           |                                   |
|                                       |                                                   | 1001 - Digit 9               | ⇒           | 1001 - Digit 9               |                                           |                                   |
|                                       |                                                   | 1010 - spare                 | ⇒           | 0000 - digit 0               |                                           |                                   |
|                                       |                                                   | 1111 - reserved              | ⇒           | 1111 - ST                    |                                           |                                   |
| Transit Network Selection             |                                                   |                              | ⇒           | No Mapping                   |                                           |                                   |
| Charge Number                         |                                                   | ⇒                            | No mapping  |                              |                                           |                                   |
| Originating line information          |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Carrier selection                     |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Service code                          |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Carrier Identification Code Parameter |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Hop Counter                           |                                                   | ⇒                            | No Mapping] |                              |                                           |                                   |
| Jurisdiction Information              |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Original Called Number                |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Redirecting Number                    |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Access Transport                      |                                                   | ⇒                            |             |                              | Access Transport                          |                                   |
| Generic Address                       |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |
| Generic Name                          |                                                   | ⇒                            | No Mapping  |                              |                                           |                                   |

a. Please refer to Section "Nature of Connection Mapping for IAM" on page 691.

b. Please refer to Section "Additional SS7 procedures" on page 683.

c. Some field mappings shown in the Called Party Number may be altered by translations.

d. Calling Party Number mappings shown may be altered by inswitch features.

## Parameter Mapping - ETSI ISUP V1 ACM to ISUP FGD ACM

| ISUP FGD ACM             |                                            |                                                    | Dir | ETSI ISUP V1 ACM                                   |                                   |                          |
|--------------------------|--------------------------------------------|----------------------------------------------------|-----|----------------------------------------------------|-----------------------------------|--------------------------|
| Parameter                | Field                                      | Field Value                                        |     | Field Value                                        | Field                             | Parameter                |
| Backward call indicators | Charge Indicator                           | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Charge Indicator                  | Backward call indicators |
|                          |                                            | 01 - No Charge                                     | ⇐   | 01 - No Charge                                     |                                   |                          |
|                          |                                            | 10 - Charge                                        | ⇐   | 10 - Charge                                        |                                   |                          |
|                          |                                            | 10 - Charge                                        | ⇐   | 11 - spare                                         |                                   |                          |
|                          | Called Party's Status Indicator            | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Called Party's Status Indicator   |                          |
|                          |                                            | 01 - Subscriber Free                               | ⇐   | 01 - Subscriber Free                               |                                   |                          |
|                          |                                            | 00 - No Indication                                 | ⇐   | 11 - spare                                         |                                   |                          |
|                          | Called Party's Category Indicator          | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Called Party's Category Indicator |                          |
|                          |                                            | 01 - Ordinary Subscriber                           | ⇐   | 01 - Ordinary Subscriber                           |                                   |                          |
|                          |                                            | 10 - Payphone                                      | ⇐   | 10 - Payphone                                      |                                   |                          |
|                          |                                            | 00 - No Indication                                 | ⇐   | 11 - spare                                         |                                   |                          |
|                          | End-to-End Method Indicator                | 00 - No End to End Method Available                |     | 00 - No End to End Method Available                | End-to-End Method Indicator       |                          |
|                          |                                            |                                                    | ⇐   | 01 - pass along method available                   |                                   |                          |
|                          |                                            |                                                    |     | 10 - SCCP method available                         |                                   |                          |
|                          |                                            |                                                    |     | 11 - pass along and SCCP methods available         |                                   |                          |
|                          | Interworking Indicator                     | 0 - No Interworking Encountered                    | ⇐   | 0 - No Interworking Encountered                    | Interworking Indicator            |                          |
|                          |                                            | 1 - Interworking Encountered                       | ⇐   | 1 - Interworking Encountered                       |                                   |                          |
|                          | No mapping                                 |                                                    | ⇐   | 00 - No End to End Information Available           | End-to-End Information Indicator  |                          |
|                          | ISDN User Part Indicator                   | 0 - ISDN User Part not Used All the Way            | ⇐   | 0 - ISDN User Part not Used All the Way            | ISDN User Part Indicator          |                          |
|                          |                                            | 1 - ISDN User Part Used All the Way                | ⇐   | 1 - ISDN User Part Used All the Way                |                                   |                          |
|                          | Holding Indicator                          | 0 - Holding not required                           | ⇐   | 0 - Holding not required                           | Holding Indicator                 |                          |
|                          |                                            |                                                    | ⇐   | 1 - Holding required                               |                                   |                          |
|                          | ISDN Access Indicator                      | 0 - Terminating Access Non-ISDN                    | ⇐   | 0 - Terminating Access Non-ISDN                    | ISDN Access Indicator             |                          |
|                          |                                            | 1 - Terminating Access ISDN                        | ⇐   | 1 - Terminating Access ISDN                        |                                   |                          |
|                          | Echo Control Device Indicator <sup>a</sup> | 0 - Incoming Half Echo Control Device not Included | ⇐   | 0 - Incoming Half Echo Control Device not Included | Echo Control Device Indicator     |                          |
|                          |                                            | 1 - Incoming Half Echo Control Device Included     | ⇐   | 1 - Incoming Half Echo Control Device Included     |                                   |                          |
|                          | SCCP Method Indicator                      | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | SCCP Method Indicator             |                          |
|                          |                                            |                                                    | ⇐   | all other values                                   |                                   |                          |
|                          | IAM Segmentation Indicator                 | 0 - no indication                                  | ⇐   |                                                    |                                   |                          |

| ISUP FGD ACM                      |       |             | Dir | ETSI ISUP V1 ACM |       |                                   |
|-----------------------------------|-------|-------------|-----|------------------|-------|-----------------------------------|
| Parameter                         | Field | Field Value |     | Field Value      | Field | Parameter                         |
| Optional backward call indicators |       |             | ⇐   |                  |       | Optional backward call indicators |
| Cause Indicator                   |       |             | ⇐   |                  |       | Cause Indicator                   |
| Access Transport                  |       |             | ⇐   |                  |       | Access Transport                  |
| User to User Indicators           |       |             | ⇐   |                  |       | User to User Indicator            |
| User to User information          |       |             | ⇐   |                  |       | User to user information          |

a. The Echo Control Device Ind. field is encoded based on incoming information and datafill. Datafill may result in a value other than that shown

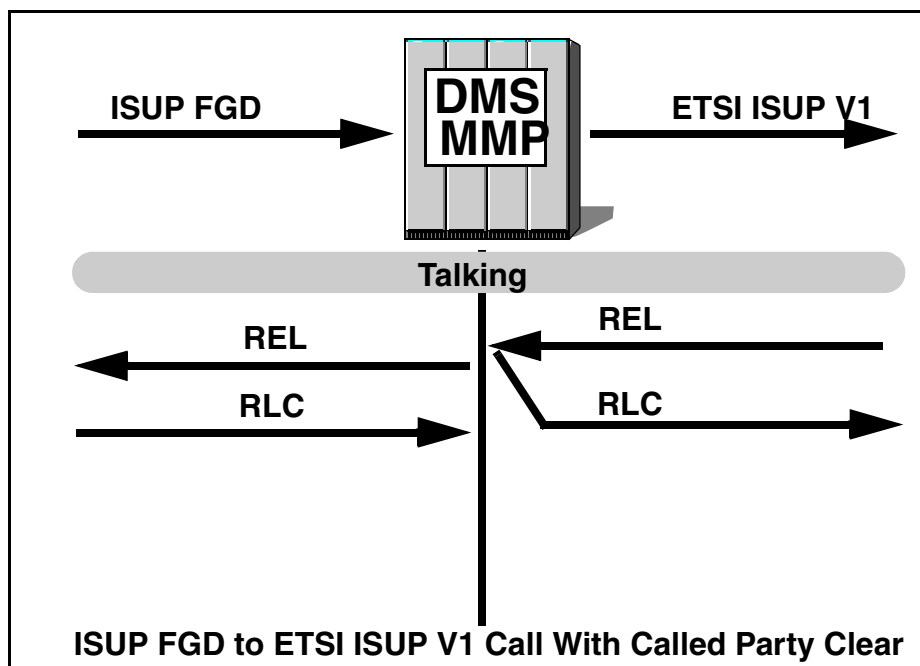
### Parameter Mapping - ETSI ISUP V1 ANM to ISUP FGD ANM

| ISUP FGD ANM             |                                        |             | Dir | ETSI ISUP V1 ANM |                                        |                          |
|--------------------------|----------------------------------------|-------------|-----|------------------|----------------------------------------|--------------------------|
| Parameter                | Field                                  | Field Value |     | Field Value      | Field                                  | Parameter                |
| Backward Call Indicators | Refer to ACM: Backward Call Indicators |             | ⇐   |                  | Refer to ACM: Backward Call Indicators | Backward Call Indicators |
| No Mapping               |                                        |             | ⇐   |                  |                                        | Connected Number         |
| Access Transport         |                                        |             | ⇐   |                  |                                        | Access Transport         |
| User to User information |                                        |             | ⇐   |                  |                                        | User to user information |

## Normal Call Clearing

### Called Party Clear

#### ISUP FGD to ETSI ISUP V1 Call With Called Party Clear



### Called Party Clear Message Mappings

| ISUP FGD Message | Trigger Direction | ETSI ISUP V1 Message |
|------------------|-------------------|----------------------|
| REL              | ←                 | REL                  |
| No trigger       | ⇒                 | RLC <sup>1</sup>     |
| RLC              | ⇒                 | No mapping           |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message

#### Parameter Mapping - ETSI ISUP V1 REL to ISUP FGD REL

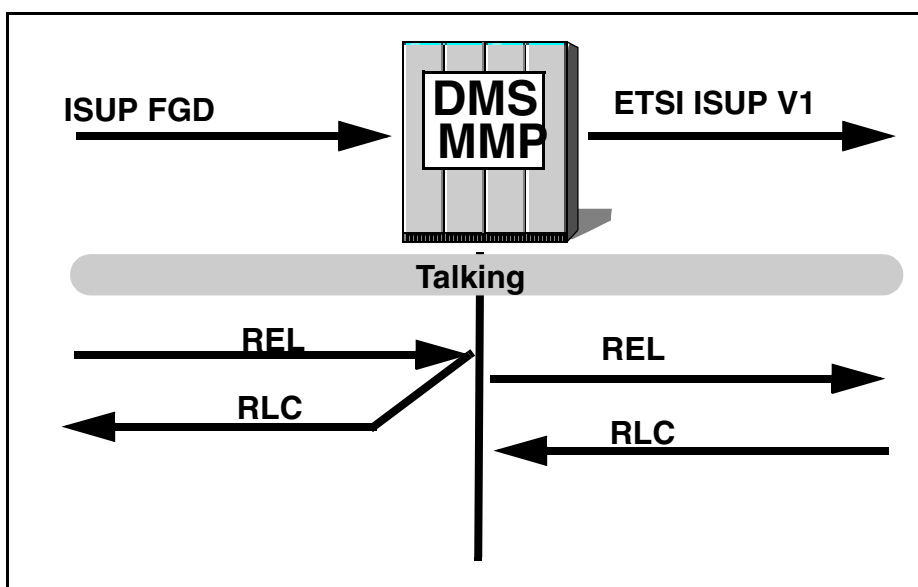
| ISUP FGD REL                                                             |       |             | Dir | ETSI ISUP V1 REL |       |                  |
|--------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|------------------|
| Parameter                                                                | Field | Field Value |     | Field Value      | Field | Parameter        |
| Cause Indicators [ Mapping as described in "REL Generation and Mapping"] |       |             | ←   |                  |       | Cause Indicators |



| ISUP FGD REL |       |             | Dir | ETSI ISUP V1 REL           |       |           |
|--------------|-------|-------------|-----|----------------------------|-------|-----------|
| Parameter    | Field | Field Value |     | Field Value                | Field | Parameter |
| No Mapping   |       |             | ⇒   | Automatic Congestion Level |       |           |
| No mapping   |       |             | ⇒   | User-to-user information   |       |           |

### Calling Party Clear

#### ISUP FGD to ETSI ISUP V1 Call With Calling Party Clear



#### Calling Party Clear Message Mappings

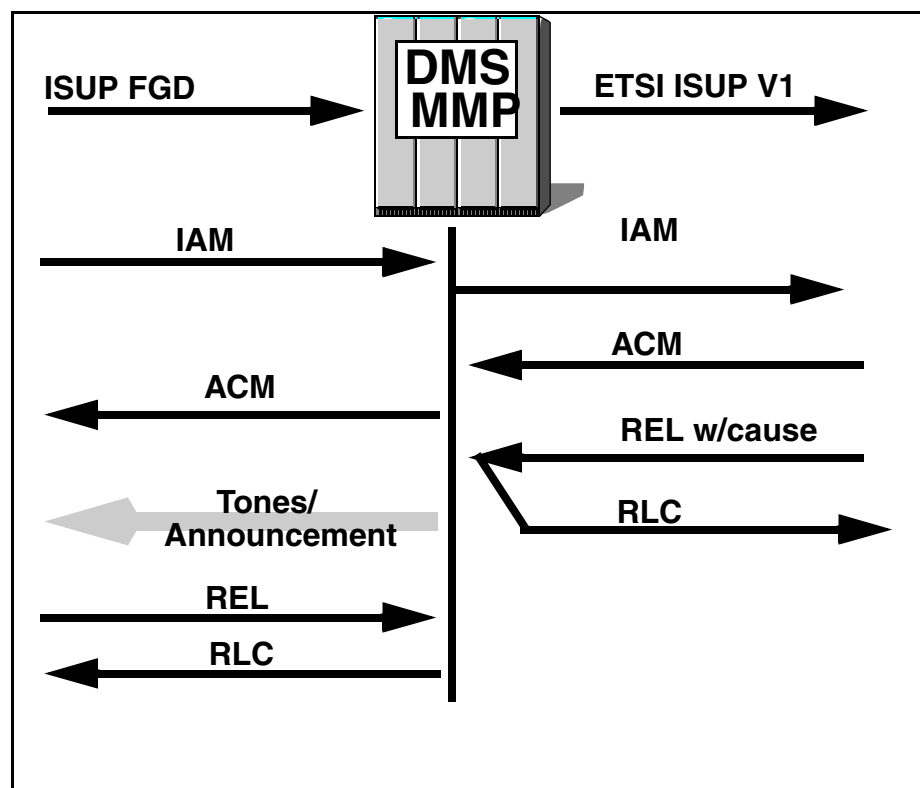
| ISUP FGD Message | Trigger Direction | ETSI ISUP V1 Message |
|------------------|-------------------|----------------------|
| REL              | ⇒                 | REL                  |
| RLC <sup>1</sup> | ⇒                 | No trigger           |
| No mapping       | ⇒                 | RLC                  |

**Parameter Mapping - ISUP FGD REL to ETSI ISUP V1 REL**

| ISUP FGD REL               |       |             | Dir | ETSI ISUP V1 REL                                                          |       |           |
|----------------------------|-------|-------------|-----|---------------------------------------------------------------------------|-------|-----------|
| Parameter                  | Field | Field Value |     | Field Value                                                               | Field | Parameter |
| Cause Indicators           |       |             | ⇒   | Cause Indicators [ Mapping as described in “ REL Generation and Mapping”] |       |           |
| Automatic Congestion Level |       |             | ⇒   | No Mapping                                                                |       |           |
| Access Transport           |       |             | ⇒   | No Mapping                                                                |       |           |

**Unsuccessful Call Attempt**

Please refer to Section “REL Generation and Mapping” on page 691.

**ISUP FGD to ETSI ISUP v1 Unsuccessful Call Attempt (Release w/cause to Tones/Announcements)**

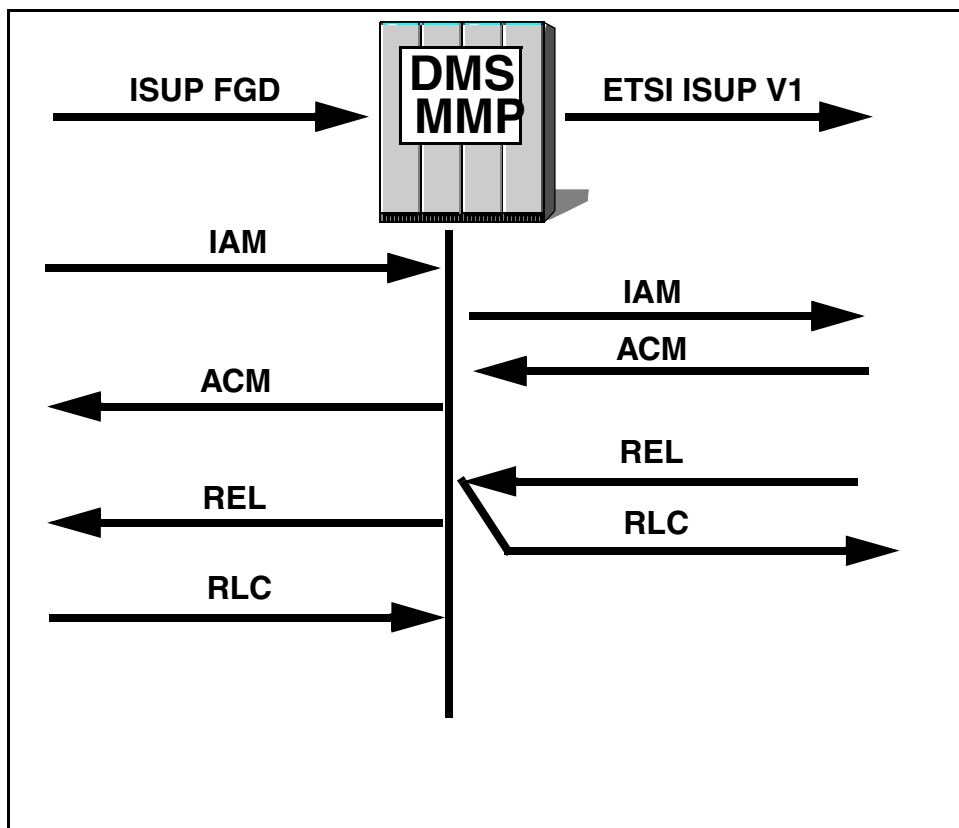
**Message Mappings**

| ISUP FGD Message        | Trigger Direction | ETSI ISUP V1 Message    |
|-------------------------|-------------------|-------------------------|
| IAM <sup>1</sup>        | ⇒                 | IAM                     |
| ACM <sup>1</sup>        | ⇐                 | ACM                     |
| No Mapping              | ⇐                 | REL                     |
| No Trigger <sup>2</sup> | ⇒                 | RLC                     |
| REL                     | ⇒                 | No Mapping              |
| RLC                     | ⇐                 | No Trigger <sup>3</sup> |

<sup>1</sup> -IAM and ACM mappings are defined in previous section

<sup>2</sup> -RLC triggered by receipt of REL message.

<sup>3</sup> - RLC triggered by receipt of Forward Release.

**ISUP FGD -> ETSI ISUP V1: Unsuccessful Call Attempt (cause)**

**Unsuccessful Call Attempt (cause) Message Mapping**

| ISUP FGD Message | Trigger Direction | ETSI ISUP V1 Message |
|------------------|-------------------|----------------------|
| IAM              | ⇒                 | IAM                  |
| ACM              | ⇐                 | ACM                  |
| REL              | ⇐                 | REL                  |
| No trigger       | ⇒                 | RLC <sup>1</sup>     |
| RLC              | ⇒                 | No mapping           |

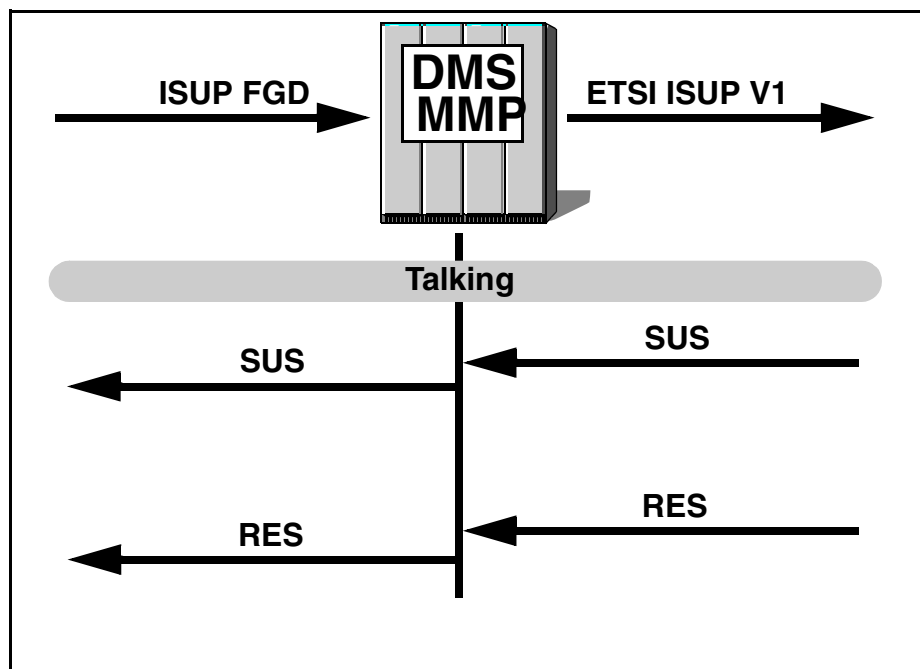
<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

**Parameter Mapping - ETSI ISUP V1 REL to ISUP FGD REL**

| ISUP FGD REL                                                              |       |             | Dir | ETSI ISUP V1 REL |       |                            |
|---------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                                 | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as described in “ REL Generation and Mapping”] |       |             | ⇐   | Cause Indicators |       |                            |
| No Mapping                                                                |       |             | ⇐   |                  |       | Automatic Congestion Level |
| No mapping                                                                |       |             | ⇐   |                  |       | User-to-user information   |

## Suspend/Resume

### ISUP FGD to ETSI ISUP V1: Suspend with Resume



### Message/Signal Mappings

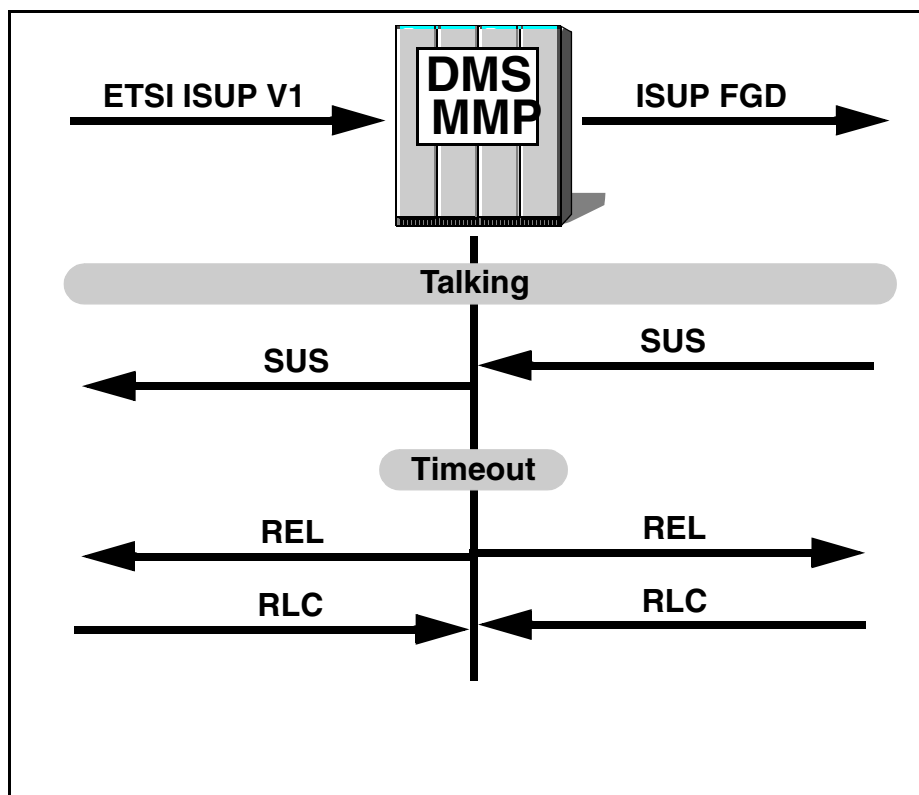
| ISUP FGD Message | Trigger | ETSI ISUP V1 Message |
|------------------|---------|----------------------|
| SUS              | ←       | SUS                  |
| RES              | ←       | RES                  |

### Parameter Mapping - ETSI ISUP V1 SUS to ISUP FGD SUS

| ISUP FGD SUS              |                    |                               | Dir | ETSI ISUP V1 SUS              |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ←   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ←   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       |     | 0000000                       | Spare              |                           |

**Parameter Mapping - ETSI ISUP V1 RES to ISUP FGD RES**

| ISUP FGD RES              |                    |                               | Dir | ETSI ISUP V1 RES              |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**ISUP FGD -> ETSI ISUP V1: Suspend Timer Time-out**

**Suspend Timer Time-out Message Mapping**

| ISUP FGD Message        | Trigger | ETSI ISUP V1 Message    |
|-------------------------|---------|-------------------------|
| SUS                     | ⇐       | SUS                     |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| REL                     | ⇐       | No Trigger <sup>b</sup> |
| No Mapping              | ⇐       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

*a. REL triggered by Time-out of Suspend timer.*

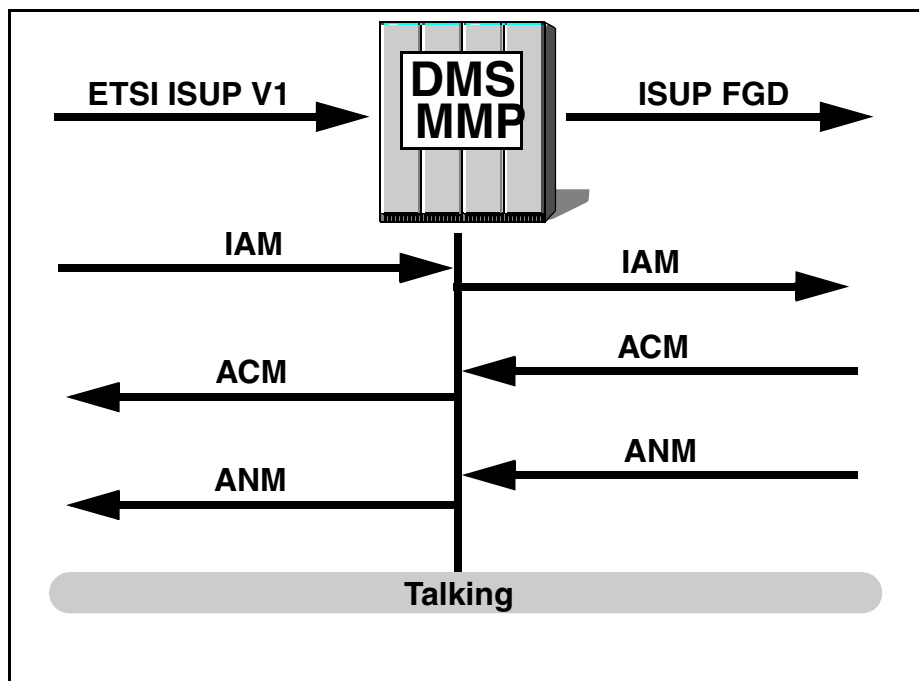
*b. REL triggered by Time-out of Suspend timer.*

**Overlap Call Setup**

ETSI ISUP V1 and ISUP FGD do not support overlap.

**ETSI ISUP V1 -> ISUP FGD Interworking****Normal Call Setup**

The following tables show the ETSI ISUP V1 to ISUP FGD detailed message mapping. They include all the possible ETSI ISUP V1 and details how they are mapped to their corresponding ISUP FGD counterparts.

**ETSI ISUP V1 to ISUP FGD: Normal Call Setup****Message Mappings**

| ETSI ISUP V1 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| IAM                  | ⇒                 | IAM              |
| ACM                  | ⇐                 | ACM              |
| ANM                  | ⇐                 | ANM              |



**Parameter Mapping - ETSI ISUP V1 IAM to ISUP FGD IAM**

| ETSI ISUP V1 IAM       |       |                                               | Dir | ISUP FGD IAM                                |       |                        |
|------------------------|-------|-----------------------------------------------|-----|---------------------------------------------|-------|------------------------|
| Parameter              | Field | Field Value                                   |     | Field Value                                 | Field | Parameter              |
| Calling Party Category | N/A   | 00000000 - not used                           | ⇒   | 00000000 - calling party's category unknown | N/A   | Calling Party Category |
|                        |       | 00000001 - Operator, French                   | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000010 - Operator, English                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000011 - Operator, German                   | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000100 - Operator, Russian                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000101 - Operator, Spanish                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000110 to 00001000 - Reserve                | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001001 - Domestic operator                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001010 - Regular Calling                    | ⇒   | 00001010 - Ordinary Calling Subscriber      |       |                        |
|                        |       | 00001011 - Calling Subscriber With Priority   | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001100 - Data Call (Voice and Data)         | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001101 - Test Call                          | ⇒   | 00001101 - Test Call                        |       |                        |
|                        |       | 00001110 - Non Voice Term (For Further Study) | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001111 - Payphone                           | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00010000 to 11011111 - Spare                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 11100000 to 11111110 - Spare                  | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 11111111 - Spare                              | ⇒   | 00000000 - calling party's category unknown |       |                        |

| ETSI ISUP V1 IAM               |                            |                                                       | Dir | ISUP FGD IAM                                          |                            |                                   |
|--------------------------------|----------------------------|-------------------------------------------------------|-----|-------------------------------------------------------|----------------------------|-----------------------------------|
| Parameter                      | Field                      | Field Value                                           |     | Field Value                                           | Field                      | Parameter                         |
| Nature of Connection Indicator | Satellite Indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | 00 - No Satellite Circuit in the Connection           | Satellite Indicator        | Nature of Connection <sup>a</sup> |
|                                |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | 01 - One Satellite Circuit in the Connection          |                            |                                   |
|                                |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | 10 - Two Satellite Circuit in the Connection          |                            |                                   |
|                                |                            | 11 - Spare                                            | ⇒   | 10 - Two Satellite Circuit in the Connection          |                            |                                   |
|                                | Continuity Check Indicator | 00 - Continuity Check not Required                    | ⇒   | 00 - Continuity Check not Required                    | Continuity Check Indicator |                                   |
|                                |                            | 01 - A Continuity Test is Needed in This Circuit      | ⇒   | 10 - continuity check performed on a previous circuit |                            |                                   |
|                                |                            | 10 - continuity check performed on a previous circuit | ⇒   | 10 - continuity check performed on a previous circuit |                            |                                   |
|                                |                            | 11 - Spare, Treated as 00                             | ⇒   | 00 - Continuity Test not Needed                       |                            |                                   |
|                                | Echo Suppressor Indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | 0 - Outgoing Half Echo Control Device not Included    | Echo Suppressor Indicator  |                                   |
|                                |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | 1 - Outgoing Half Echo Control Device Included        |                            |                                   |

| ETSI ISUP V1 IAM    |                             |                                           | Dir | ISUP FGD IAM                                                                       |                             |                                  |
|---------------------|-----------------------------|-------------------------------------------|-----|------------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| Parameter           | Field                       | Field Value                               |     | Field Value                                                                        | Field                       | Parameter                        |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits         | ⇒   | Encoded based on the number of Called Party Number address signals to be outpulsed | Odd Even Indicator          | Called Party Number <sup>b</sup> |
|                     |                             | 1 - Odd Number Of Address Digits          | ⇒   |                                                                                    |                             |                                  |
|                     | Nature of Address Indicator | 0000000 - Spare                           | ⇒   | Based on translations [ Datafill as in “ NOA/TON Mapping”]                         | Nature of Address Indicator |                                  |
|                     |                             | 0000001 - Subscriber Number               | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0000010 - Spare, Reserve for Domestic Use | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0000011 - National Number                 | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0000100 - International Number            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0000101 to 1101111 - Spare                | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1111111 - Spare                           | ⇒   |                                                                                    |                             |                                  |
|                     | Numbering Plan Indicator    | 000 - Unknown                             | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                              | Numbering Plan Indicator    |                                  |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan     | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 010 - Spare                               | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 111 - Spare                               | ⇒   |                                                                                    |                             |                                  |
|                     |                             | all other values                          | ⇒   |                                                                                    |                             |                                  |
|                     | Address Signal              | 0000 - Digit 0                            | ⇒   | Determined by MMP translations.                                                    | Address Signal              |                                  |
|                     |                             | 0001 - Digit 1                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0010 - Digit 2                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0011 - Digit 3                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0100 - Digit 4                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0101 - Digit 5                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0110 - Digit 6                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 0111 - Digit 7                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1000 - Digit 8                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1001 - Digit 9                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1011 - Code 11                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1100 - Code 12                            | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1101 - spare                              | ⇒   |                                                                                    |                             |                                  |
|                     |                             | 1110 - spare                              | ⇒   |                                                                                    |                             |                                  |

| ETSI ISUP V1 IAM       |                                        |                                              | Dir | ISUP FGD IAM                                   |                                                     |                        |
|------------------------|----------------------------------------|----------------------------------------------|-----|------------------------------------------------|-----------------------------------------------------|------------------------|
| Parameter              | Field                                  | Field Value                                  |     | Field Value                                    | Field                                               | Parameter              |
| Forward Call Indicator | National /International Call Indicator | 0 - Call to be treated as national call      | ⇒   | 0- incoming national                           | National /International Call Indicator <sup>c</sup> | Forward Call Indicator |
|                        |                                        | 1 - Call to be treated as International call | ⇒   | 1 - incoming International call                |                                                     |                        |
|                        | End to End Mode Indicator              | 00 - No End to End Method Available          | ⇒   | 00 - No Mode Available for End to End Transfer | End to End Method Indicator                         |                        |
|                        |                                        | 01 - pass along method available             | ⇒   | 01 - pass along method available               |                                                     |                        |
|                        |                                        | 10 - SCCP method available                   | ⇒   | 10 - SCCP method available                     |                                                     |                        |
|                        |                                        | 11 - pass along and SCCP methods available   | ⇒   | 11 - pass along and SCCP methods available     |                                                     |                        |
|                        | Interworking Indicator                 | 0 - No Interworking Encountered              | ⇒   | 0 - No Interworking Encountered                | Interworking Indicator                              |                        |
|                        |                                        | 1 -Interworking Encountered                  | ⇒   | 1 - Interworking Encountered                   |                                                     |                        |
|                        | End to End Information Indicator       | 0 - No End to End Information Available      | ⇒   | No mapping                                     |                                                     |                        |
|                        |                                        | other value                                  | ⇒   |                                                |                                                     |                        |
|                        | ISDN User Part Indicator               | 0 - ISDN User Part not Used All the Way      | ⇒   | 0 - ISDN User Part not Used All the Way        | ISDN User Part Indicator                            |                        |
|                        |                                        | 1 - ISDN User Part Used All the Way          | ⇒   | 1 - ISDN User Part Used All the Way            |                                                     |                        |
|                        | SCCP Mode Indicator                    | 00 - No Indication                           | ⇒   | 00 - No Indication                             | SCCP Mode Indicator                                 |                        |
|                        |                                        | all other values                             | ⇒   |                                                |                                                     |                        |
|                        | ISDN User Part Preference Indicator    | 00 - ISDN User Part Preferred All the Way    | ⇒   | 00 - ISDN User Part Preferred All the Way      | ISDN User Part Preference Indicators                |                        |
|                        |                                        | 01 - ISDN User Part not Required All the Way | ⇒   | 01 - ISDN User Part not Required All the Way   |                                                     |                        |
|                        |                                        | 10 - ISDN User Part Required All the Way     | ⇒   | 10 - ISDN User Part Required All the Way       |                                                     |                        |
|                        |                                        | 11 - Spare                                   | ⇒   | Treatment                                      |                                                     |                        |
|                        | ISDN Access Indicator                  | 0 - Originating Access Non-ISDN              | ⇒   | 0 - Originating Access Non-ISDN                | ISDN Access Indicator                               |                        |
|                        |                                        | 1 - Originating Access ISDN                  | ⇒   | 1 - Originating Access ISDN                    |                                                     |                        |
|                        |                                        |                                              | ⇒   | 0 - no indication                              | IAM Segmentation Indicator                          |                        |

| ETSI ISUP V1 IAM     |                                           |                                           | Dir | ISUP FGD IAM                                                              |                             |                                   |
|----------------------|-------------------------------------------|-------------------------------------------|-----|---------------------------------------------------------------------------|-----------------------------|-----------------------------------|
| Parameter            | Field                                     | Field Value                               |     | Field Value                                                               | Field                       | Parameter                         |
| Calling Party Number | Odd Even Indicator                        | 0 - Even Number of Address Signals        | ⇒   | Encoded based on number of Calling Party Number address signals outpulsed | Odd Even Indicator          | Calling Party Number <sup>d</sup> |
|                      |                                           | 1 - Odd Number of Address Signals         | ⇒   |                                                                           |                             |                                   |
|                      | Nature of Address Indicator               | 0000000 - Spare                           | ⇒   | 0000011 - unique national number                                          | Nature of Address Indicator |                                   |
|                      |                                           | 0000001 - Subscriber Number               | ⇒   | 0000001 - unique subscriber number                                        |                             |                                   |
|                      |                                           | 0000010 - Spare, Reserve for National Use | ⇒   | 0000011 - unique national number                                          |                             |                                   |
|                      |                                           | 0000011 - National Number                 | ⇒   | 0000011 - unique national number                                          |                             |                                   |
|                      |                                           | 0000100 - International Number            | ⇒   | 0000100 - unique international number                                     |                             |                                   |
|                      |                                           | all other values                          | ⇒   | 0000011 - unique national number                                          |                             |                                   |
|                      | Calling Party number Incomplete Indicator | ALL VALUES                                | ⇒   | No mapping                                                                |                             |                                   |

| ETSI ISUP V1 IAM                 |                                           |                                         | Dir        | ISUP FGD IAM                                   |                                           |                          |
|----------------------------------|-------------------------------------------|-----------------------------------------|------------|------------------------------------------------|-------------------------------------------|--------------------------|
| Parameter                        | Field                                     | Field Value                             |            | Field Value                                    | Field                                     | Parameter                |
| Calling Party Number             | Address Presentation Restricted Indicator | 00 - Presentation Allowed               | ⇒          | 00 - Presentation Allowed                      | Address Presentation Restricted Indicator | Calling Party Number     |
|                                  |                                           | 01 - Presentation Restricted            | ⇒          | 01 - Presentation Restricted                   |                                           |                          |
|                                  |                                           | 11 - Spare                              | ⇒          | 01 - Presentation Restricted                   |                                           |                          |
|                                  |                                           | all other values                        | ⇒          | 01 - Presentation Restricted                   |                                           |                          |
|                                  | Numbering Plan Indicator                  | 001 - ISDN (Telephony) Numbering Plan   | ⇒          | 001 - ISDN (Telephony) Numbering Plan          | Numbering Plan Indicator                  |                          |
|                                  |                                           | all other values                        | ⇒          | No CGPN                                        |                                           |                          |
|                                  | Screening Indicator                       | 01 - user provided, verified and passed | ⇒          | No mapping                                     |                                           |                          |
|                                  |                                           | 11 - network provided                   | ⇒          |                                                |                                           |                          |
|                                  |                                           | all other values                        | ⇒          |                                                |                                           |                          |
|                                  | Address Signal                            | 0000 - Digit 0                          | ⇒          | 0000 - Digit 0                                 | Address Signal                            |                          |
|                                  |                                           | 0001 - Digit 1                          | ⇒          | 0001 - Digit 1                                 |                                           |                          |
|                                  |                                           | 0010 - Digit 2                          | ⇒          | 0010 - Digit 2                                 |                                           |                          |
|                                  |                                           | 0011 - Digit 3                          | ⇒          | 0011 - Digit 3                                 |                                           |                          |
|                                  |                                           | 0100 - Digit 4                          | ⇒          | 0100 - Digit 4                                 |                                           |                          |
|                                  |                                           | 0101 - Digit 5                          | ⇒          | 0101 - Digit 5                                 |                                           |                          |
|                                  |                                           | 0110 - Digit 6                          | ⇒          | 0110 - Digit 6                                 |                                           |                          |
|                                  |                                           | 0111 - Digit 7                          | ⇒          | 0111 - Digit 7                                 |                                           |                          |
|                                  |                                           | 1000 - Digit 8                          | ⇒          | 1000 - Digit 8                                 |                                           |                          |
|                                  |                                           | 1001 - Digit 9                          | ⇒          | 1001 - Digit 9                                 |                                           |                          |
|                                  | Filler                                    | 0000                                    | ⇒          | 0000 (included if address signal count is odd) | Filler                                    |                          |
| User service Information         | Information transfer capability           | 00000 - speech                          | ⇒          | 00000 - speech                                 | Information transfer capability           | User service Information |
|                                  |                                           | 01000 - 64kbps Unrestricted             |            | 01000 - 64kbps Unrestricted                    |                                           |                          |
|                                  |                                           | 10000 - 3.1 - kHz audio                 | ⇒          | 10000 - 3.1 - kHz audio                        |                                           |                          |
|                                  |                                           | ALL OTHER VALUES                        | ⇒          | 00000 - speech                                 |                                           |                          |
|                                  | Coding Standard                           | 00 - ITU-T                              | ⇒          | 00 - ITU-T                                     | Coding Standard                           |                          |
|                                  | Information Transfer Rate                 | 10000 - 64kbps                          | ⇒          | 10000 - 64 kb/s                                | Information Transfer Rate                 |                          |
|                                  | Transfer Mode                             | 00 - circuit                            | ⇒          | 00 - circuit                                   | Transfer Mode                             |                          |
|                                  | User Layer Protocol Identification        | ANY VALUE                               | ⇒          | 0100010 - Layer 1; <i>u</i> - law              | User Layer Protocol Identification        |                          |
| Transit Network Selection        |                                           |                                         | ⇒          | No Mapping                                     |                                           |                          |
| Optional forward Call Indicators |                                           | ⇒                                       | No mapping |                                                |                                           |                          |

| ETSI ISUP V1 IAM                 |       |             | Dir | ISUP FGD IAM                                        |       |             |
|----------------------------------|-------|-------------|-----|-----------------------------------------------------|-------|-------------|
| Parameter                        | Field | Field Value |     | Field Value                                         | Field | Parameter   |
| User- to- User Information       |       |             | ⇒   | No mapping                                          |       |             |
| Access Transport                 |       |             | ⇒   | Access Transport                                    |       |             |
| closed user group interlock code |       |             | ⇒   | No mapping                                          |       |             |
|                                  |       |             | ⇒   | [ Detailed description available in “ Hop Counter”] |       | Hop Counter |

- a. Please refer to Section “Nature of Connection Mapping for IAM” on page 691.  
b. Some field mappings shown in the Called Party Number may be altered by translations.  
c. Please refer to Section “Additional SS7 procedures” on page 683.  
d. Calling Party Number mappings may be altered by inswitch features.

**Parameter Mapping - ISUP FGD ACM to ETSI ISUP V1 ACM**

| ETSI ISUP V1 ACM         |                                   |                                                    | Dir | ISUP FGD ACM                                       |                                   |                          |
|--------------------------|-----------------------------------|----------------------------------------------------|-----|----------------------------------------------------|-----------------------------------|--------------------------|
| Parameter                | Field                             | Field Value                                        |     | Field Value                                        | Field                             | Parameter                |
| Backward Call Indicators | Charge Indicator                  | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Charge Indicator                  | Backward Call Indicators |
|                          |                                   | 01 - No Charge                                     | ⇐   | 01 - No Charge                                     |                                   |                          |
|                          |                                   | 10 - Charge                                        | ⇐   | 10 - Charge                                        |                                   |                          |
|                          |                                   | 10 - Charge                                        | ⇐   | 11 - Spare                                         |                                   |                          |
|                          | Called Party's Status Indicator   | 00 - No Indication                                 | ⇐   | 00 - No indication                                 | Called Party's Status Indicator   |                          |
|                          |                                   | 01 - Subscriber Free                               | ⇐   | 01 -Subscriber Free                                |                                   |                          |
|                          |                                   | 01 - Subscriber Free <sup>a</sup>                  | ⇐   | 10 - Connect When Free                             |                                   |                          |
|                          |                                   | 00 - No Indication                                 | ⇐   | 11 - Excessive delay                               |                                   |                          |
|                          | Called Party's Category Indicator | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Called Party's Category Indicator |                          |
|                          |                                   | 01 - Ordinary Subscriber                           | ⇐   | 01 - Ordinary Subscriber                           |                                   |                          |
|                          |                                   | 10 - Payphone                                      | ⇐   | 10 - Payphone                                      |                                   |                          |
|                          |                                   | 00 - No Indication                                 | ⇐   | 11 - Spare                                         |                                   |                          |
|                          | End-to-End Method Indicator       | 00 - No End to End Method Available                | ⇐   | 00 to 11 - ANY VALUE                               | End-to-End Mode Indicator         |                          |
|                          | Interworking Indicator            | 0 - No Interworking Encountered                    | ⇐   | 0 - No Interworking Encountered                    | Interworking indicator            |                          |
|                          |                                   | 1 - Interworking Encountered                       | ⇐   | 1 - Interworking Encountered                       |                                   |                          |
|                          | No mapping                        |                                                    | ⇐   | ALL VALUES                                         | IAM Segmentation indicator        |                          |
|                          | ISDN User Part Indicator          | 0 - ISDN User Part not Used All the Way            | ⇐   | 0 - ISDN User Part not Used All the Way            | ISDN User Part Indicator          |                          |
|                          |                                   | 1 - ISDN User Part Used All the Way                | ⇐   | 1 - ISDN User Part Used All the Way                |                                   |                          |
|                          | SCCP Method Indicator             | 00 - No Indication                                 | ⇐   | 00 to 11 - ANY VALUE                               | SCCP Method Indicator             |                          |
|                          | Holding Indicator                 | 0 - Holding not required                           | ⇐   | 0 - Holding not required                           | Holding Indicator                 |                          |
|                          |                                   |                                                    | ⇐   | 1 - Holding required                               |                                   |                          |
|                          | ISDN Access Indicator             | 0 - Terminating Access Non-ISDN                    | ⇐   | 0 - Terminating Access Non-ISDN                    | ISDN Access Indicator             |                          |
|                          |                                   | 1 - Terminating Access ISDN                        | ⇐   | 1 - Terminating Access ISDN                        |                                   |                          |
|                          | Echo Control Device Indicator     | 0 - Incoming Half Echo Control Device not Included | ⇐   | 0 - Incoming Half Echo Control Device not Included | Echo Control Device Indicator     |                          |
|                          |                                   | 1 - Incoming Half Echo Control Device Included     | ⇐   | 1 - Incoming Half Echo Control Device Included     |                                   |                          |
|                          | End-to-End Information Indicator  | 0 - no end-to-end information available            | ⇐   |                                                    |                                   |                          |
| Access Transport         |                                   |                                                    | ⇐   |                                                    |                                   | Access Transport         |

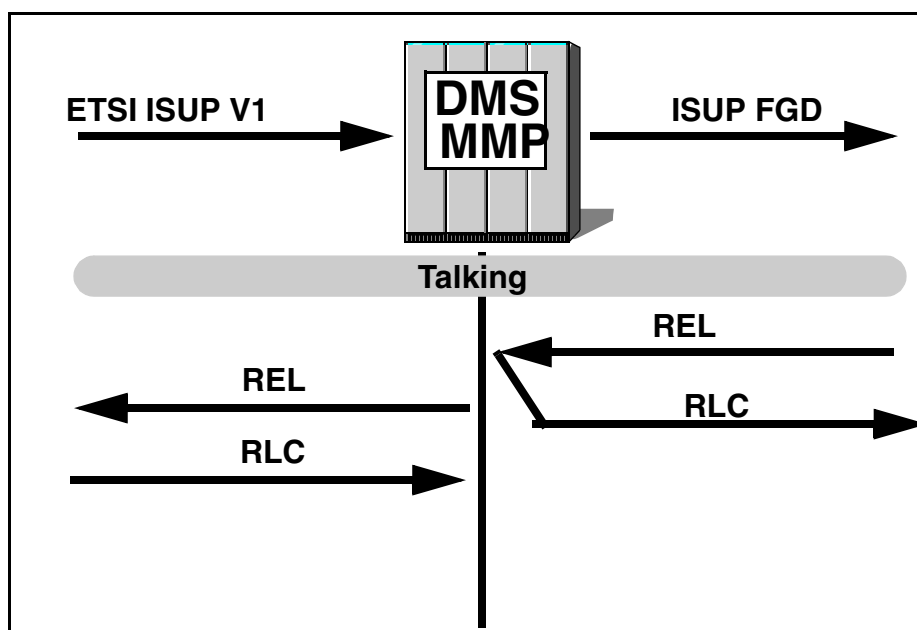


| ETSI ISUP V1 ACM                  |       |             | Dir | ISUP FGD ACM |       |                                   |
|-----------------------------------|-------|-------------|-----|--------------|-------|-----------------------------------|
| Parameter                         | Field | Field Value |     | Field Value  | Field | Parameter                         |
| Optional Backward Call Indicators |       |             | ⇐   |              |       | Optional Backward Call Indicators |
| Cause Indicators                  |       |             | ⇐   |              |       | Cause Indicators                  |

a. ACM case only

**Parameter Mapping - ISUP FGD ANM to ETSI ISUP V1 ANM**

| ETSI ISUP V1 ANM         |                                        |             | Dir | ISUP FGD ANM |                                        |                          |
|--------------------------|----------------------------------------|-------------|-----|--------------|----------------------------------------|--------------------------|
| Parameter                | Field                                  | Field Value |     | Field Value  | Field                                  | Parameter                |
| Backward Call Indicators | Refer to ACM: Backward Call Indicators |             | ⇐   |              | Refer to ACM: Backward Call Indicators | Backward Call Indicators |
| Access Transport         |                                        |             | ⇐   |              |                                        | Access Transport         |

**Normal Call Clearing****Called Party Clear****ETSI ISUP V1 to ISUP FGD Call With Called Party Clear**

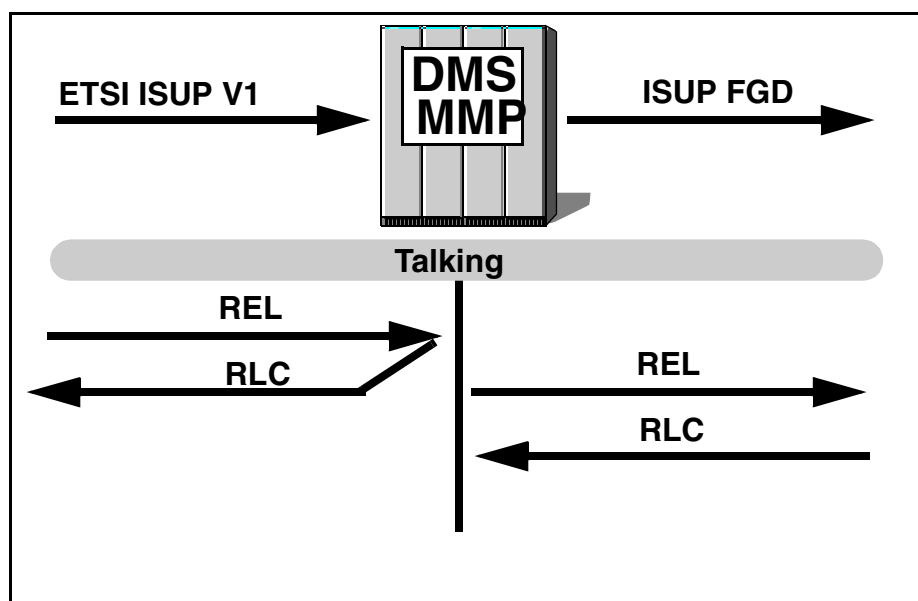
**Called Party Clear Message Mappings**

| ETSI ISUP V1 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| REL                  | ←                 | REL              |
| No trigger           | ⇒                 | RLC <sup>1</sup> |
| RLC                  | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message

**Parameter Mapping - ISUP FGD REL to ETSI ISUP V1 REL**

| ETSI ISUP V1 REL                                                          |       |             | Dir | ISUP FGD REL     |       |                            |
|---------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                                 | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as described in " REL Generation and Mapping"] |       |             | ←   | Cause Indicators |       |                            |
| No Mapping                                                                |       |             | ←   |                  |       | Automatic Congestion Level |
| No Mapping                                                                |       |             | ←   |                  |       | Access Transport           |

**Calling Party Clear****ETSI ISUP V1 to ISUP FGD Call With Calling Party Clear**

**Calling Party Clear Message Mappings**

| ETSI ISUP V1 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| REL                  | ⇒                 | REL              |
| RLC <sup>1</sup>     | ⇐                 | No trigger       |
| No mapping           | ⇐                 | RLC              |

<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

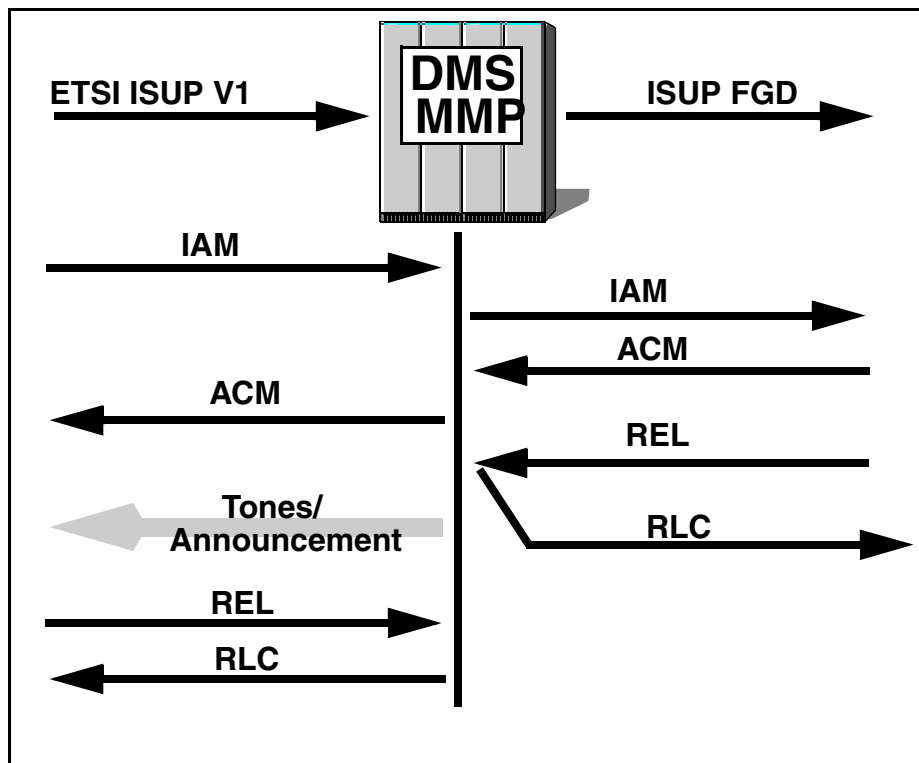
**Parameter Mapping - ETSI ISUP V1 REL to ISUP FGD REL**

| ETSI ISUP V1 REL           |       |             | Dir | ISUP FGD REL                                                             |       |           |
|----------------------------|-------|-------------|-----|--------------------------------------------------------------------------|-------|-----------|
| Parameter                  | Field | Field Value |     | Field Value                                                              | Field | Parameter |
| Cause Indicators           |       |             | ⇒   | Cause Indicators [ Mapping as described in "REL Generation and Mapping"] |       |           |
| Automatic Congestion Level |       |             | ⇒   | No mapping                                                               |       |           |
| User-to-user information   |       |             | ⇒   | No mapping                                                               |       |           |

**Unsuccessful Call Attempt**

Please refer to Section "REL Generation and Mapping" on page 691.

## ETSI ISUP v1 to ISUP FGD Unsuccessful Call Attempt



## Message Mappings

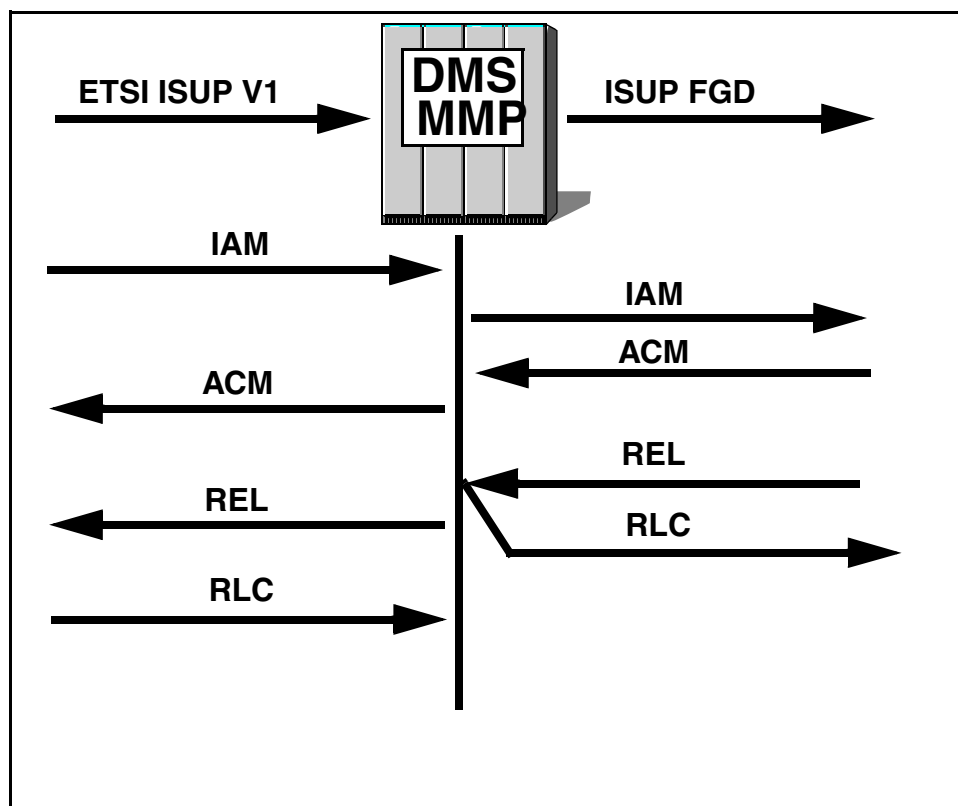
| ETSI ISUP V1 Message    | Trigger Direction | ISUP FGD Message        |
|-------------------------|-------------------|-------------------------|
| IAM <sup>1</sup>        | ⇒                 | IAM                     |
| ACM <sup>1</sup>        | ⇐                 | ACM                     |
| No Mapping              | ⇐                 | REL                     |
| No Trigger <sup>2</sup> | ⇒                 | RLC                     |
| REL                     | ⇒                 | No Mapping              |
| RLC                     | ⇐                 | No Trigger <sup>3</sup> |

<sup>1</sup> -IAM and ACM mappings are defined in previous section

<sup>2</sup> -RLC triggered by receipt of REL message.

<sup>3</sup> - RLC triggered by receipt of Forward Release.

### ETSI ISUP V1 -> ISUP FGD: Unsuccessful Call Attempt (cause)



### Unsuccessful Call Attempt (cause) Message Mapping

| ETSI ISUP V1 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| IAM                  | ←                 | IAM              |
| ACM                  | ←                 | ACM              |
| REL                  | ←                 | REL              |
| No trigger           | ⇒                 | RLC <sup>1</sup> |
| RLC                  | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

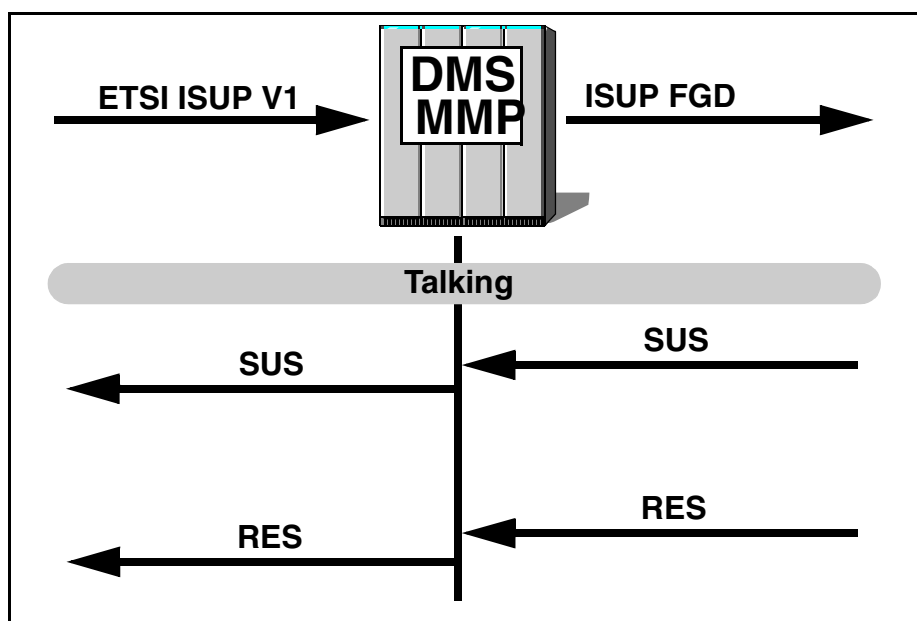
### Parameter Mapping - ISUP FGD REL to ETSI ISUP V1 REL

| ETSI ISUP V1 REL                                                         |       |             | Dir | ISUP FGD REL     |       |           |
|--------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|-----------|
| Parameter                                                                | Field | Field Value |     | Field Value      | Field | Parameter |
| Cause Indicators [ Mapping as described in "REL Generation and Mapping"] |       |             | ⇐   | Cause Indicators |       |           |

| ETSI ISUP V1 REL |       |             | Dir | ISUP FGD REL |       |                            |
|------------------|-------|-------------|-----|--------------|-------|----------------------------|
| Parameter        | Field | Field Value |     | Field Value  | Field | Parameter                  |
| No Mapping       |       |             | ←   |              |       | Automatic Congestion Level |
| No Mapping       |       |             | ←   |              |       | Access Transport           |

## Suspend/Resume

### ETSI ISUP V1 to ISUP FGD: Suspend with Resume



### Message/Signal Mappings

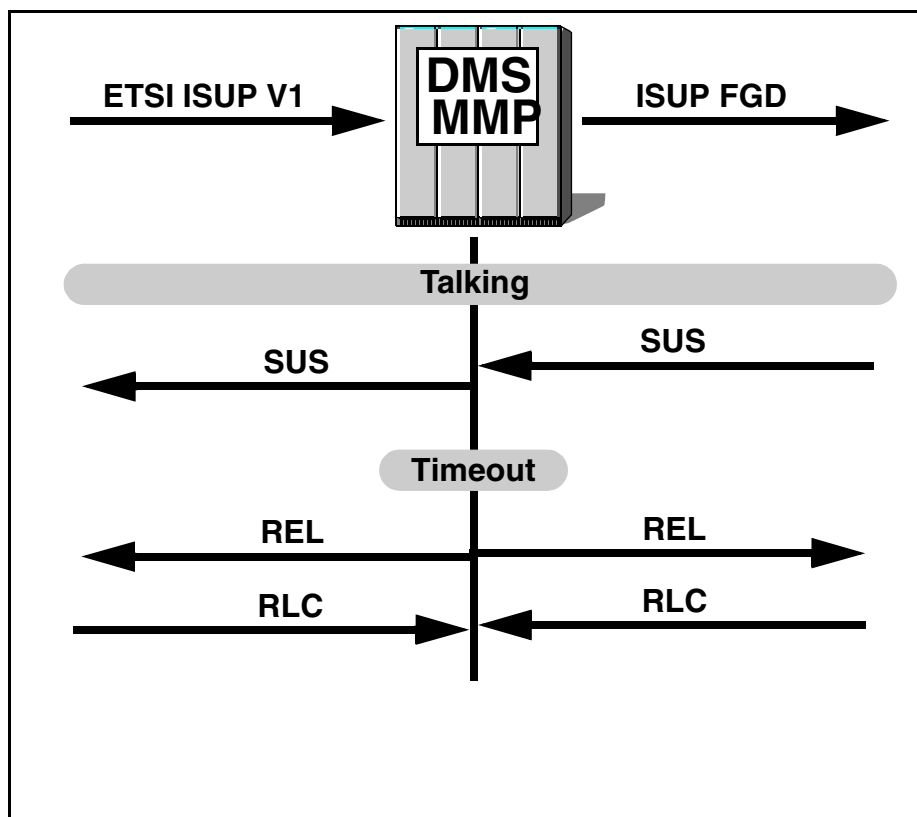
| ETSI ISUP V1 Message | Trigger | ISUP FGD Message |
|----------------------|---------|------------------|
| SUS                  | ←       | SUS              |
| RES                  | ←       | RES              |

**Parameter Mapping - ISUP FGD SUS to ETSI ISUP V1 SUS**

| ETSI ISUP V1 SUS          |                    |                               | Dir | ISUP FGD SUS                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**Parameter Mapping - ISUP FGD RES to ETSI ISUP V1 RES**

| ETSI ISUP V1 RES          |                    |                               | Dir | ISUP FGD RES                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**ISUP FGD -> ETSI ISUP V1: Suspend Timer Time-out**

## Suspend Timer Time-out Message Mapping

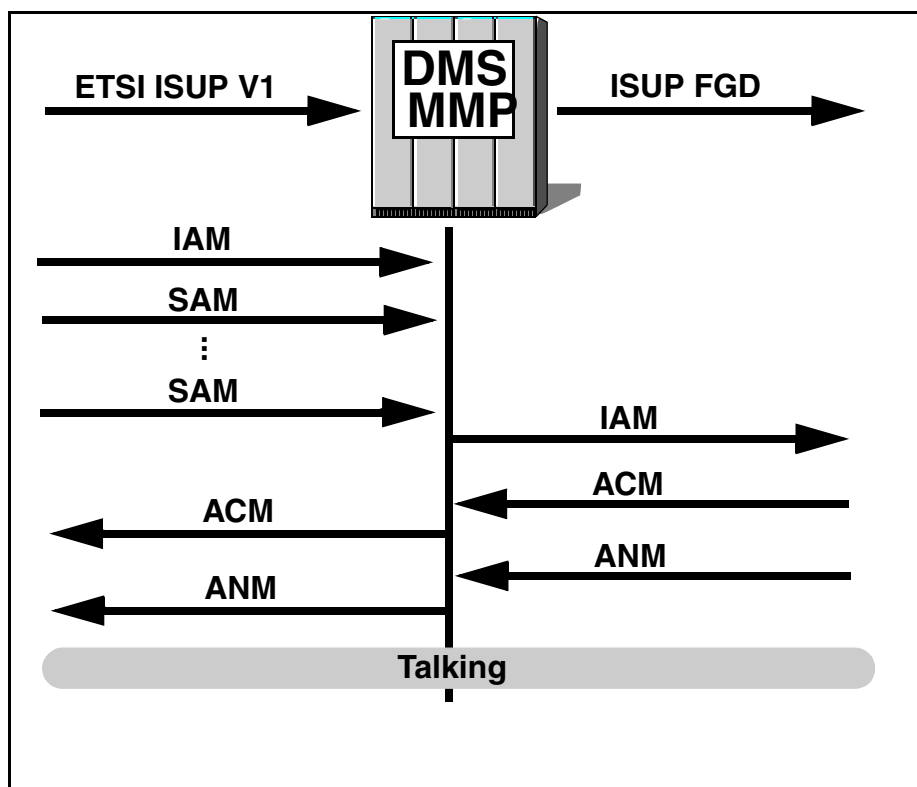
| ETSI ISUP V1 Message    | Trigger | ISUP FGD Message        |
|-------------------------|---------|-------------------------|
| SUS                     | ⇐       | SUS                     |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| REL                     | ⇐       | No Trigger <sup>b</sup> |
| No Mapping              | ⇐       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

*a. REL triggered by Time-out of Suspend timer.*

*b. REL triggered by Time-out of Suspend timer.*

## Overlap Call Setup

## ETSI ISUP V1 to ISUP FGD - Overlap Call Setup





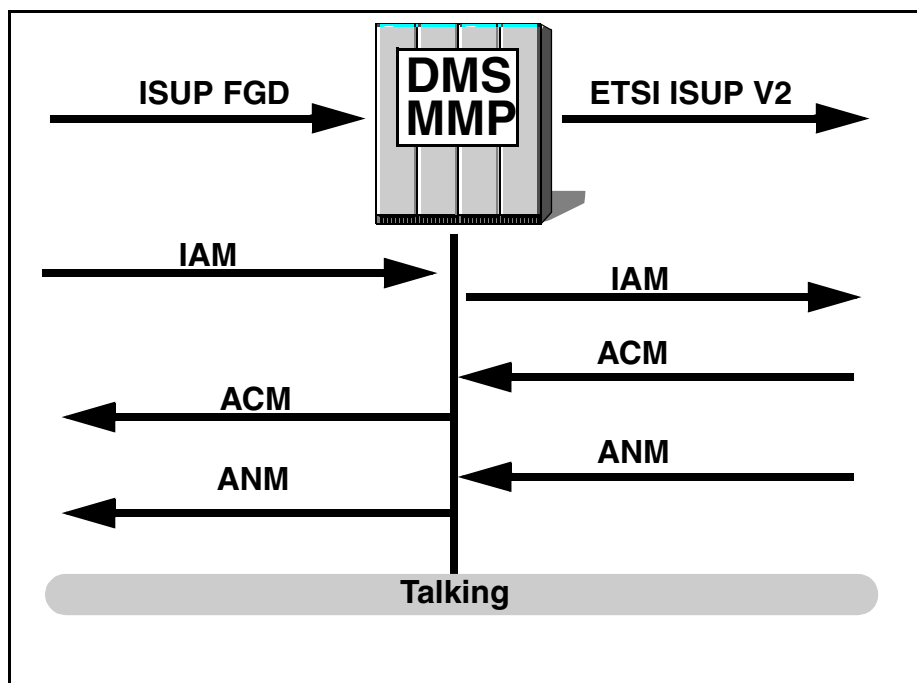
**Overlap Call Setup Message Mapping**

| ETSI ISUP V1 Message | Trigger | ISUP FGD Message |
|----------------------|---------|------------------|
| IAM                  | ⇒       | IAM              |
| SAM(s)               | ⇒       |                  |
| ACM                  | ⇐       | ACM              |
| ANM                  | ⇐       | ANM              |

Parameter and field mappings are identical to the normal call setup scenario except for the Called Party Number Address Signals. This field will be a concatenation of the digits received in the incoming IAM message and SAM message(s).

**ISUP FGD -> ETSI ISUP V2 Interworking****Normal Call Setup**

The following tables show the ISUP FGD to ETSI ISUP V2 detailed message mapping. They include all the possible ISUP FGD parameters, and details how they are mapped to their corresponding ETSI ISUP V2 counterparts

**ISUP FGD to ETSI ISUP V2: Normal Call Setup**

**Message Mappings**

| ISUP FGD Message | Trigger Direction | ETSI ISUP V2 Message |
|------------------|-------------------|----------------------|
| IAM              | ⇒                 | IAM                  |
| ACM              | ⇐                 | ACM                  |
| ANM              | ⇐                 | ANM                  |

**Parameter Mapping - ISUP FGD IAM to ETSI ISUP V2 IAM**

| ISUP FGD IAM                    |                            |                                                       | Dir | ETSI ISUP V2 IAM                                      |                               |                                              |
|---------------------------------|----------------------------|-------------------------------------------------------|-----|-------------------------------------------------------|-------------------------------|----------------------------------------------|
| Parameter                       | Field                      | Field Value                                           |     | Field Value                                           | Field                         | Parameter                                    |
| Nature of connection indicators | Satellite indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | 00 - No Satellite Circuit in the Connection           | Satellite indicator           | Nature of connection indicators <sup>a</sup> |
|                                 |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | 01 - One Satellite Circuit in the Connection          |                               |                                              |
|                                 |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | 10 - Two Satellite Circuit in the Connection          |                               |                                              |
|                                 |                            | 11 -Three Satellite Circuit in the Connection         | ⇒   | 10 - Two Satellite Circuit in the Connection          |                               |                                              |
|                                 | Continuity check indicator | 00 - Continuity Check not Required                    | ⇒   | 00 - Continuity Check not Required                    | Continuity check indicator    |                                              |
|                                 |                            | 01 - Continuity Check Required on This Circuit        | ⇒   | 10 - continuity check performed on a previous circuit |                               |                                              |
|                                 |                            | 10 - continuity check performed on a previous circuit | ⇒   | 10 - continuity check performed on a previous circuit |                               |                                              |
|                                 |                            | 11 - spare                                            | ⇒   | 00 - Continuity Check not Required                    |                               |                                              |
|                                 | Echo Suppressor indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | 0 - Outgoing Half Echo Control Device not Included    | Echo Control Device Indicator |                                              |
|                                 |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | 1 - Outgoing Half Echo Control Device Included        |                               |                                              |

| ISUP FGD IAM             |                                       |                                                                                                          | Dir | ETSI ISUP V2 IAM                                              |                                                    |                          |  |
|--------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------|----------------------------------------------------|--------------------------|--|
| Parameter                | Field                                 | Field Value                                                                                              |     | Field Value                                                   | Field                                              | Parameter                |  |
| Forward Call Indicator   | National/International Call Indicator | 0 - incoming national call                                                                               | ⇒   | 0- incoming national                                          | National/International Call Indicator <sup>b</sup> | Forward Call Indicator   |  |
|                          |                                       | 1 - incoming International call                                                                          | ⇒   | 1 - incoming International cal                                |                                                    |                          |  |
|                          | End to End Method Indicator           | 00 - No End to End Method Available                                                                      | ⇒   | 00 - No End to End Method Available                           | End to End Method Indicator                        |                          |  |
|                          |                                       | 01 - pass along method available                                                                         | ⇒   | 00 - No End to End Method Available                           |                                                    |                          |  |
|                          |                                       | 10 - SCCP method available                                                                               | ⇒   | 10 - SCCP method available                                    |                                                    |                          |  |
|                          |                                       | 11 - pass along and SCCP methods available                                                               | ⇒   | 00 - No End to End Method Available                           |                                                    |                          |  |
|                          | Interworking Indicator                | 0 - No Interworking Encountered (SS7 all the way)                                                        | ⇒   | 0 - No Interworking Encountered                               | Interworking Indicator                             |                          |  |
|                          |                                       | 1 -Interworking Encountered                                                                              | ⇒   | 1 -Interworking Encountered                                   |                                                    |                          |  |
|                          | IAM Segmentation indicator            | 0 - no indication                                                                                        | ⇒   | No mapping                                                    |                                                    |                          |  |
|                          |                                       | 1 - additional information has been received and incorporated into call setup                            | ⇒   |                                                               |                                                    |                          |  |
|                          | ISDN User Part Indicator              | 0 - ISDN User Part not used all the way                                                                  | ⇒   | 0 - ISDN User Part not used all the way                       | ISDN User Part Indicator                           |                          |  |
|                          |                                       | 1 - ISDN User Part used all the way                                                                      | ⇒   | 1- ISDN User Part used all the way                            |                                                    |                          |  |
|                          | ISDN User Part Preference Indicator   | 00 - ISDN User Part Preferred All the Way                                                                | ⇒   | 00 - ISDN User Part Preferred All the Way                     | ISDN User Part Preference Indicator <sup>a</sup>   |                          |  |
|                          |                                       | 01 - ISDN User Part not Required All the Way                                                             | ⇒   | 01 - ISDN User Part not Required All the Way                  |                                                    |                          |  |
|                          |                                       | 10 - ISDN User Part Required All the Way                                                                 | ⇒   | 10 - ISDN User Part Required All the Way                      |                                                    |                          |  |
|                          |                                       | 11 - Spare                                                                                               | ⇒   | 00 - ISDN User Part Preferred All the Way                     |                                                    |                          |  |
|                          | ISDN Access Indicator                 | 0 - Originating Access Non-ISDN                                                                          | ⇒   | 0 - Originating Access Non-ISDN                               | ISDN Access Indicator                              |                          |  |
|                          |                                       | 1 - Originating Access ISDN                                                                              | ⇒   | 1 - Originating Access ISDN                                   |                                                    |                          |  |
|                          | SCCP Mode Indicator                   | 00 - no indication                                                                                       | ⇒   | 00 - no indication                                            | SCCP Mode Indicator                                |                          |  |
|                          |                                       | 01 - connectionless method available (No procedure specified for U.S. networks)                          | ⇒   | 01 - connectionless method available                          |                                                    |                          |  |
|                          |                                       | 10 - connection oriented method available (No procedure specified for U.S. networks)                     | ⇒   | 10 - connection oriented method available                     |                                                    |                          |  |
|                          |                                       | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. networks) | ⇒   | 11 - connectionless and connection oriented methods available |                                                    |                          |  |
|                          |                                       |                                                                                                          | ⇒   | 0 - no end-to-end information available                       | End-to-End Information Indicator                   |                          |  |
| Calling Party's Category | N/A                                   | 00000000 - calling party's category's unknown                                                            | ⇒   | 00000000 - calling party's category unknown at this time      | N/A                                                | Calling Party's Category |  |
|                          |                                       | 00001010 - Ordinary Calling Subscriber                                                                   | ⇒   | 00001010 - Ordinary Calling Subscriber                        |                                                    |                          |  |
|                          |                                       | 00001101 - Test Call                                                                                     | ⇒   | 00001101 - Test Call                                          |                                                    |                          |  |
|                          |                                       | all other values - treat as 0                                                                            | ⇒   | 00001010 - Ordinary Calling Subscriber                        |                                                    |                          |  |

| ISUP FGD IAM                                     |                                    |                                        | Dir             | ETSI ISUP V2 IAM                                 |                                    |                                                          |
|--------------------------------------------------|------------------------------------|----------------------------------------|-----------------|--------------------------------------------------|------------------------------------|----------------------------------------------------------|
| Parameter                                        | Field                              | Field Value                            |                 | Field Value                                      | Field                              | Parameter                                                |
| User Service Information                         | Extension Indicator                | 1 - not extended (last octet)          | ⇒               | 1 - last octet                                   | Extension Indicator                | User Service Information/Transmission Medium Requirement |
|                                                  | Coding Standard                    | 00 - CCITT                             | ⇒               | 00 - CCITT                                       | Coding Standard                    |                                                          |
|                                                  | Information transfer capability    | 00000 - speech                         | ⇒               | 00000 - speech                                   | Information transfer capability    |                                                          |
|                                                  |                                    | 01000 - 64kbps Unrestricted            |                 | 01000 - 64kbps Unrestricted                      |                                    |                                                          |
|                                                  |                                    | 10000 - 3.1 kHz audio                  | ⇒               | 10000 - 3.1 kHz audio                            |                                    |                                                          |
|                                                  |                                    | Any other value                        |                 | BCNI treatment                                   |                                    |                                                          |
|                                                  | Transfer Mode                      | 00 - circuit mode                      | ⇒               | 00 - circuit mode                                | Transfer Mode                      |                                                          |
|                                                  | Information transfer rate          | 10000 - 64 Kbit/s                      | ⇒               | 10000 - 64 kbit/s                                | Information transfer rate          |                                                          |
|                                                  | User layer protocol identification | 01 - user information layer 1 protocol | ⇒               | 01 - user information layer 1 protocol           | User layer protocol identification |                                                          |
| User information layer 1 protocol identification | 00010 - <i>u</i> - law             | ⇒                                      | 00010 - u - law | User information layer 1 protocol identification |                                    |                                                          |

| ISUP FGD IAM        |                             |                                                                                                | Dir | ETSI ISUP V2 IAM                                                                              |                             |                     |
|---------------------|-----------------------------|------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------|-----------------------------|---------------------|
| Parameter           | Field                       | Field Value                                                                                    |     | Field Value                                                                                   | Field                       | Parameter           |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                                                              | ⇒   | Encoded based on number of address signals outpulsed                                          | Odd Even Indicator          | Called Party Number |
|                     |                             | 1 - Odd Number Of Address Digits                                                               | ⇒   |                                                                                               |                             |                     |
|                     | Nature of Address Indicator | 0000000 - Spare                                                                                | ⇒   | Set based on translations.[ Datafill as described in “ NOA/TON Mapping” ]                     | Nature of Address Indicator |                     |
|                     |                             | 0000001 - Subscriber number                                                                    | ⇒   |                                                                                               |                             |                     |
|                     |                             | 0000010 - Spare, Reserve for national Use                                                      | ⇒   |                                                                                               |                             |                     |
|                     |                             | 0000011 - National Number                                                                      | ⇒   |                                                                                               |                             |                     |
|                     |                             | 0000100 - International Number                                                                 | ⇒   |                                                                                               |                             |                     |
|                     |                             | 0000101 to 1110000 - Spare                                                                     | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110001 - subscriber number, operator requested (0+ call)                                      | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110010 - National number, operator requested (0+ call)                                        | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110011 - International number, operator requested (0+ call)                                   | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110100 - no address present, operator requested (0-,10XXX+0(0), or 00- call)                  | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110101 - no address present, cut-through call to carrier                                      | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110110 - 950+ call from local exchange carrier public station or hotel/motel line or non-EAEO | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1110111 - Test Line Test code                                                                  | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1111000 - to 1111110 - reserved for network specific use                                       | ⇒   |                                                                                               |                             |                     |
|                     |                             | 1111111 - reserved                                                                             | ⇒   |                                                                                               |                             |                     |
|                     | Numbering plan              | 000 - Unknown                                                                                  | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                                         | Numbering Plan Indicator    |                     |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan                                                          | ⇒   |                                                                                               |                             |                     |
|                     |                             | 010 - Spare                                                                                    | ⇒   |                                                                                               |                             |                     |
|                     |                             | 011 - reserved (CCITT: Data numbering plan)                                                    | ⇒   | Natl agency: 011 - data numbering plan<br>Intl agency: 001 - ISDN (Telephony) Numbering Plan  |                             |                     |
|                     |                             | 100 - reserved (CCITT: Telex numbering plan)                                                   | ⇒   | Natl agency: 100 - telex numbering plan<br>Intl agency: 001 - ISDN (telephony) numbering plan |                             |                     |
|                     |                             | 101 - private numbering plan                                                                   | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                                         |                             |                     |
|                     |                             | 110 - spare                                                                                    | ⇒   |                                                                                               |                             |                     |
|                     |                             | 111 - spare                                                                                    | ⇒   |                                                                                               |                             |                     |

| ISUP FGD IAM         |                             |                                                          | Dir | ETSI ISUP V2 IAM                                     |                                   |                                   |
|----------------------|-----------------------------|----------------------------------------------------------|-----|------------------------------------------------------|-----------------------------------|-----------------------------------|
| Parameter            | Field                       | Field Value                                              |     | Field Value                                          | Field                             | Parameter                         |
| Called Party Number  | Address information         | 0000 - Digit 0                                           | ⇒   | Determined by MMP translations                       | Address signal                    | Called Party Number <sup>b</sup>  |
|                      |                             | 0001 - Digit 1                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0010 - Digit 2                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0011 - Digit 3                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0101 - Digit 4                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0101 - Digit 5                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0110 - Digit 6                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 0111 - Digit 7                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1000 - Digit 8                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1001 - Digit 9                                           | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1111 - reserved                                          | ⇒   |                                                      |                                   |                                   |
|                      | Filler                      | 0000                                                     | ⇒   | 0000 (included if signal count is odd)               | Filler                            |                                   |
|                      |                             |                                                          | ⇒   | 0 - routing to internal network number allowed       | Internal Network Number Indicator |                                   |
| Calling Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                        | ⇒   | Encoded based on number of address signals outpulsed | Odd Even Indicator                | Calling Party Number <sup>c</sup> |
|                      |                             | 1 - Odd Number of Address Digits                         | ⇒   |                                                      |                                   |                                   |
|                      | Nature of Address Indicator | 0000000 - Spare                                          | ⇒   | 0000010 - Unknown                                    | Nature of Address Indicator       |                                   |
|                      |                             | 0000001 - unique subscriber number                       | ⇒   | 0000001 - subscriber number                          |                                   |                                   |
|                      |                             | 0000010 - Spare, Reserve for national Use                | ⇒   | 0000010 - Unknown                                    |                                   |                                   |
|                      |                             | 0000011 - unique national number                         | ⇒   | 0000011 - national Number                            |                                   |                                   |
|                      |                             | 0000100 - unique international number                    | ⇒   | 0000100 - International Number                       |                                   |                                   |
|                      |                             | 0000101 to 1110000 - Spare                               | ⇒   | 0000010 - Unknown                                    |                                   |                                   |
|                      |                             | 1110001 - non-unique subscriber number,                  | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110010 - spare, reserved for national use               | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110011 - non-unique national number                     | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110100 - non-unique international number                | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110101 - spare                                          | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110110 - spare                                          | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1110111 - Test Line Test code                            | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1111000 - to 1111110 - reserved for network specific use | ⇒   |                                                      |                                   |                                   |
|                      |                             | 1111111 - spare                                          | ⇒   |                                                      |                                   |                                   |

| ISUP FGD IAM                 |                                                   |                                              | Dir | ETSI ISUP V2 IAM                                                                              |                                           |                                   |
|------------------------------|---------------------------------------------------|----------------------------------------------|-----|-----------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------|
| Parameter                    | Field                                             | Field Value                                  |     | Field Value                                                                                   | Field                                     | Parameter                         |
| Calling Party Number         | Numbering plan                                    | 000 - Unknown                                | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                                         | Numbering Plan Indicator                  | Calling Party Number <sup>c</sup> |
|                              |                                                   | 001 - ISDN (Telephony) Numbering Plan        | ⇒   |                                                                                               |                                           |                                   |
|                              |                                                   | 010 - Spare                                  | ⇒   |                                                                                               |                                           |                                   |
|                              |                                                   | 011 - reserved (CCITT: Data numbering plan)  | ⇒   | Natl agency: 011 - data numbering plan<br>Intl agency: 001 - ISDN (Telephony) Numbering Plan  |                                           |                                   |
|                              |                                                   | 100 - reserved (CCITT: Telex numbering plan) | ⇒   | Natl agency: 100 - telex numbering plan<br>Intl agency: 001 - ISDN (telephony) numbering plan |                                           |                                   |
|                              |                                                   | 101 - private numbering plan                 | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                                         |                                           |                                   |
|                              |                                                   | 110 - spare                                  | ⇒   |                                                                                               |                                           |                                   |
|                              |                                                   | 111 - spare                                  | ⇒   |                                                                                               |                                           |                                   |
|                              | Pres. (Address presentation restricted indicator) | 00 - presentation allowed                    | ⇒   | 00 - presentation allowed                                                                     | Address presentation restricted indicator |                                   |
|                              |                                                   | 01 - presentation restricted                 | ⇒   | 01 - presentation restricted                                                                  |                                           |                                   |
|                              |                                                   | All other values                             | ⇒   | 01 - presentation restricted                                                                  |                                           |                                   |
|                              | Address information                               | 0000 - Digit 0                               | ⇒   | 0000 - Digit 0                                                                                | Address signal                            |                                   |
|                              |                                                   | 0001 - Digit 1                               | ⇒   | 0001 - Digit 1                                                                                |                                           |                                   |
|                              |                                                   | 0010 - Digit 2                               | ⇒   | 0010 - Digit 2                                                                                |                                           |                                   |
|                              |                                                   | 0011 - Digit 3                               | ⇒   | 0011 - Digit 3                                                                                |                                           |                                   |
|                              |                                                   | 0101 - Digit 4                               | ⇒   | 0101 - Digit 4                                                                                |                                           |                                   |
|                              |                                                   | 0101 - Digit 5                               | ⇒   | 0101 - Digit 5                                                                                |                                           |                                   |
|                              |                                                   | 0110 - Digit 6                               | ⇒   | 0110 - Digit 6                                                                                |                                           |                                   |
|                              |                                                   | 0111 - Digit 7                               | ⇒   | 0111 - Digit 7                                                                                |                                           |                                   |
|                              |                                                   | 1000 - Digit 8                               | ⇒   | 1000 - Digit 8                                                                                |                                           |                                   |
|                              |                                                   | 1001 - Digit 9                               | ⇒   | 1001 - Digit 9                                                                                |                                           |                                   |
|                              |                                                   | 1010 - spare                                 | ⇒   | 0000 - digit 0                                                                                |                                           |                                   |
|                              |                                                   | 1111 - reserved                              | ⇒   | 1111 - ST                                                                                     |                                           |                                   |
|                              | Filler                                            | 0000                                         | ⇒   | 0000 (included if address signal count is odd)                                                | Filler                                    |                                   |
|                              |                                                   |                                              | ⇒   | 0 - complete                                                                                  | Calling Party Number Incomplete Indicator |                                   |
|                              |                                                   |                                              | ⇒   | 00 - user provided, not verified                                                              | Screening Indicator                       |                                   |
| Transit Network Selection    |                                                   |                                              | ⇒   | No Mapping                                                                                    |                                           |                                   |
| Originating line information |                                                   |                                              | ⇒   | No mapping                                                                                    |                                           |                                   |

| ISUP FGD IAM                          |       |             | Dir | ETSI ISUP V2 IAM                              |       |                        |
|---------------------------------------|-------|-------------|-----|-----------------------------------------------|-------|------------------------|
| Parameter                             | Field | Field Value |     | Field Value                                   | Field | Parameter              |
| Charge Number                         |       |             | ⇒   | No mapping                                    |       |                        |
| Carrier selection                     |       |             | ⇒   | No mapping                                    |       |                        |
| Service code                          |       |             | ⇒   | No mapping                                    |       |                        |
| Carrier Identification Code Parameter |       |             | ⇒   | No mapping                                    |       |                        |
| Hop Counter                           |       |             | ⇒   | Hop Counter [ As described in “ Hop Counter”] |       |                        |
| Jurisdiction Information              |       |             | ⇒   | No mapping                                    |       |                        |
| Original Called Number                |       |             | ⇒   |                                               |       | Original Called Number |



| ISUP FGD IAM       |                                    |                                                        | Dir | ETSI ISUP V2 IAM                                    |                                           |                    |
|--------------------|------------------------------------|--------------------------------------------------------|-----|-----------------------------------------------------|-------------------------------------------|--------------------|
| Parameter          | Field                              | Field Value                                            |     | Field Value                                         | Field                                     | Parameter          |
| Redirecting Number | Nature of Address Indicator        | 0000000 - spare or unknown                             | ⇒   | Redirecting Number parameter discarded              |                                           |                    |
|                    |                                    | 0000001 - unique subscriber number                     | ⇒   | Natl agency: 0000001 - subscriber number            | Nature of Address Indicator               | Redirecting Number |
|                    |                                    |                                                        | ⇒   | Intl Agency: Redirecting Number parameter discarded |                                           |                    |
|                    |                                    | 0000010 - spare, reserved for national use             | ⇒   | Natl agency: 0000010 - unknown                      | Nature of Address Indicator               | Redirecting Number |
|                    |                                    |                                                        | ⇒   | Intl Agency: Redirecting Number parameter discarded |                                           |                    |
|                    |                                    | 0000011 - unique national (significant) number         | ⇒   | 0000011 - national (significant) number             | Nature of Address Indicator               | Redirecting Number |
|                    |                                    | 0000100 - unique international number                  | ⇒   | 0000100 - internal number                           | Nature of Address Indicator               | Redirecting Number |
|                    |                                    | 0000101 to 1110000 - spare                             | ⇒   | Redirecting Number parameter discarded              |                                           |                    |
|                    |                                    | 1110001 - non-unique subscriber number                 | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110010 - spare, reserved for national use             | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110011 - non-unique national (significant) number     | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110100 - non-unique international number              | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110101 - spare                                        | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110110 - spare                                        | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1110111 - test line test code                          | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1111000 to 1111110 - reserved for network specific use | ⇒   |                                                     |                                           |                    |
|                    |                                    | 1111111 - spare                                        | ⇒   |                                                     |                                           |                    |
|                    | Odd/Even Indicator                 | 0 - even number of address digits                      | ⇒   | 0 - even number of address signals                  | Odd/Even Indicator                        | Redirecting Number |
|                    |                                    | 1 - odd number of address digits                       | ⇒   | 1 - odd number of address signals                   |                                           |                    |
|                    | Screening Indicator                | 00 - network provided                                  | ⇒   | No Mapping                                          |                                           |                    |
|                    |                                    | 01 - user provided, passed network screening           | ⇒   | No Mapping                                          |                                           |                    |
|                    |                                    | 10 - user provided, failed network screening           | ⇒   | No Mapping                                          |                                           |                    |
|                    |                                    | 11 - user provided, not screened                       | ⇒   | No Mapping                                          |                                           |                    |
|                    | Presentation Restriction Indicator | 00 - presentation allowed                              | ⇒   | 00 - presentation allowed                           | Address Presentation Restricted Indicator | Redirecting Number |
|                    |                                    | 01 - presentation restricted                           | ⇒   | 01 - presentation restricted                        |                                           |                    |
|                    |                                    | 10 - number not available                              | ⇒   | Natl agency: 10 - address not available             |                                           |                    |
|                    |                                    |                                                        | ⇒   | Intl agency: 01 - presentation restricted           |                                           |                    |
|                    |                                    | 11 - spare                                             | ⇒   | 01 - presentation restricted                        |                                           |                    |

| ISUP FGD IAM       |                     |                                              | Dir                                                      | ETSI ISUP V2 IAM                                    |                                                          |                    |
|--------------------|---------------------|----------------------------------------------|----------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|--------------------|
| Parameter          | Field               | Field Value                                  |                                                          | Field Value                                         | Field                                                    | Parameter          |
| Redirecting Number | Numbering Plan      | 000 - unknown                                | ⇒                                                        | Redirecting Number parameter discarded              |                                                          |                    |
|                    |                     | 001 - ISDN (telephony) numbering plan        | ⇒                                                        | 001 - ISDN (telephony) numbering plan               | Numbering Plan Indicator                                 | Redirecting Number |
|                    |                     | 010 - spare                                  | ⇒                                                        | Redirecting Number parameter discarded              |                                                          |                    |
|                    |                     | 011 - reserved (CCITT: Data numbering plan)  | ⇒                                                        | Natl agency: 011 - data numbering plan              | Numbering Plan Indicator                                 | Redirecting Number |
|                    |                     |                                              | ⇒                                                        | Intl Agency: Redirecting Number parameter discarded |                                                          |                    |
|                    |                     | 100 - reserved (CCITT: Telex numbering plan) | ⇒                                                        | Natl agency: 100 - telex numbering plan             | Numbering Plan Indicator                                 | Redirecting Number |
|                    |                     |                                              | ⇒                                                        | Intl Agency: Redirecting Number parameter discarded |                                                          |                    |
|                    |                     | 101 - private numbering plan                 | ⇒                                                        | Redirecting Number parameter discarded              |                                                          |                    |
|                    |                     | 110 - spare                                  | ⇒                                                        |                                                     |                                                          |                    |
|                    | 111 - spare         | ⇒                                            |                                                          |                                                     |                                                          |                    |
|                    | Spare               | 0                                            | ⇒                                                        | No Mapping                                          |                                                          |                    |
|                    | Address Information | 0000 - digit 0                               | ⇒                                                        | 0000 - digit 0                                      | Address Signal                                           | Redirecting Number |
|                    |                     | 0001 - digit 1                               | ⇒                                                        | 0001 - digit 1                                      |                                                          |                    |
|                    |                     | 0010 - digit 2                               | ⇒                                                        | 0010 - digit 2                                      |                                                          |                    |
|                    |                     | 0011 - digit 3                               | ⇒                                                        | 0011 - digit 3                                      |                                                          |                    |
|                    |                     | 0100 - digit 4                               | ⇒                                                        | 0100 - digit 4                                      |                                                          |                    |
|                    |                     | 0101 - digit 5                               | ⇒                                                        | 0101 - digit 5                                      |                                                          |                    |
|                    |                     | 0110 - digit 6                               | ⇒                                                        | 0110 - digit 6                                      |                                                          |                    |
|                    |                     | 0111 - digit 7                               | ⇒                                                        | 0111 - digit 7                                      |                                                          |                    |
|                    |                     | 1000 - digit 8                               | ⇒                                                        | 1000 - digit 8                                      |                                                          |                    |
|                    |                     | 1001 - digit 9                               | ⇒                                                        | 1001 - digit 9                                      |                                                          |                    |
|                    |                     | 1010 - spare                                 | ⇒                                                        | 0000 - digit 0                                      |                                                          |                    |
|                    |                     | 1111 - reserved                              | ⇒                                                        | 1111 - reserved                                     |                                                          |                    |
|                    |                     | Filler                                       | 0000 (interted after last address digit if count is odd) | ⇒                                                   | 0000 (interted after last address digit if count is odd) |                    |
|                    |                     |                                              |                                                          | ⇒                                                   | 00                                                       | Spare              |
|                    |                     |                                              |                                                          | ⇒                                                   | 0                                                        | Spare              |
|                    | Access Transport    |                                              | ⇒                                                        | Access Transport                                    |                                                          |                    |
| Generic Address    |                     | ⇒                                            | No mapping                                               |                                                     |                                                          |                    |
| Generic Name       |                     | ⇒                                            | No mapping                                               |                                                     |                                                          |                    |

a. Please refer to Section "Nature of Connection Mapping for IAM" on page 691.

b. Please refer to Section "Additional SS7 procedures" on page 683.

c. Calling Party Number mappings shown may be altered by inswitch features.



**Parameter Mapping for ACM - ETSI ISUP V2 ACM to ISUP FGD Interworking**

| ISUP FGD ACM             |                                            |                                                    | Dir | ETSI ISUP V2 ACM                                              |                                   |                          |
|--------------------------|--------------------------------------------|----------------------------------------------------|-----|---------------------------------------------------------------|-----------------------------------|--------------------------|
| Parameter                | Field                                      | Field Value                                        |     | Field Value                                                   | Field                             | Parameter                |
| Backward call indicators | Charge Indicator                           | 00 - No Indication                                 | ⇐   | 00 - No Indication                                            | Charge Indicator                  | Backward call indicators |
|                          |                                            | 01 - No Charge                                     | ⇐   | 01 - No Charge                                                |                                   |                          |
|                          |                                            | 10 - Charge                                        | ⇐   | 10 - Charge                                                   |                                   |                          |
|                          |                                            | 10 - Charge                                        | ⇐   | 11 - spare                                                    |                                   |                          |
|                          | Called Party's Status Indicator            | 00 - No Indication                                 | ⇐   | 00 - No Indication                                            | Called Party's Status Indicator   |                          |
|                          |                                            | 01 - Subscriber Free                               | ⇐   | 01 - Subscriber Free                                          |                                   |                          |
|                          |                                            | 01 - Subscriber Free                               | ⇐   | 10 - connect when free                                        |                                   |                          |
|                          |                                            | 00 - No Indication                                 | ⇐   | 11 - spare                                                    |                                   |                          |
|                          | Called Party's Category Indicator          | 00 - No Indication                                 | ⇐   | 00 - No Indication                                            | Called Party's Category Indicator |                          |
|                          |                                            | 01 - Ordinary Subscriber                           | ⇐   | 01 - Ordinary Subscriber                                      |                                   |                          |
|                          |                                            | 10 - Payphone                                      | ⇐   | 10 - Payphone                                                 |                                   |                          |
|                          |                                            | 00 - No Indication                                 | ⇐   | 11 - spare                                                    |                                   |                          |
|                          | End-to-End Method Indicator                | 00 - No End to End Method Available                | ⇐   | Any value                                                     | End-to-End Method Indicator       |                          |
|                          | Interworking Indicator                     | 0 - No Interworking Encountered                    | ⇐   | 0 - No Interworking Encountered                               | Interworking Indicator            |                          |
|                          |                                            | 1 - Interworking Encountered                       | ⇐   | 1 - Interworking Encountered                                  |                                   |                          |
|                          | No mapping                                 |                                                    | ⇐   | ALL VALUES                                                    | End-to-End Information Indicator  |                          |
|                          | ISDN User Part Indicator                   | 0 - ISDN User Part not Used All the Way            | ⇐   | 0 - ISDN User Part not Used All the Way                       | ISDN User Part Indicator          |                          |
|                          |                                            | 1 - ISDN User Part Used All the Way                | ⇐   | 1 - ISDN User Part Used All the Way                           |                                   |                          |
|                          | Holding Indicator                          | 0 - Holding not required                           | ⇐   | 0 - Holding not requested                                     | Holding Indicator                 |                          |
|                          |                                            |                                                    | ⇐   | 1 - Holding requested                                         |                                   |                          |
|                          | ISDN Access Indicator                      | 0 - Terminating Access Non-ISDN                    | ⇐   | 0 - Terminating Access Non-ISDN                               | ISDN Access Indicator             |                          |
|                          |                                            | 1 - Terminating Access ISDN                        | ⇐   | 1 - Terminating Access ISDN                                   |                                   |                          |
|                          | Echo Control Device Indicator <sup>a</sup> | 0 - Incoming Half Echo Control Device not Included | ⇐   | 0 - Incoming Half Echo Control Device not Included            | Echo Control Device Indicator     |                          |
|                          |                                            | 1 - Incoming Half Echo Control Device Included     | ⇐   | 1 - Incoming Half Echo Control Device Included                |                                   |                          |
|                          | SCCP Method Indicator                      | 00 - No Indication                                 | ⇐   | 00 - No Indication                                            | SCCP Method Indicator             |                          |
|                          |                                            |                                                    | ⇐   | 01 - connectionless method available                          |                                   |                          |
|                          |                                            |                                                    | ⇐   | 10 - connection oriented method available                     |                                   |                          |
|                          |                                            |                                                    | ⇐   | 11 - connectionless and connection oriented methods available |                                   |                          |
|                          | IAM Segmentation Indicator                 | 0 - no indication                                  | ⇐   |                                                               |                                   |                          |

| ISUP FGD ACM                      |       |             | Dir | ETSI ISUP V2 ACM |       |                                     |
|-----------------------------------|-------|-------------|-----|------------------|-------|-------------------------------------|
| Parameter                         | Field | Field Value |     | Field Value      | Field | Parameter                           |
| Optional backward call indicators |       |             | ←   |                  |       | Optional backward call indicators   |
| Cause Indicators                  |       |             | ←   |                  |       | Cause Indicators                    |
| No Mapping                        |       |             | ←   |                  |       | Call Reference                      |
| Access Transport                  |       |             | ←   |                  |       | Access Transport                    |
| User to User Indicators           |       |             | ←   |                  |       | User to User Indicator              |
| User to User information          |       |             | ←   |                  |       | User to user information            |
| No mapping                        |       |             | ←   |                  |       | Generic notification indicator      |
| No mapping                        |       |             | ←   |                  |       | Transmission medium used            |
| No mapping                        |       |             | ←   |                  |       | Echo control information            |
| No mapping                        |       |             | ←   |                  |       | Access delivery information         |
| No mapping                        |       |             | ←   |                  |       | Redirection number                  |
| No mapping                        |       |             | ←   |                  |       | Parameter compatibility information |
| No mapping                        |       |             | ←   |                  |       | Call diversion information          |
| No mapping                        |       |             | ←   |                  |       | Redirection number restriction      |
| No mapping                        |       |             | ←   |                  |       | Service activation                  |
| No mapping                        |       |             | ←   |                  |       | Network-specific facility Parameter |
| No mapping                        |       |             | ←   |                  |       | Remote operations                   |

a. Echo Control Device Ind. fields are encoded based on incoming information and datafill. Datafill may result in a values other than that shown

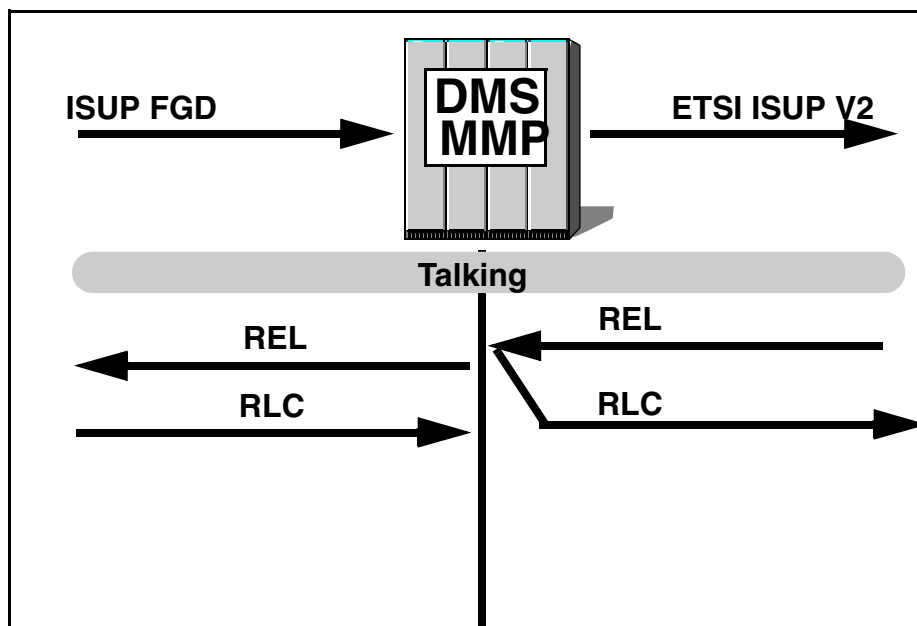
**Parameter Mapping for ANM- ETSI ISUP V2 ANM to ISUP FGD Interworking**

| ISUP FGD ANM             |                                        |             | Dir | ETSI ISUP V2 ANM |                                        |                                     |
|--------------------------|----------------------------------------|-------------|-----|------------------|----------------------------------------|-------------------------------------|
| Parameter                | Field                                  | Field Value |     | Field Value      | Field                                  | Parameter                           |
| Backward Call Indicators | Refer to ACM: Backward Call Indicators |             | ⇐   |                  | Refer to ACM: Backward Call Indicators | Backward Call Indicators            |
| No mapping               |                                        |             | ⇐   |                  |                                        | Optional backwards call indicators  |
| No mapping               |                                        |             | ⇐   |                  |                                        | User-to-user indicator              |
| User to User information |                                        |             | ⇐   |                  |                                        | User to user information            |
| No mapping               |                                        |             | ⇐   |                  |                                        | Connected Number                    |
| Access Transport         |                                        |             | ⇐   |                  |                                        | Access Transport                    |
| No mapping               |                                        |             | ⇐   |                  |                                        | Access delivery information         |
| No mapping               |                                        |             | ⇐   |                  |                                        | Generic notification                |
| No mapping               |                                        |             | ⇐   |                  |                                        | Parameter compatibility information |
| No mapping               |                                        |             | ⇐   |                  |                                        | Call history information            |
| No mapping               |                                        |             | ⇐   |                  |                                        | Generic number                      |
| No mapping               |                                        |             | ⇐   |                  |                                        | Transmission medium used            |
| No mapping               |                                        |             | ⇐   |                  |                                        | Redirection number                  |
| No mapping               |                                        |             | ⇐   |                  |                                        | Echo control information            |
| No mapping               |                                        |             | ⇐   |                  |                                        | Redirection number restriction      |
| No mapping               |                                        |             | ⇐   |                  |                                        | Service activation                  |
| No mapping               |                                        |             | ⇐   |                  |                                        | Call reference                      |
| No mapping               |                                        |             | ⇐   |                  |                                        | Network-specific facility           |
| No mapping               |                                        |             | ⇐   |                  |                                        | Remote operations                   |

## Normal Call Clearing

### Called Party Clear

### ISUP FGD to ETSI ISUP V2 Call With Called Party Clear



### Called Party Clear Message Mappings

| ISUP FGD Message | Trigger Direction | ETSI ISUP V2 Message |
|------------------|-------------------|----------------------|
| REL              | ⇐                 | REL                  |
| No trigger       | ⇒                 | RLC <sup>1</sup>     |
| RLC              | ⇒                 | No mapping           |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message

### Parameter Mapping - ETSI ISUP V2 REL to ISUP FGD REL

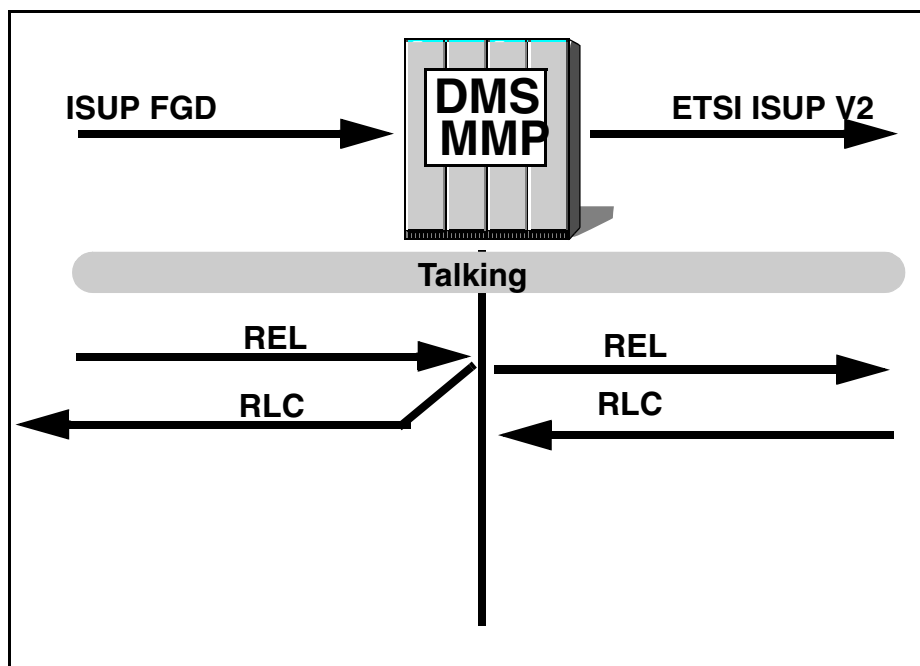
| ISUP FGD REL                                                              |       |             | Dir | ETSI ISUP V2 REL |       |                            |
|---------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                                 | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as described in " REL Generation and Mapping"] |       |             | ⇐   | Cause Indicators |       |                            |
| No Mapping                                                                |       |             | ⇐   |                  |       | Automatic Congestion Level |

| ISUP FGD REL |                          |             | Dir | ETSI ISUP V2 REL |       |                                     |
|--------------|--------------------------|-------------|-----|------------------|-------|-------------------------------------|
| Parameter    | Field                    | Field Value |     | Field Value      | Field | Parameter                           |
|              | No mapping               |             | ⇐   |                  |       | Redirection information             |
|              | No mapping               |             | ⇐   |                  |       | Redirection number                  |
|              | No mapping               |             | ⇐   |                  |       | Access transport                    |
|              | No mapping               |             | ⇐   |                  |       | Signalling point code               |
|              | User to User information |             | ⇐   |                  |       | User-to-user information            |
|              | No mapping               |             | ⇐   |                  |       | Network specific facility           |
|              | No mapping               |             | ⇐   |                  |       | Access delivery information         |
|              | No mapping               |             | ⇐   |                  |       | Parameter compatibility information |
|              | No mapping               |             | ⇐   |                  |       | Redirection number restrict         |
|              | No mapping               |             | ⇐   |                  |       | User-to-user indicators             |



## Calling Party Clear

### ISUP FGD to ETSI ISUP V2 Call With Calling Party Clear



### Calling Party Clear Message Mappings

| ISUP FGD Message | Trigger Direction | ETSI ISUP V2 Message |
|------------------|-------------------|----------------------|
| REL              | ⇒                 | REL                  |
| RLC <sup>1</sup> | ⇐                 | No trigger           |
| No mapping       | ⇐                 | RLC                  |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message.

### Parameter Mapping - ISUP FGD REL to ETSI ISUP V2 REL

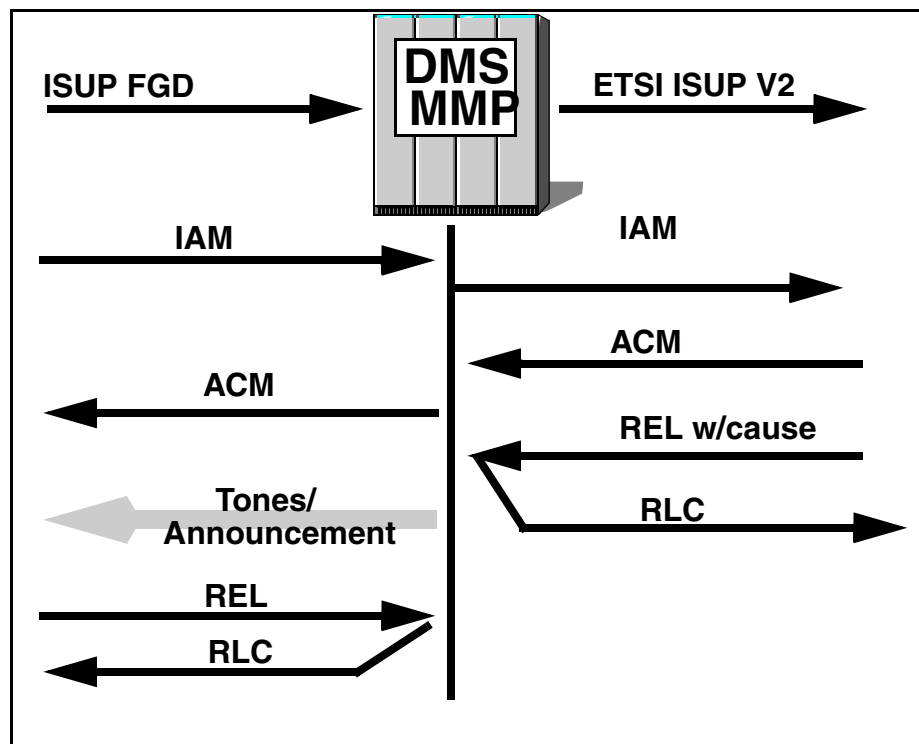
| ISUP FGD REL               |       |             | Dir | ETSI ISUP V2 REL                                                         |       |           |
|----------------------------|-------|-------------|-----|--------------------------------------------------------------------------|-------|-----------|
| Parameter                  | Field | Field Value |     | Field Value                                                              | Field | Parameter |
| Cause Indicators           |       |             | ⇒   | Cause Indicators[ Mapping as described in “ REL Generation and Mapping”] |       |           |
| Automatic Congestion Level |       |             | ⇒   | No Mapping                                                               |       |           |

| ISUP FGD REL     |       |             | Dir | ETSI ISUP V2 REL |       |           |
|------------------|-------|-------------|-----|------------------|-------|-----------|
| Parameter        | Field | Field Value |     | Field Value      | Field | Parameter |
| Access Transport |       |             | ⇒   | No Mapping       |       |           |

### Unsuccessful Call Attempt

Please refer to Section “REL Generation and Mapping” on page 691.

#### ISUP FGD to ETSI ISUP V2 Unsuccessful Call Attempt (Release w/cause to Tones/Announcements)



#### Message Mappings

| ISUP FGD Message        | Trigger Direction | ETSI ISUP V2 Message |
|-------------------------|-------------------|----------------------|
| IAM <sup>1</sup>        | ⇒                 | IAM                  |
| ACM <sup>1</sup>        | ⇐                 | ACM                  |
| No Mapping              | ⇐                 | REL                  |
| No Trigger <sup>2</sup> | ⇒                 | RLC                  |

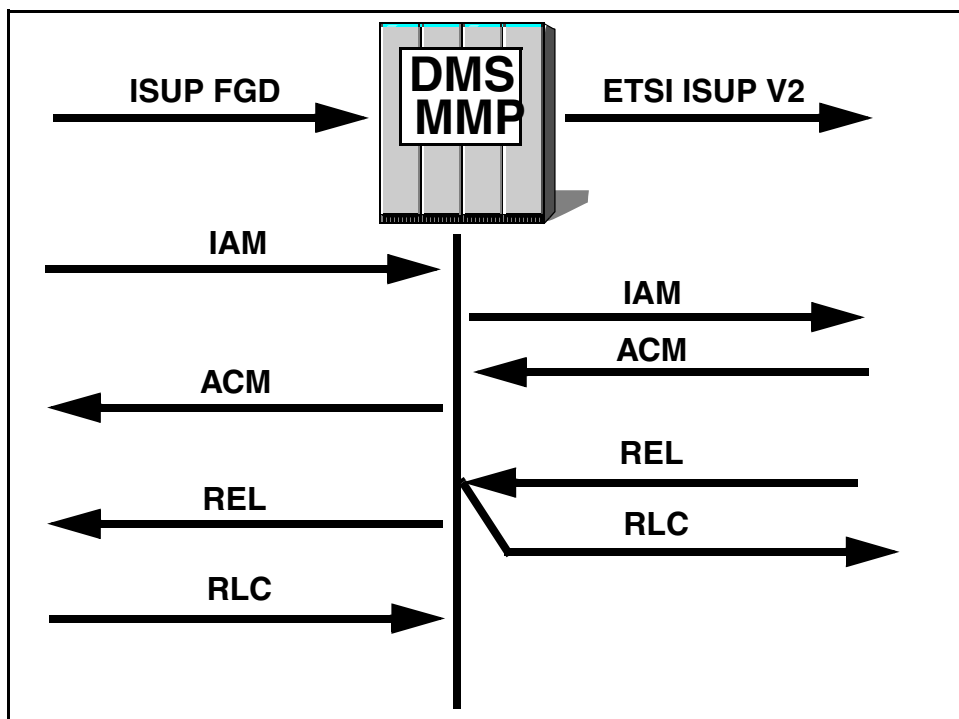
| ISUP FGD Message | Trigger Direction | ETSI ISUP V2 Message    |
|------------------|-------------------|-------------------------|
| REL              | $\Rightarrow$     | No Mapping              |
| RLC              | $\Leftarrow$      | No Trigger <sup>3</sup> |

<sup>1</sup> -IAM and ACM mappings are defined in previous section

<sup>2</sup> -RLC triggered by receipt of REL message.

<sup>3</sup> - RLC triggered by receipt of Clear Forward.

### ISUP FGD -> ETSI ISUP V2: Unsuccessful Call Attempt (cause)



### Unsuccessful Call Attempt (cause) Message Mapping

| ISUP FGD Message | Trigger Direction | ETSI ISUP V2 Message |
|------------------|-------------------|----------------------|
| REL              | $\Leftarrow$      | REL                  |
| No trigger       | $\Rightarrow$     | RLC <sup>1</sup>     |
| RLC              | $\Rightarrow$     | No mapping           |

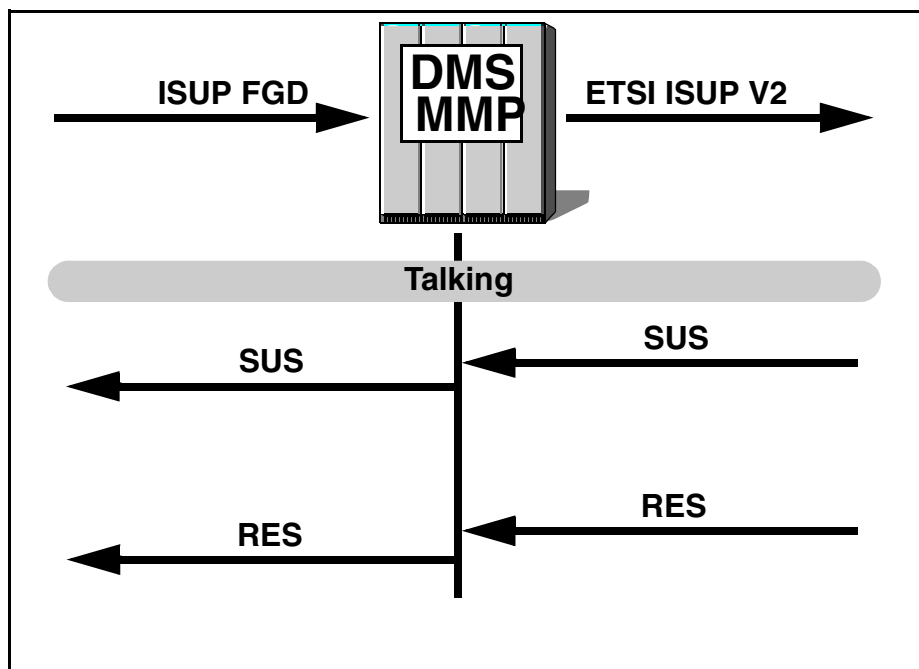
<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

**Parameter Mapping - ETSI ISUP V2 REL to ISUP FGD REL**

| ISUP FGD REL                                                              |       |             | Dir | ETSI ISUP V2 REL        |       |                                     |
|---------------------------------------------------------------------------|-------|-------------|-----|-------------------------|-------|-------------------------------------|
| Parameter                                                                 | Field | Field Value |     | Field Value             | Field | Parameter                           |
| Cause Indicators [ Mapping as described in “ REL Generation and Mapping”] |       |             | ⇐   | <b>Cause Indicators</b> |       |                                     |
| No Mapping                                                                |       |             | ⇐   |                         |       | Automatic Congestion Level          |
| No mapping                                                                |       |             | ⇐   |                         |       | Redirection information             |
| No mapping                                                                |       |             | ⇐   |                         |       | Redirection number                  |
| No Mapping                                                                |       |             | ⇐   |                         |       | Access transport                    |
| No mapping                                                                |       |             | ⇐   |                         |       | Signalling point code               |
| User to user information                                                  |       |             | ⇐   |                         |       | User-to-user information            |
| No mapping                                                                |       |             | ⇐   |                         |       | Network specific facility           |
| No mapping                                                                |       |             | ⇐   |                         |       | Access delivery information         |
| No mapping                                                                |       |             | ⇐   |                         |       | Parameter compatibility information |
| No mapping                                                                |       |             | ⇐   |                         |       | Redirection number restrict         |
| No mapping                                                                |       |             | ⇐   |                         |       | User-to-user indicators             |

## Suspend/Resume

### ISUP FGD to ETSI ISUP V2: Suspend with Resume



### Message/Signal Mappings

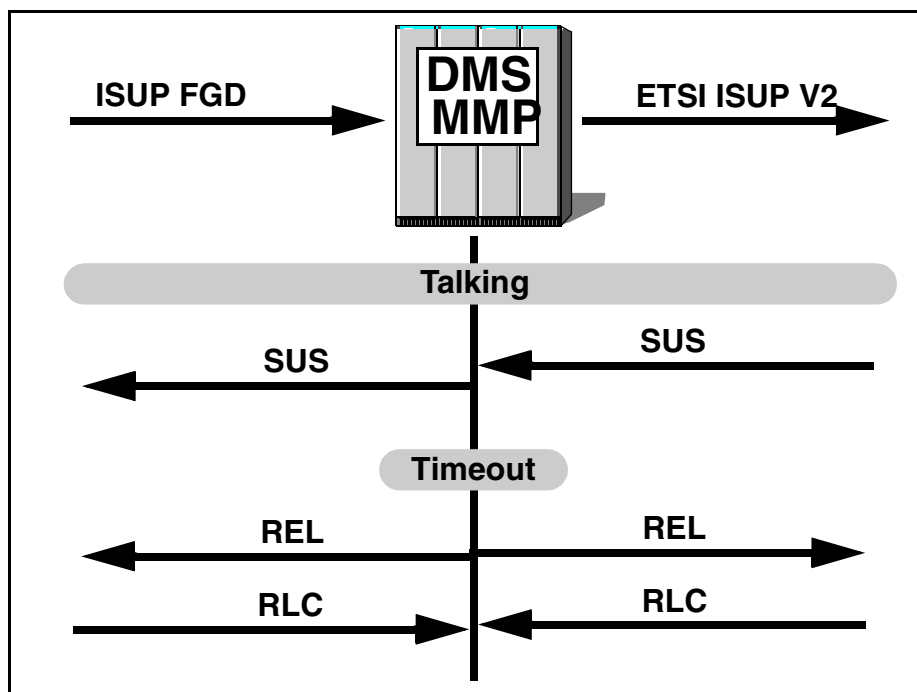
| ISUP FGD Message | Trigger | ETSI ISUP V2Message |
|------------------|---------|---------------------|
| SUS              | ⇐       | SUS                 |
| RES              | ⇐       | RES                 |

### Parameter Mapping - ETSI ISUP V2 SUS to ISUP FGD SUS

| ISUP FGD SUS              |                    |                               | Dir | ETSI ISUP V2 SUS              |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**Parameter Mapping - ETSI ISUP V2 RES to ISUP FGD RES**

| ISUP FGD RES              |                    |                               | Dir | ETSI ISUP V2 RES              |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**ISUP FGD -> ETSI ISUP V2: Suspend Timer Time-out****Suspend Timer Time-out Message Mapping**

| ISUP FGD Message        | Trigger | ETSI ISUP V2 Message    |
|-------------------------|---------|-------------------------|
| SUS                     | ⇐       | SUS                     |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| REL                     | ⇐       | No Trigger <sup>b</sup> |
| No Mapping              | ⇐       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

*a. REL triggered by Time-out of Suspend timer.*

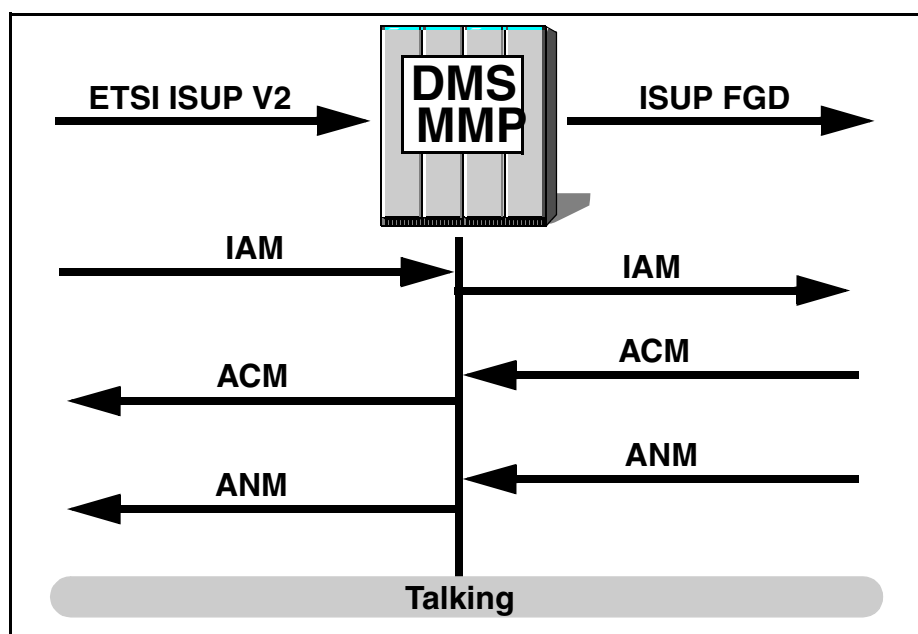
*b. REL triggered by Time-out of Suspend timer.*

## ETSI ISUP V2 -> ISUP FGD Interworking

### Normal Call Setup

The following tables show the ETSI ISUP V2 to ISUP FGD detailed message mapping. They include all the possible ETSI ISUP V2 and details how they are mapped to their corresponding ISUP FGD counterparts.

### ETSI ISUP V2 to ISUP FGD: Normal Call Setup



### Message Mappings

| ETSI ISUP V2 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| IAM                  | ⇒                 | IAM              |
| ACM                  | ⇐                 | ACM              |
| ANM                  | ⇐                 | ANM              |

**No Mapping-** There is no appropriate mapping of an ETSI ISUP V2 protocol element to an equivalent ISUP FGD protocol element (or vice versa). This element is discarded when interworked

**Parameter Mapping - ETSI ISUP V2 IAM to ISUP FGD IAM**

| ETSI ISUP V2 IAM       |       |                                             | Dir | ISUP FGD IAM                                |       |                        |
|------------------------|-------|---------------------------------------------|-----|---------------------------------------------|-------|------------------------|
| Parameter              | Field | Field Value                                 |     | Field Value                                 | Field | Parameter              |
| Calling Party Category | N/A   | 00000000 - Unknown                          | ⇒   | 00001010 - calling party Subscriber         | N/A   | Calling Party Category |
|                        |       | 00000001 - Operator, French                 | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000010 - Operator, English                | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000011 - Operator, German                 | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000100 - Operator, Russian                | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000101 - Operator, Spanish                | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00000110 to 00001000 - Reverse              | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001001 - Reserved                         | ⇒   | 00001010 - calling party Subscriber         |       |                        |
|                        |       | 00001010 - Ordinary Calling Subscriber      | ⇒   | 00001010 - Ordinary Calling Subscriber      |       |                        |
|                        |       | 00001011 - Calling Subscriber With Priority | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001100 - Data Call (Voice and Data)       | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00001101 - Test Call                        | ⇒   | 00001101 - Test Call                        |       |                        |
|                        |       | 00001110 - Spare                            | ⇒   | 00001010 - calling party Subscriber         |       |                        |
|                        |       | 00001111 - Payphone                         | ⇒   | 00000000 - calling party's category unknown |       |                        |
|                        |       | 00010000 to 11011111 - Spare                | ⇒   | 00001010 - calling party Subscriber         |       |                        |
|                        |       | 11100000 to 11111110 - Reserved             | ⇒   | 00001010 - calling party subscriber         |       |                        |
|                        |       | 11111111 - Spare                            | ⇒   | 00001010 - calling party Subscriber         |       |                        |



| ETSI ISUP V2 IAM               |                            |                                                       | Dir | ISUP FGD IAM                                          |                            |                                   |
|--------------------------------|----------------------------|-------------------------------------------------------|-----|-------------------------------------------------------|----------------------------|-----------------------------------|
| Parameter                      | Field                      | Field Value                                           |     | Field Value                                           | Field                      | Parameter                         |
| Nature of Connection Indicator | Satellite Indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | 00 - No Satellite Circuit in the Connection           | Satellite Indicator        | Nature of Connection <sup>a</sup> |
|                                |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | 01 - One Satellite Circuit in the Connection          |                            |                                   |
|                                |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | 10 - Two Satellite Circuit in the Connection          |                            |                                   |
|                                |                            | 11 - Spare                                            | ⇒   | 10 - Two Satellite Circuit in the Connection          |                            |                                   |
|                                | Continuity Check Indicator | 00 - Continuity Check not Required                    | ⇒   | 00 - Continuity Check not Required                    | Continuity Check Indicator |                                   |
|                                |                            | 01 - A Continuity Test is Needed in This Circuit      | ⇒   | 10 - continuity check performed on a previous circuit |                            |                                   |
|                                |                            | 10 - continuity check performed on a previous circuit | ⇒   | 10 - continuity check performed on a previous circuit |                            |                                   |
|                                |                            | 11 - Spare                                            | ⇒   | 00 - Continuity Test not Needed                       |                            |                                   |
|                                | Echo Suppressor Indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | 0 - Outgoing Half Echo Control Device not Included    | Echo Suppressor Indicator  |                                   |
|                                |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | 1 - Outgoing Half Echo Control Device Included        |                            |                                   |

| ETSI ISUP V2 IAM    |                             |                                             | Dir | ISUP FGD IAM                           |                             |                                  |
|---------------------|-----------------------------|---------------------------------------------|-----|----------------------------------------|-----------------------------|----------------------------------|
| Parameter           | Field                       | Field Value                                 |     | Field Value                            | Field                       | Parameter                        |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits           | ⇒   | 0 - Even Number of Address Signals     | Odd Even Indicator          | Called Party Number <sup>b</sup> |
|                     |                             | 1 - Odd Number Of Address Digits            | ⇒   | 1 - Odd Number Of Address Signals      |                             |                                  |
|                     | Nature of Address Indicator | 0000000 - Spare                             | ⇒   | 0000011 - National(significant) Number | Nature of Address Indicator |                                  |
|                     |                             | 0000001 - Subscriber Number                 | ⇒   | 0000001 - Subscriber Number            |                             |                                  |
|                     |                             | 0000010 - Unknown                           | ⇒   | 0000011 - National(significant) Number |                             |                                  |
|                     |                             | 0000011 - National Number                   | ⇒   | 0000011 - National(significant) Number |                             |                                  |
|                     |                             | 0000100 - International Number              | ⇒   | 0000100 - International Number         |                             |                                  |
|                     |                             | 0000101 to 1101111 - Spare                  | ⇒   | 0000011 - National(significant) Number |                             |                                  |
|                     |                             | 1110000 to 1111110 - Reserved               | ⇒   | 0000011 - National(significant) Number |                             |                                  |
|                     |                             | 1111111 - Spare                             | ⇒   | 0000011 - National(significant) Number |                             |                                  |
|                     | INN indicator               | 0 - routing to internal network allowed     | ⇒   | No mapping                             | No mapping                  |                                  |
|                     |                             | 1 - routing to internal network not allowed | ⇒   | No mapping                             |                             |                                  |
|                     | Numbering Plan Indicator    | 000 - Spare                                 | ⇒   | 001 - ISDN (Telephony) Numbering Plan  | Numbering Plan Indicator    |                                  |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan       | ⇒   |                                        |                             |                                  |
|                     |                             | 010 - Spare                                 | ⇒   |                                        |                             |                                  |
|                     |                             | 011 - Data numbering plan                   | ⇒   |                                        |                             |                                  |
|                     |                             | 100 - Telex numbering plan                  | ⇒   |                                        |                             |                                  |
|                     |                             | 101 - reserved for national use             | ⇒   |                                        |                             |                                  |
|                     |                             | 110 - reserved for national use             | ⇒   |                                        |                             |                                  |
|                     |                             | 111 - Spare                                 | ⇒   |                                        |                             |                                  |

| ETSI ISUP V2 IAM    |                |                | Dir | ISUP FGD IAM                    |                |                     |
|---------------------|----------------|----------------|-----|---------------------------------|----------------|---------------------|
| Parameter           | Field          | Field Value    |     | Field Value                     | Field          | Parameter           |
| Called Party Number | Address Signal | 0000 - Digit 0 | ⇒   | Determined by MMP translations. | Address Signal | Called Party Number |
|                     |                | 0001 - Digit 1 | ⇒   |                                 |                |                     |
|                     |                | 0010 - Digit 2 | ⇒   |                                 |                |                     |
|                     |                | 0011 - Digit 3 | ⇒   |                                 |                |                     |
|                     |                | 0100 - Digit 4 | ⇒   |                                 |                |                     |
|                     |                | 0101 - Digit 5 | ⇒   |                                 |                |                     |
|                     |                | 0110 - Digit 6 | ⇒   |                                 |                |                     |
|                     |                | 0111 - Digit 7 | ⇒   |                                 |                |                     |
|                     |                | 1000 - Digit 8 | ⇒   |                                 |                |                     |
|                     |                | 1001 - Digit 9 | ⇒   |                                 |                |                     |
|                     |                | 1011 - Code 11 | ⇒   |                                 |                |                     |
|                     |                | 1100 - Code 12 | ⇒   |                                 |                |                     |
|                     |                | 1101 - spare   | ⇒   |                                 |                |                     |
|                     |                | 1110 - spare   | ⇒   |                                 |                |                     |

| ETSI ISUP V2 IAM       |                                        |                                                               | Dir | ISUP FGD IAM                                   |                                                     |                        |
|------------------------|----------------------------------------|---------------------------------------------------------------|-----|------------------------------------------------|-----------------------------------------------------|------------------------|
| Parameter              | Field                                  | Field Value                                                   |     | Field Value                                    | Field                                               | Parameter              |
| Forward Call Indicator | National /International Call Indicator | 0 - Call to be treated as national call                       | ⇒   | 0- incoming national                           | National /International Call Indicator <sup>c</sup> | Forward Call Indicator |
|                        |                                        | 1 - Call to be treated as International call                  | ⇒   | 1 - Incoming International call                |                                                     |                        |
|                        | End to End Method Indicator            | 00 - No End to End Method Available                           | ⇒   | 00 - No Mode Available for End to End Transfer | End to End Method Indicator                         |                        |
|                        |                                        | 01 - pass along method available                              | ⇒   | 00 - No End to End available                   |                                                     |                        |
|                        |                                        | 10 - SCCP method available                                    | ⇒   | 10 - SCCP method available                     |                                                     |                        |
|                        |                                        | 11 - pass along and SCCP methods available                    | ⇒   | 00 - No End to End available                   |                                                     |                        |
|                        | Interworking Indicator                 | 0 - No Interworking Encountered                               | ⇒   | 0 - No Interworking Encountered                | Interworking Indicator                              |                        |
|                        |                                        | 1 -Interworking Encountered                                   | ⇒   | 1 - Interworking Encountered                   |                                                     |                        |
|                        | End to End Information Indicator       | 0 - No End to End Information Available                       | ⇒   | No mapping                                     | No mapping                                          |                        |
|                        | ISDN User Part Indicator               | 0 - ISDN User Part not Used All the Way                       | ⇒   | 0 - ISDN User Part not Used All the Way        | ISDN User Part Indicator                            |                        |
|                        |                                        | 1 - ISDN User Part Used All the Way                           | ⇒   | 1 - ISDN User Part Used All the Way            |                                                     |                        |
|                        | SCCP Mode Indicator                    | 00 - No Indication                                            | ⇒   | 00 - No Indication                             | SCCP Mode Indicator                                 |                        |
|                        |                                        | 01 - connectionless method available                          | ⇒   | 00 - No Indication                             |                                                     |                        |
|                        |                                        | 10 - connection oriented method available                     | ⇒   | 10 - connection oriented method available      |                                                     |                        |
|                        |                                        | 11 - connectionless and connection oriented methods available | ⇒   | 00 - No Indication                             |                                                     |                        |
|                        | ISDN User Part Preference Indicator    | 00 - ISDN User Part Preferred All the Way                     | ⇒   | 00 - ISDN User Part Preferred All the Way      | ISDN User Part Preference Indicators <sup>a</sup>   |                        |
|                        |                                        | 01 - ISDN User Part not Required All the Way                  | ⇒   | 01 - ISDN User Part not Required All the Way   |                                                     |                        |
|                        |                                        | 10 - ISDN User Part Required All the Way                      | ⇒   | 10 - ISDN User Part Required All the Way       |                                                     |                        |
|                        |                                        | 11 - Spare                                                    | ⇒   | 00 - ISDN User Part Preferred All the Way      |                                                     |                        |
|                        | ISDN Access Indicator                  | 0 - Originating Access Non-ISDN                               | ⇒   | 0 - Originating Access Non-ISDN                | ISDN Access Indicator                               |                        |
|                        |                                        | 1 - Originating Access ISDN                                   | ⇒   | 1 - Originating Access ISDN                    |                                                     |                        |

| ETSI ISUP V2 IAM     |                                           |                                         | Dir | ISUP FGD IAM                                  |                                           |                                   |  |
|----------------------|-------------------------------------------|-----------------------------------------|-----|-----------------------------------------------|-------------------------------------------|-----------------------------------|--|
| Parameter            | Field                                     | Field Value                             |     | Field Value                                   | Field                                     | Parameter                         |  |
| Calling Party Number | Odd Even Indicator                        | 0 - Even Number of Address Signals      | ⇒   | 0 - Even Number of Address Signals            | Odd Even Indicator                        | Calling Party Number <sup>b</sup> |  |
|                      |                                           | 1 - Odd Number of Address Signals       | ⇒   | 1 - Odd Number of Address Signals             |                                           |                                   |  |
|                      | Nature of Address Indicator               | 0000000 - Spare                         | ⇒   | 0000011 - unique national number <sup>d</sup> | Nature of Address Indicator               |                                   |  |
|                      |                                           | 0000001 - Subscriber Number             | ⇒   | 0000001 - unique subscriber number            |                                           |                                   |  |
|                      |                                           | 0000010 - Unknown                       | ⇒   | 0000011 - unique national number              |                                           |                                   |  |
|                      |                                           | 0000011 - National Number               | ⇒   | 0000011 - unique national number              |                                           |                                   |  |
|                      |                                           | 0000100 - International Number          | ⇒   | 0000100 - unique international number         |                                           |                                   |  |
|                      |                                           | ALL OTHER VALUES                        | ⇒   | 0000011 - unique national number              |                                           |                                   |  |
|                      | Calling Party number Incomplete Indicator | ALL VALUES                              | ⇒   | No mapping                                    | No mapping                                |                                   |  |
|                      | Address Presentation Restricted Indicator | 00 - Presentation Allowed               | ⇒   | 00 - Presentation Allowed                     | Address Presentation Restricted Indicator |                                   |  |
|                      |                                           | 01 - Presentation Restricted            | ⇒   | 01 - Presentation Restricted                  |                                           |                                   |  |
|                      |                                           | 10 - Address not available              | ⇒   | 01 - Presentation Restricted                  |                                           |                                   |  |
|                      |                                           | 11 - Spare                              | ⇒   | 01 - Presentation Restricted                  |                                           |                                   |  |
|                      | Numbering Plan Indicator                  | 001 - ISDN (Telephony) Numbering Plan   | ⇒   | 001 - ISDN (Telephony) Numbering Plan         | Numbering Plan Indicator                  |                                   |  |
|                      |                                           | 011 - Data numbering plan               | ⇒   |                                               |                                           |                                   |  |
|                      |                                           | 100 - Telex numbering plan              | ⇒   |                                               |                                           |                                   |  |
|                      |                                           | Any other value                         | ⇒   | No CGPN                                       |                                           |                                   |  |
|                      | Screening Indicator                       | 00 - reserved                           | ⇒   | No mapping                                    |                                           |                                   |  |
|                      |                                           | 01 - user provided, verified and passed | ⇒   |                                               |                                           |                                   |  |
|                      |                                           | 10 - reserved                           | ⇒   |                                               |                                           |                                   |  |
|                      |                                           | 11 - network provided                   | ⇒   |                                               |                                           |                                   |  |

| ETSI ISUP V2 IAM                                         |                                    |                             | Dir | ISUP FGD IAM                      |                                                                                                |                                   |
|----------------------------------------------------------|------------------------------------|-----------------------------|-----|-----------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------|
| Parameter                                                | Field                              | Field Value                 |     | Field Value                       | Field                                                                                          | Parameter                         |
| Calling Party Number                                     | Address Signal                     | 0000 - Digit 0              | ⇒   | 0000 - Digit 0                    | Address Signal<br>[The hexadecimal address signals #B and #C in Calling party number is valid] | Calling Party Number <sup>b</sup> |
|                                                          |                                    | 0001 - Digit 1              | ⇒   | 0001 - Digit 1                    |                                                                                                |                                   |
|                                                          |                                    | 0010 - Digit 2              | ⇒   | 0010 - Digit 2                    |                                                                                                |                                   |
|                                                          |                                    | 0011 - Digit 3              | ⇒   | 0011 - Digit 3                    |                                                                                                |                                   |
|                                                          |                                    | 0100 - Digit 4              | ⇒   | 0100 - Digit 4                    |                                                                                                |                                   |
|                                                          |                                    | 0101 - Digit 5              | ⇒   | 0101 - Digit 5                    |                                                                                                |                                   |
|                                                          |                                    | 0110 - Digit 6              | ⇒   | 0110 - Digit 6                    |                                                                                                |                                   |
|                                                          |                                    | 0111 - Digit 7              | ⇒   | 0111 - Digit 7                    |                                                                                                |                                   |
|                                                          |                                    | 1000 - Digit 8              | ⇒   | 1000 - Digit 8                    |                                                                                                |                                   |
|                                                          |                                    | 1001 - Digit 9              | ⇒   | 1001 - Digit 9                    |                                                                                                |                                   |
|                                                          | Filler                             | 0000                        | ⇒   | 0000                              | Filler                                                                                         |                                   |
| User service Information/Transmission Medium Requirement | Information transfer capability    | 00000 - speech              | ⇒   | 00000 - speech                    | Information transfer capability                                                                | User service Information          |
|                                                          |                                    | 01000 - 64kbps Unrestricted | ⇒   | 01000 - 64kbps Unrestricted       |                                                                                                |                                   |
|                                                          |                                    | 10000 - 3.1 - kHz audio     | ⇒   | 10000 - 3.1 - kHz audio           |                                                                                                |                                   |
|                                                          |                                    | ALL OTHER VALUES            | ⇒   | BCNI treatment                    |                                                                                                |                                   |
|                                                          | Coding Standard                    | 00 - ITU-T                  | ⇒   | 00 - ITU-T                        | Coding Standard                                                                                |                                   |
|                                                          | Information Transfer Rate          | 10000 - 64kbps              | ⇒   | 10000 - 64 kb/s                   | Information Transfer Rate                                                                      |                                   |
|                                                          | Transfer Mode                      | 00 - circuit                | ⇒   | 00 - circuit                      | Transfer Mode                                                                                  |                                   |
|                                                          | User Layer Protocol Identification | ANY VALUE                   | ⇒   | 0100010 - Layer 1; <i>u</i> - law | User Layer Protocol Identification                                                             |                                   |
| Transit Network Selection                                |                                    |                             | ⇒   | No Mapping                        |                                                                                                |                                   |
| Optional forward Call Indicators                         |                                    |                             | ⇒   | No mapping                        |                                                                                                |                                   |
| User- to- User Indicators                                |                                    |                             | ⇒   | User to User indicator            |                                                                                                |                                   |
| Access Transport                                         |                                    |                             | ⇒   | Access Transport                  |                                                                                                |                                   |
| closed user group interlock code                         |                                    |                             | ⇒   | No mapping                        |                                                                                                |                                   |
| Transmission Medium Requirement                          |                                    |                             | ⇒   | No mapping                        |                                                                                                |                                   |

| ETSI ISUP V2 IAM   |                                           |                                                | Dir                                                       | ISUP FGD IAM                                   |                                                                                                   |                     |
|--------------------|-------------------------------------------|------------------------------------------------|-----------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------|
| Parameter          | Field                                     | Field Value                                    |                                                           | Field Value                                    | Field                                                                                             | Parameter           |
| Redirecting Number | Nature of Address Indicator               | 0000000 - spare                                | ⇒                                                         | 0000011 - unique (national) significant number | Nature of Address Indicator                                                                       | Redirecting Number  |
|                    |                                           | 0000001 - subscriber number                    | ⇒                                                         | 0000001 - unique subscriber number             |                                                                                                   |                     |
|                    |                                           | 0000010 - unknown                              | ⇒                                                         | 0000011 - unique (national) significant number |                                                                                                   |                     |
|                    |                                           | 0000011 - national (significant) number        | ⇒                                                         | 0000011 - unique (national) significant number |                                                                                                   |                     |
|                    |                                           | 0000100 - international number                 | ⇒                                                         | 0000100 - unique international number          |                                                                                                   |                     |
|                    |                                           | 0000101 to 1101111 - spare                     | ⇒                                                         | 0000011 - unique (national) significant number |                                                                                                   |                     |
|                    |                                           | 1110000 to 1111110 - reserved for national use | ⇒                                                         | 0000011 - unique (national) significant number |                                                                                                   |                     |
|                    |                                           | 1111111 - spare                                | ⇒                                                         | 0000011 - unique (national) significant number |                                                                                                   |                     |
|                    | Odd/Even Indicator                        | 0 - even number of address signals             | ⇒                                                         | 0 - even number of address digits              | Odd/Even Indicator                                                                                |                     |
|                    |                                           | 1 - odd number of address signals              | ⇒                                                         | 1 - odd number of address digits               |                                                                                                   |                     |
|                    | Spare                                     | 00                                             | ⇒                                                         | No Mapping                                     |                                                                                                   |                     |
|                    | Address Presentation Restricted Indicator | 00 - presentation allowed                      | ⇒                                                         | 00 - presentation allowed                      | Presentation Restriction Indicator                                                                | Redirecting Number  |
|                    |                                           | 01 - presentation restricted                   | ⇒                                                         | 01 - presentation restricted                   |                                                                                                   |                     |
|                    |                                           | 10 - address not available                     | ⇒                                                         | 10 - number not available                      |                                                                                                   |                     |
|                    |                                           | 11 - spare                                     | ⇒                                                         | 11 - presentation restricted                   |                                                                                                   |                     |
|                    | Numbering Plan Indicator                  | 001 - ISDN (telephony) numbering plan          | ⇒                                                         | 001 - ISDN (telephony) numbering plan          | Numbering Plan                                                                                    |                     |
|                    |                                           | 011 - data numbering plan                      | ⇒                                                         | 001 - ISDN (telephony) numbering plan          |                                                                                                   |                     |
|                    |                                           | 100 - telex numbering plan                     | ⇒                                                         | 001 - ISDN (telephony) numbering plan          |                                                                                                   |                     |
|                    |                                           | All other values                               | ⇒                                                         | 001 - ISDN (telephony) numbering plan          |                                                                                                   |                     |
| Redirecting Number | Address Signal                            | 0000 - digit 0                                 | ⇒                                                         | 0000 - digit 0                                 | Address Information<br>[The hexadecimal address signals #B and #C in Redirecting number is valid] | Redirecting Number  |
|                    |                                           | 0001 - digit 1                                 | ⇒                                                         | 0001 - digit 1                                 |                                                                                                   |                     |
|                    |                                           | 0010 - digit 2                                 | ⇒                                                         | 0010 - digit 2                                 |                                                                                                   |                     |
|                    |                                           | 0011 - digit 3                                 | ⇒                                                         | 0011 - digit 3                                 |                                                                                                   |                     |
|                    |                                           | 0100 - digit 4                                 | ⇒                                                         | 0100 - digit 4                                 |                                                                                                   |                     |
|                    |                                           | 0101 - digit 5                                 | ⇒                                                         | 0101 - digit 5                                 |                                                                                                   |                     |
|                    |                                           | 0110 - digit 6                                 | ⇒                                                         | 0110 - digit 6                                 |                                                                                                   |                     |
|                    |                                           | 0111 - digit 7                                 | ⇒                                                         | 0111 - digit 7                                 |                                                                                                   |                     |
|                    |                                           | 1000 - digit 8                                 | ⇒                                                         | 1000 - digit 8                                 |                                                                                                   |                     |
|                    |                                           | 1001 - digit 9                                 | ⇒                                                         | 1001 - digit 9                                 |                                                                                                   |                     |
|                    |                                           | 1011 - code 11                                 | ⇒                                                         | 1011 - reserved                                |                                                                                                   |                     |
|                    |                                           | 1100 - code 12                                 | ⇒                                                         | 1100 - reserved                                |                                                                                                   |                     |
|                    |                                           | Filler                                         | 0000 (included after last address signal if count is odd) | ⇒                                              |                                                                                                   |                     |
|                    |                                           |                                                |                                                           | ⇒                                              | 00 - user provided, not screened                                                                  | Screening Indicator |

| ETSI ISUP V2 IAM                      |       |             | Dir | ISUP FGD IAM             |       |           |
|---------------------------------------|-------|-------------|-----|--------------------------|-------|-----------|
| Parameter                             | Field | Field Value |     | Field Value              | Field | Parameter |
| Redirecting Information               |       |             | ⇒   | Redirecting Information  |       |           |
| Closed User Group Interlock Code      |       |             | ⇒   | No mapping               |       |           |
| Connection Request                    |       |             | ⇒   | No mapping               |       |           |
| Original Called Number                |       |             | ⇒   | Original Called Number   |       |           |
| Propagation Delay Counter             |       |             | ⇒   | No mapping               |       |           |
| User to User Information              |       |             | ⇒   | User to User information |       |           |
| User Service Information Prime        |       |             | ⇒   | No mapping               |       |           |
| Originating ISC Point Code            |       |             | ⇒   | No mapping               |       |           |
| Transmission Medium Requirement Prime |       |             | ⇒   | No mapping               |       |           |
| Location Number                       |       |             | ⇒   | No mapping               |       |           |
| Generic Notification                  |       |             | ⇒   | No mapping               |       |           |
| Generic Reference                     |       |             | ⇒   | No mapping               |       |           |
| Generic Number                        |       |             | ⇒   | No Mapping               |       |           |
| Service activation                    |       |             | ⇒   | No mapping               |       |           |
| Parameter Compatibility Info          |       |             | ⇒   | No mapping               |       |           |
| Call reference                        |       |             | ⇒   | No mapping               |       |           |
| Network-specific facility             |       |             | ⇒   | No mapping               |       |           |
| Generic digits                        |       |             | ⇒   | No mapping               |       |           |
| Remote operations                     |       |             | ⇒   | No mapping               |       |           |
| MLPP precedence                       |       |             | ⇒   | No mapping               |       |           |

a. Please refer to Section "Nature of Connection Mapping for IAM" on page 691.

b. - Called and Calling Party Number parameters are encoded based on incoming values and inswitch manipulation; therefore, SCC, INAP, and standard translation processes may result in values other than those shown.

c. Please refer to Section "Additional SS7 procedures" on page 683.

d. Field is set according to the length of the calling party number



## Parameter Mapping - ISUP FGD ACM to ETSI ISUP V2 ACM

| ETSI ISUP V2 ACM         |                                   |                                                                                                             | Dir | ISUP FGD ACM                               |                                   |                          |
|--------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------|-----|--------------------------------------------|-----------------------------------|--------------------------|
| Parameter                | Field                             | Field Value                                                                                                 |     | Field Value                                | Field                             | Parameter                |
| Backward Call Indicators | Charge Indicator                  | 00 - No Indication                                                                                          | ⇐   | 00 - No Indication                         | Charge Indicator                  | Backward Call Indicators |
|                          |                                   | 01 - No Charge                                                                                              | ⇐   | 01 - No Charge                             |                                   |                          |
|                          |                                   | 10 - Charge                                                                                                 | ⇐   | 10 - Charge                                |                                   |                          |
|                          |                                   | 10 - Charge                                                                                                 | ⇐   | 11 - Spare                                 |                                   |                          |
|                          | Called Party's Status Indicator   | 00 - No Indication                                                                                          | ⇐   | 00 - No indication Given                   | Called Party's Status Indicator   |                          |
|                          |                                   | 01 - Subscriber Free                                                                                        | ⇐   | 01 -Subscriber Free                        |                                   |                          |
|                          |                                   | 01 - Subscriber Free                                                                                        | ⇐   | 10 - Connect When Free                     |                                   |                          |
|                          |                                   | 00 - No Indication                                                                                          | ⇐   | 11 - Excessive delay                       |                                   |                          |
|                          | Called Party's Category Indicator | 00 - No Indication                                                                                          | ⇐   | 00 - No Indication                         | Called Party's Category Indicator |                          |
|                          |                                   | 01 - Ordinary Subscriber                                                                                    | ⇐   | 01 - Ordinary Subscriber                   |                                   |                          |
|                          |                                   | 10 - Payphone                                                                                               | ⇐   | 10 - Payphone                              |                                   |                          |
|                          |                                   | 00 - No Indication                                                                                          | ⇐   | 11 - Spare                                 |                                   |                          |
|                          | End-to-End Method Indicator       | 00 - No End to End Method Available                                                                         | ⇐   | 00 - No End to End Method Available        | End-to-End Mode Indicator         |                          |
|                          |                                   | Natl agency: 01 - pass along method available<br>Intl agency: 00 - No End to End Method Available           |     | 01 - pass along method available           |                                   |                          |
|                          |                                   | 10 - SCCP method available                                                                                  |     | 10 - SCCP method available                 |                                   |                          |
|                          |                                   | Natl agency: 11 - SCCP and pass along methods available<br>Intl agency: 00 - No End to End Method Available |     | 11 - SCCP and pass along methods available |                                   |                          |
|                          | Interworking Indicator            | 0 - No Interworking Encountered                                                                             | ⇐   | 0 - No Interworking Encountered            | Interworking indicator            |                          |
|                          |                                   | 1 - Interworking Encountered                                                                                | ⇐   | 1 - Interworking Encountered               |                                   |                          |
|                          | No mapping                        | No mapping                                                                                                  | ⇐   |                                            | IAM Segmentation indicator        |                          |
|                          | ISDN User Part Indicator          | 0 - ISDN User Part not Used All the Way                                                                     | ⇐   | 0 - ISDN User Part not Used All the Way    | ISDN User Part Indicator          |                          |
|                          |                                   | 1 - ISDN User Part Used All the Way                                                                         | ⇐   | 1 - ISDN User Part Used All the Way        |                                   |                          |
|                          | SCCP Method Indicator             | 00 - No Indication                                                                                          | ⇐   | 00 - No Indication                         | SCCP Method Indicator             |                          |
|                          |                                   |                                                                                                             | ⇐   | 01 - connectionless method available       |                                   |                          |

| ETSI ISUP V2 ACM                  |                                            |                                                    | Dir | ISUP FGD ACM                                                  |                               |                                   |
|-----------------------------------|--------------------------------------------|----------------------------------------------------|-----|---------------------------------------------------------------|-------------------------------|-----------------------------------|
| Parameter                         | Field                                      | Field Value                                        |     | Field Value                                                   | Field                         | Parameter                         |
|                                   |                                            |                                                    | ⇐   | 10 - connection oriented method available                     |                               |                                   |
|                                   |                                            |                                                    | ⇐   | 11 - connectionless and connection oriented methods available |                               |                                   |
|                                   | Holding Indicator                          | 0 - Holding not required                           | ⇐   | 0 - Holding not required                                      | Holding Indicator             |                                   |
|                                   |                                            |                                                    | ⇐   | 1 - Holding required                                          |                               |                                   |
|                                   |                                            |                                                    |     |                                                               |                               |                                   |
|                                   |                                            |                                                    |     |                                                               |                               |                                   |
|                                   | Echo Control Device Indicator <sup>a</sup> | 0 - Incoming Half Echo Control Device not Included | ⇐   | 0 - Incoming Half Echo Control Device not Included            | Echo Control Device Indicator |                                   |
|                                   |                                            | 1 - Incoming Half Echo Control Device Included     | ⇐   | 1 - Incoming Half Echo Control Device Included                |                               |                                   |
|                                   | ISDN Access Indicator                      | 0 - Terminating Access Non-ISDN                    | ⇐   | 0 - Terminating Access Non-ISDN                               | ISDN Access Indicator         |                                   |
| Optional Backward Call Indicators |                                            |                                                    | ⇐   |                                                               |                               | Optional Backward Call Indicators |
| Cause Indicators                  |                                            |                                                    | ⇐   |                                                               |                               | Cause Indicators                  |
| Access Transport                  |                                            |                                                    | ⇐   |                                                               |                               | Access Transport                  |

a. Echo Control Device Ind. fields are all encoded based on incoming information and existing datafill. Datafill may result in values other than those shown

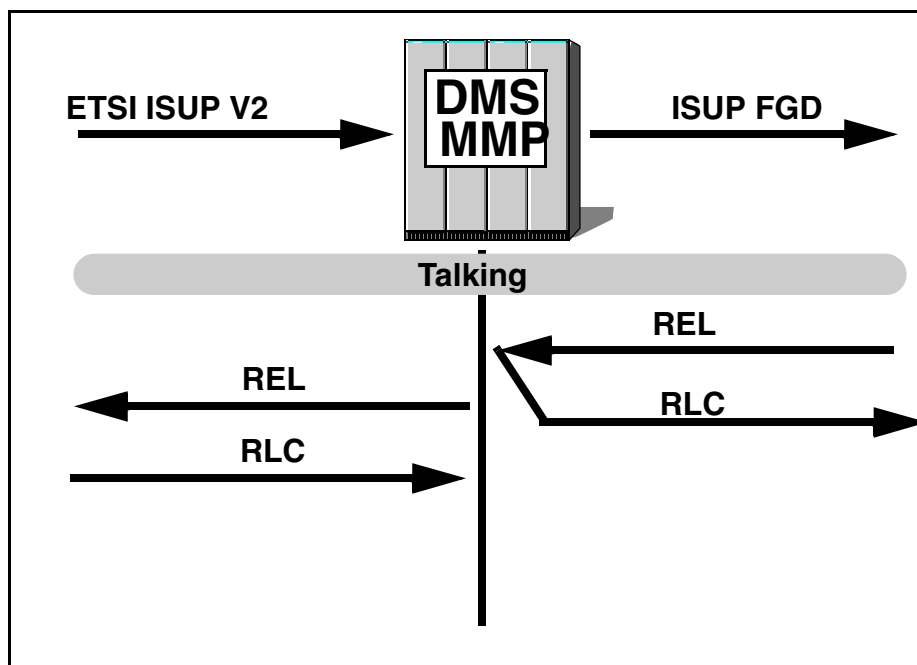
### Parameter Mapping - ISUP FGD ANM to ETSI ISUP V2 ANM

| ETSI ISUP V2 ANM         |                                        |             | Dir | ISUP FGD ANM |                                        |                          |
|--------------------------|----------------------------------------|-------------|-----|--------------|----------------------------------------|--------------------------|
| Parameter                | Field                                  | Field Value |     | Field Value  | Field                                  | Parameter                |
| Backward Call Indicators | Refer to ACM: Backward Call Indicators |             | ⇐   |              | Refer to ACM: Backward Call Indicators | Backward Call Indicators |
| Access Transport         |                                        |             | ⇐   |              |                                        | Access Transport         |

## Normal Call Clearing

### Called Party Clear

### ETSI ISUP V2 to ISUP FGD Call With Called Party Clear



### Called Party Clear Message Mappings

| ETSI ISUP V2 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| REL                  | ⇐                 | REL              |
| No trigger           | ⇒                 | RLC <sup>1</sup> |
| RLC                  | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message

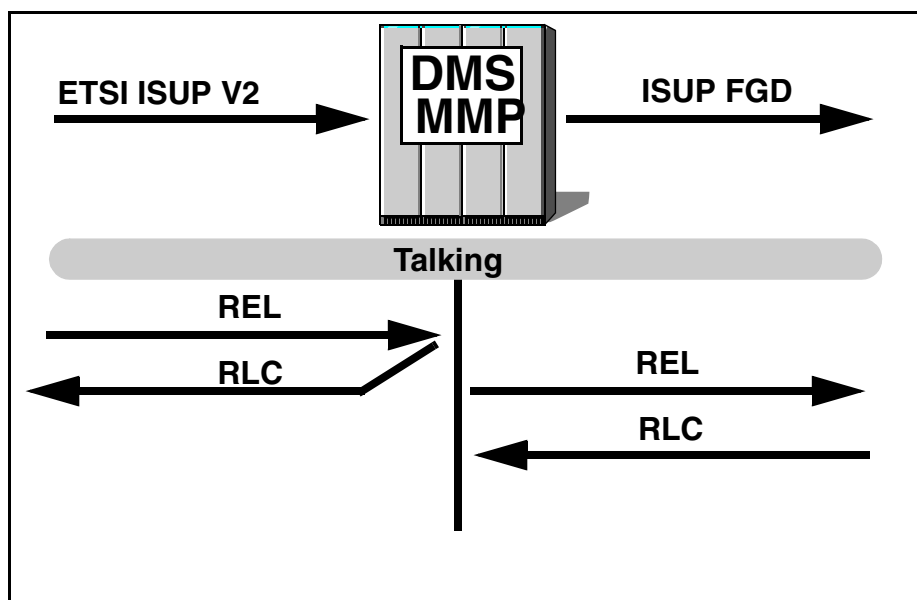
### Parameter Mapping - ETSI ISUP V2 REL to ISUP FGD REL

| ETSI ISUP V2 REL                                                          |       |             | Dir | ISUP FGD REL     |       |                            |
|---------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                                 | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as described in " REL Generation and Mapping"] |       |             | ⇐   | Cause Indicators |       |                            |
| No Mapping                                                                |       |             | ⇐   |                  |       | Automatic Congestion Level |

| ETSI ISUP V2 REL |       |             | Dir | ISUP FGD REL |       |                  |
|------------------|-------|-------------|-----|--------------|-------|------------------|
| Parameter        | Field | Field Value |     | Field Value  | Field | Parameter        |
| Access Transport |       |             | ←   |              |       | Access Transport |

## Calling Party Clear

### ETSI ISUP V2 to ISUP FGD Call With Calling Party Clear



### Calling Party Clear Message Mappings

| ETSI ISUP V2 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| REL                  | ⇒                 | REL              |
| RLC <sup>1</sup>     | ←                 | No trigger       |
| No mapping           | ←                 | RLC              |

<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

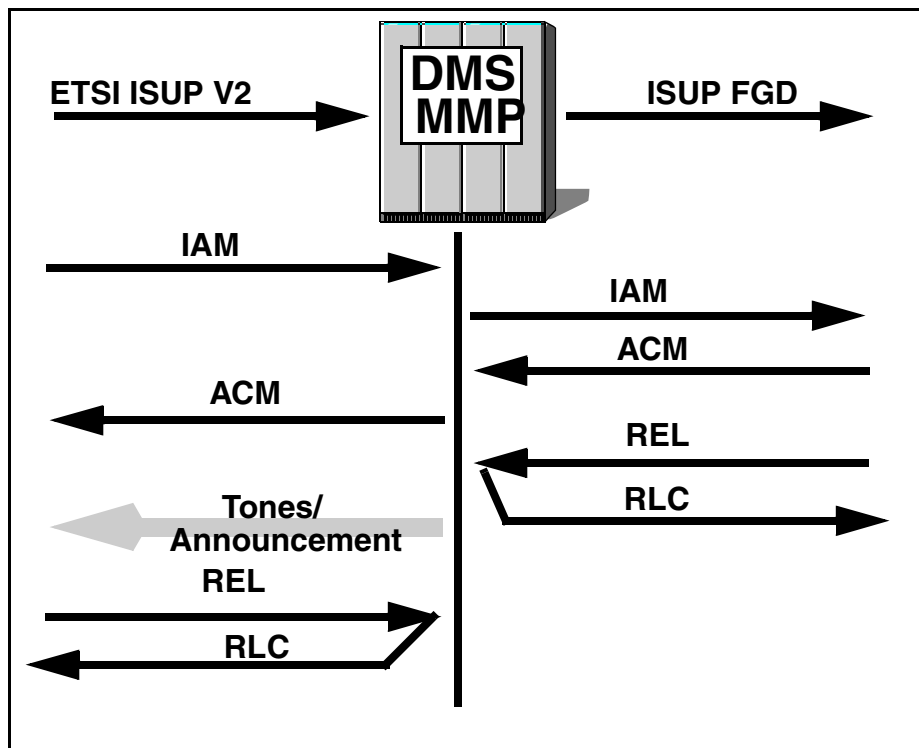
**Parameter Mapping - ETSI ISUP V2 REL to ISUP FGD REL**

| ETSI ISUP V2 REL                    |       |             | Dir | ISUP FGD REL                                                               |       |           |
|-------------------------------------|-------|-------------|-----|----------------------------------------------------------------------------|-------|-----------|
| Parameter                           | Field | Field Value |     | Field Value                                                                | Field | Parameter |
| Cause Indicators                    |       |             | ⇒   | Cause Indicators [ Mapping as described in “ REL Generation and Mapping” ] |       |           |
| Automatic Congestion Level          |       |             | ⇒   | No Mapping                                                                 |       |           |
| Redirection information             |       |             | ⇒   | No Mapping                                                                 |       |           |
| Redirection number                  |       |             | ⇒   | No Mapping                                                                 |       |           |
| Access transport                    |       |             | ⇒   | No Mapping                                                                 |       |           |
| Signalling point code               |       |             | ⇒   | No Mapping                                                                 |       |           |
| User-to-user information            |       |             | ⇒   | No mapping                                                                 |       |           |
| Network specific facility           |       |             | ⇒   | No mapping                                                                 |       |           |
| Access delivery information         |       |             | ⇒   | No mapping                                                                 |       |           |
| Parameter compatibility information |       |             | ⇒   | No mapping                                                                 |       |           |
| Redirection number restrict         |       |             | ⇒   | No mapping                                                                 |       |           |
| User-to-user indicators             |       |             | ⇒   | No mapping                                                                 |       |           |

**Unsuccessful Call Attempt**

Please refer to Section “REL Generation and Mapping” on page 691.

### ETSI ISUP V2 to ISUP FGD Unsuccessful Call Attempt



### Message Mappings

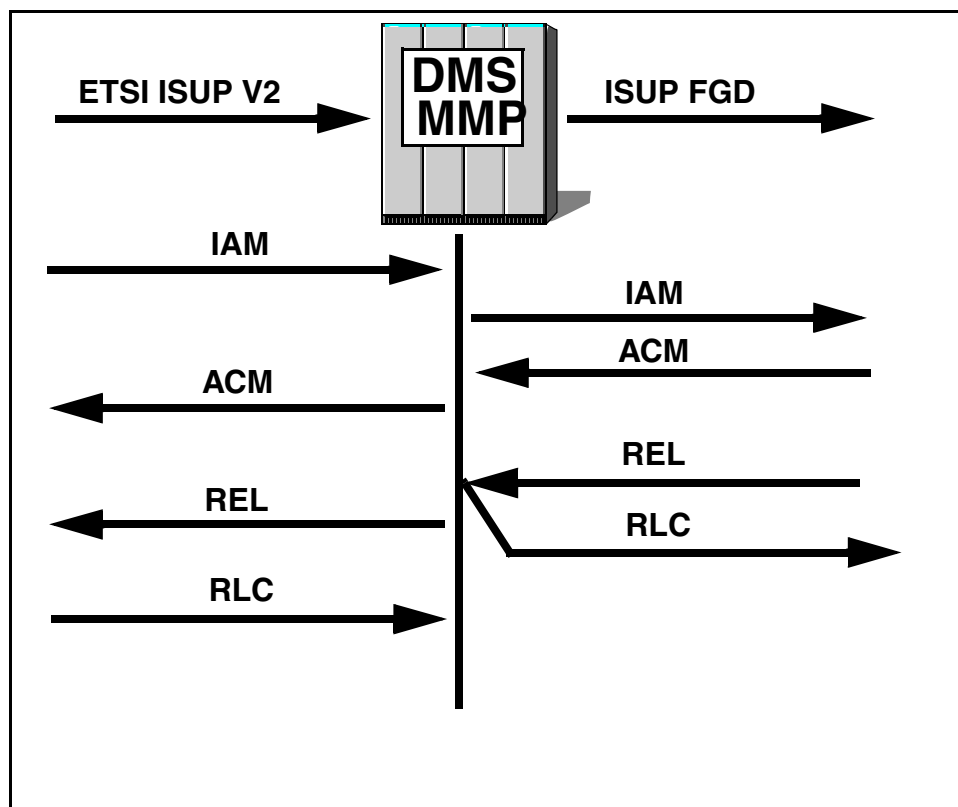
| ETSI ISUP V2 Message    | Trigger Direction | ISUP FGD Message        |
|-------------------------|-------------------|-------------------------|
| IAM <sup>1</sup>        | ⇒                 | IAM                     |
| ACM <sup>1</sup>        | ⇐                 | ACM                     |
| No Mapping              | ⇐                 | REL                     |
| No Trigger <sup>2</sup> | ⇒                 | RLC                     |
| REL                     | ⇒                 | No Mapping              |
| RLC                     | ⇐                 | No Trigger <sup>3</sup> |

<sup>1</sup> -IAM and ACM mappings are defined in previous section

<sup>2</sup> -RLC triggered by receipt of REL message.

<sup>3</sup> - RLC triggered by receipt of Clear Forward.

## ETSI ISUP V2 -&gt; ISUP FGD: Unsuccessful Call Attempt (cause)



## Unsuccessful Call Attempt (cause) Message Mapping

| ETSI ISUP V2 Message | Trigger Direction | ISUP FGD Message |
|----------------------|-------------------|------------------|
| REL                  | ←                 | REL              |
| No trigger           | ⇒                 | RLC <sup>1</sup> |
| RLC                  | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

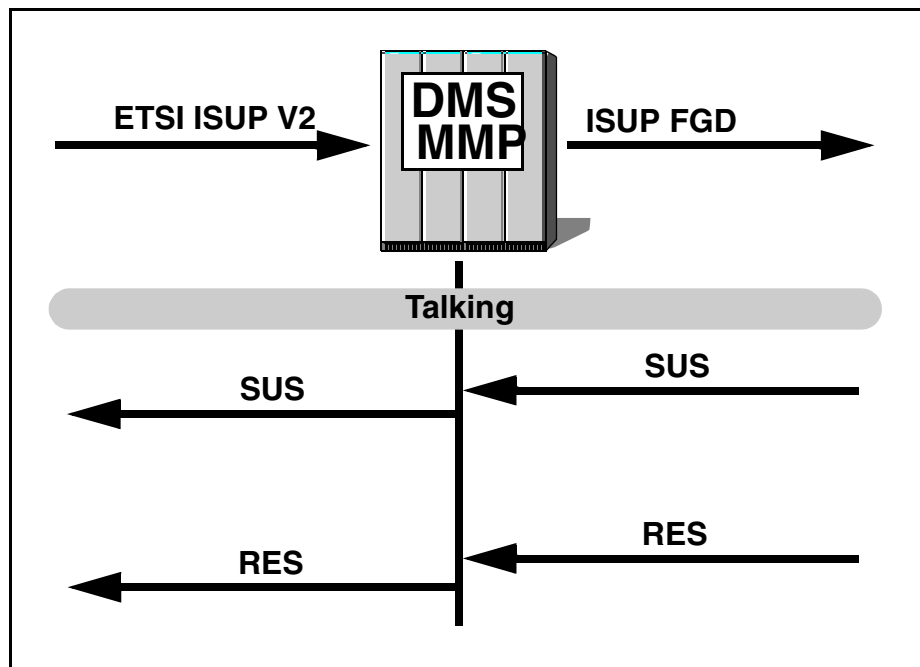
## Parameter Mapping - ETSI ISUP V2 REL to ISUP FGD REL

| ETSI ISUP V2 REL                                                        |       |             | Dir | ISUP FGD REL     |       |           |
|-------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|-----------|
| Parameter                                                               | Field | Field Value |     | Field Value      | Field | Parameter |
| Cause Indicators [ Mapping as described " REL Generation and Mapping" ] |       |             | ←   | Cause Indicators |       |           |

| ETSI ISUP V2 REL |       |             | Dir | ISUP FGD REL |       |                            |
|------------------|-------|-------------|-----|--------------|-------|----------------------------|
| Parameter        | Field | Field Value |     | Field Value  | Field | Parameter                  |
| No Mapping       |       |             | ⇐   |              |       | Automatic Congestion Level |
| Access transport |       |             | ⇐   |              |       | Access Transport           |

### Suspend/Resume

#### ETSI ISUP V2 to ISUP FGD: Suspend with Resume



#### Message/Signal Mappings

| ETSI ISUP V2 Message | Trigger | ISUP FGD Message |
|----------------------|---------|------------------|
| SUS                  | ⇐       | SUS              |
| RES                  | ⇐       | RES              |

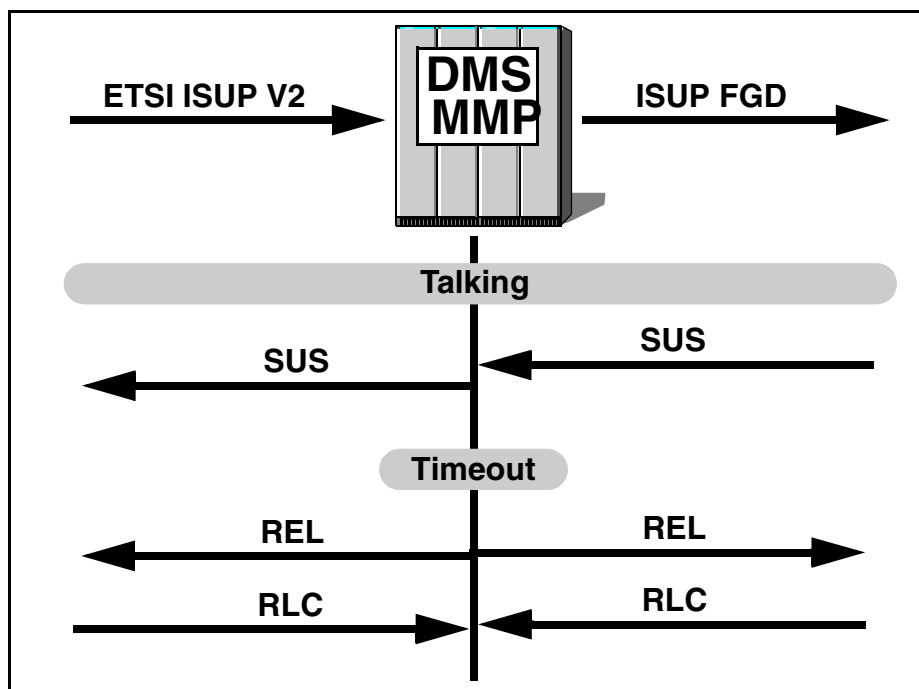


**Parameter Mapping - ETSI ISUP V2 SUS to ISUP FGD SUS**

| ETSI ISUP V2 SUS          |                    |                               | Dir | ISUP FGD SUS                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**Parameter Mapping - ETSI ISUP V2 RES to ISUP FGD RES**

| ETSI ISUP V2 RES          |                    |                               | Dir | ISUP FGD RES                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |

**ISUP FGD -> ETSI ISUP V2: Suspend Timer Time-out**

**Suspend Timer Time-out Message Mapping**

| ETSI ISUP V2 Message    | Trigger | ISUP FGD Message        |
|-------------------------|---------|-------------------------|
| SUS                     | ←       | SUS                     |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| REL                     | ←       | No Trigger <sup>b</sup> |
| No Mapping              | ←       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

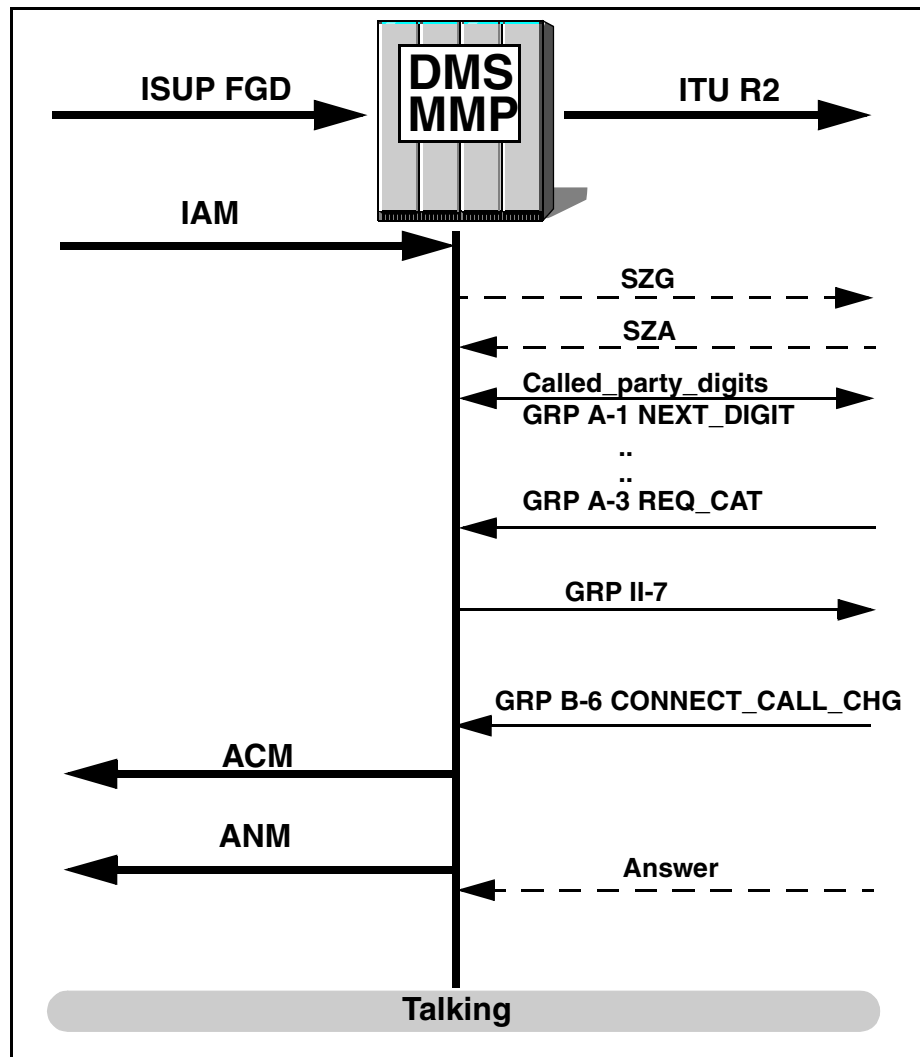
*a. REL triggered by Time-out of Suspend timer.*

*b. REL triggered by Time-out of Suspend timer.*

**ISUP FGD -> ITU R2 Interworking****Normal Call Setup**

The following tables show the ISUP FGD to ITU R2 detailed message mapping. They include all the possible ISUP FGD parameters, and details how they are mapped to their corresponding ITU R2 counterparts.

## ISUP FGD -&gt; ITU R2: Normal Call Setup



**Normal Call Setup Message Mapping**

| ISUP FGD Message | Trigger Direction | ITU R2 Line Signal                 |
|------------------|-------------------|------------------------------------|
| IAM              | ⇒                 | SZG                                |
|                  |                   | SZA                                |
|                  |                   | GRP I-A<br>NEXT_DIGIT <sup>a</sup> |
|                  |                   | Called Party Digit <sup>b</sup>    |
|                  |                   | GRP A-3<br>REQ_CAT                 |
|                  |                   | GRP II - 7 <sup>c</sup>            |
| ACM              | ⇐                 | GRP B-6<br>CONNECT_CALL<br>_CHG    |
| ANM              | ⇐                 | Answer                             |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

c. See the following table for the specific Calling Party Category signal generated from each IAM Calling Party Category value.

**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM                    |                            |                                                       | Dir | ITU R2 SZG/SZA |       |           |
|---------------------------------|----------------------------|-------------------------------------------------------|-----|----------------|-------|-----------|
| Parameter                       | Field                      | Field Value                                           |     | Field Value    | Field | Parameter |
| Nature of connection indicators | Satellite indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | No Mapping     |       |           |
|                                 |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | No Mapping     |       |           |
|                                 |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | No Mapping     |       |           |
|                                 |                            | 11 - Three Satellite Circuit in the Connection        | ⇒   | No Mapping     |       |           |
|                                 | Continuity check indicator | 00 - Continuity Check not Required                    | ⇒   | No Mapping     |       |           |
|                                 |                            | 01 - Continuity Check Required on This Circuit        | ⇒   | No Mapping     |       |           |
|                                 |                            | 10 - continuity check performed on a previous circuit | ⇒   | No Mapping     |       |           |
|                                 |                            | 11 - spare                                            | ⇒   | No Mapping     |       |           |
|                                 | Echo Suppressor indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | No Mapping     |       |           |
|                                 |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | No Mapping     |       |           |
|                                 | Spare                      | xxx                                                   | ⇒   | No Mapping     |       |           |

## Parameter Mapping - ISUP FGD IAM -&gt; ITU R2 SZG/SZA

| ISUP FGD IAM             |                                       |                                                                                                          | Dir | ITU R2 SZG/SZA |       |                                                        |
|--------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------|-----|----------------|-------|--------------------------------------------------------|
| Parameter                | Field                                 | Field Value                                                                                              |     | Field Value    | Field | Parameter                                              |
| Forward Call Indicator   | National/International Call Indicator | 0 - incoming national call                                                                               | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 1 - incoming International call                                                                          | ⇒   | No Mapping     |       |                                                        |
|                          | End to End Method Indicator           | 00 - No End to End Method Available                                                                      | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 01 - pass along method available                                                                         | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 10 - SCCP method available                                                                               | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 11 - pass along and SCCP methods available                                                               | ⇒   | No Mapping     |       |                                                        |
|                          | Interworking Indicator                | 0 - No Interworking Encountered (SS7 all the way)                                                        | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 1 -Interworking Encountered                                                                              | ⇒   | No Mapping     |       |                                                        |
|                          | IAM Segmentation indicator            | 0 - no indication                                                                                        | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 1 - additional information has been received and incorporated into call setup                            | ⇒   | No Mapping     |       |                                                        |
|                          | ISDN User Part Indicator              | 0 - ISDN User Part not used all the way                                                                  | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 1 - ISDN User Part used all the way                                                                      | ⇒   | No Mapping     |       |                                                        |
|                          | ISDN User Part Preference Indicator   | 00 - ISDN User Part Preferred All the Way                                                                | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 01 - ISDN User Part not Required All the Way                                                             | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 10 - ISDN User Part Required All the Way                                                                 | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 11 - Spare                                                                                               | ⇒   | No Mapping     |       |                                                        |
|                          | ISDN Access Indicator                 | 0 - Originating Access Non-ISDN                                                                          | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 1 - Originating Access ISDN                                                                              | ⇒   | No Mapping     |       |                                                        |
|                          | SCCP Mode Indicator                   | 00 - no indication                                                                                       | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 01 - connectionless method available (No procedure specified for U.S. networks)                          | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 10 - connection oriented method available (No procedure specified for U.S. networks)                     | ⇒   | No Mapping     |       |                                                        |
|                          |                                       | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. networks) | ⇒   | No Mapping     |       |                                                        |
| Calling Party's Category |                                       | 0000 0000 - calling party's category unknown                                                             | ⇒   | Regular (Intl) | II-7  | Calling Party Category (Forward Group II) <sup>a</sup> |
|                          |                                       | 0000 1010 - Ordinary Calling Subscriber                                                                  | ⇒   | Regular (Intl) | II-7  |                                                        |
|                          |                                       | 00001101 - Test Call                                                                                     | ⇒   | Regular (Intl) | II-7  |                                                        |
|                          |                                       | All other values - treat as 0                                                                            | ⇒   | Regular (Intl) | II-7  |                                                        |

**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM             |                                                  |                                        | Dir | ITU R2 SZG/SZA |       |           |
|--------------------------|--------------------------------------------------|----------------------------------------|-----|----------------|-------|-----------|
| Parameter                | Field                                            | Field Value                            |     | Field Value    | Field | Parameter |
| User Service Information | Extension Indicator                              | 1 - not extended (last octet)          | ⇒   | No Mapping     |       |           |
|                          | Coding Standard                                  | 00 - CCITT                             | ⇒   | No Mapping     |       |           |
|                          | Information transfer capability                  | 0 0000 - speech                        | ⇒   | No Mapping     |       |           |
|                          |                                                  | 0 1000 - 64kbps Unrestricted           | ⇒   | No Mapping     |       |           |
|                          |                                                  | 1 0000 - 3.1khz audi                   |     | No Mapping     |       |           |
|                          |                                                  | All other values                       | ⇒   | BCNI treatment |       |           |
|                          | Transfer Mode                                    | 00 - circuit mode                      | ⇒   | No Mapping     |       |           |
|                          | Information transfer rate                        | 1 0000 - 64 kbit/s                     | ⇒   | No Mapping     |       |           |
|                          | User layer protocol identification               | 01 - user information layer 1 protocol | ⇒   | No Mapping     |       |           |
|                          | User information layer 1 protocol identification | 00010 - <i>u</i> - law                 | ⇒   | No Mapping     |       |           |

**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM        |                             |                                                                                                | Dir | ITU R2 SZG/SZA |       |           |
|---------------------|-----------------------------|------------------------------------------------------------------------------------------------|-----|----------------|-------|-----------|
| Parameter           | Field                       | Field Value                                                                                    |     | Field Value    | Field | Parameter |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                                                              | ⇒   | No Mapping     |       |           |
|                     |                             | 1 - Odd Number Of Address Digits                                                               | ⇒   | No Mapping     |       |           |
|                     | Nature of Address Indicator | 0000000 - Spare                                                                                | ⇒   | No Mapping     |       |           |
|                     |                             | 0000001 - Subscriber number                                                                    | ⇒   | No Mapping     |       |           |
|                     |                             | 0000010 - Spare, Reserve for national Use                                                      | ⇒   | No Mapping     |       |           |
|                     |                             | 0000011 - National Number                                                                      | ⇒   | No Mapping     |       |           |
|                     |                             | 0000100 - International Number                                                                 | ⇒   | No Mapping     |       |           |
|                     |                             | 0000101 to 1110000 - Spare                                                                     | ⇒   | No Mapping     |       |           |
|                     |                             | 1110001 - subscriber number, operator requested (0+ call)                                      | ⇒   | No Mapping     |       |           |
|                     |                             | 1110010 - National number, operator requested (0+ call)                                        | ⇒   | No Mapping     |       |           |
|                     |                             | 1110011 - International number, operator requested (0+ call)                                   | ⇒   | No Mapping     |       |           |
|                     |                             | 1110100 - no address present, operator requested (0-,10XXX+0(0), or 00- call)                  | ⇒   | No Mapping     |       |           |
|                     |                             | 1110101 - no address present, cut-through call to carrier                                      | ⇒   | No Mapping     |       |           |
|                     |                             | 1110110 - 950+ call from local exchange carrier public station or hotel/motel line or non-EAEO | ⇒   | No Mapping     |       |           |
|                     |                             | 1110111 - Test Line Test code                                                                  | ⇒   | No Mapping     |       |           |
|                     |                             | 1111000 - to 1111110 - reserved for network specific use                                       | ⇒   | No Mapping     |       |           |
|                     |                             | 1111111 - reserved                                                                             | ⇒   | No Mapping     |       |           |
|                     | Numbering plan              | 000 - Unknown                                                                                  | ⇒   | No Mapping     |       |           |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan                                                          | ⇒   | No Mapping     |       |           |
|                     |                             | 010 - Spare                                                                                    | ⇒   | No Mapping     |       |           |
|                     |                             | 011 - reserved (CCITT: Data numbering plan)                                                    | ⇒   | No Mapping     |       |           |
|                     |                             | 100 - reserved (CCITT: Telex numbering plan)                                                   | ⇒   | No Mapping     |       |           |
|                     |                             | 101 - private numbering plan                                                                   | ⇒   | No Mapping     |       |           |
|                     |                             | 110 - spare                                                                                    | ⇒   | No Mapping     |       |           |
|                     |                             | 111 - spare                                                                                    | ⇒   | No Mapping     |       |           |

**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM        |                     |                 | Dir | ITU R2 SZG/SZA           |       |                                       |
|---------------------|---------------------|-----------------|-----|--------------------------|-------|---------------------------------------|
| Parameter           | Field               | Field Value     |     | Field Value              | Field | Parameter                             |
| Called Party Number | Address information | 0000 - Digit 0  | ⇒   | Based on MMPtranslations |       | Called Party Number (Forward Group 1) |
|                     |                     | 0001 - Digit 1  | ⇒   |                          |       |                                       |
|                     |                     | 0010 - Digit 2  | ⇒   |                          |       |                                       |
|                     |                     | 0011 - Digit 3  | ⇒   |                          |       |                                       |
|                     |                     | 0101 - Digit 4  | ⇒   |                          |       |                                       |
|                     |                     | 0101 - Digit 5  | ⇒   |                          |       |                                       |
|                     |                     | 0110 - Digit 6  | ⇒   |                          |       |                                       |
|                     |                     | 0111 - Digit 7  | ⇒   |                          |       |                                       |
|                     |                     | 1000 - Digit 8  | ⇒   |                          |       |                                       |
|                     |                     | 1001 - Digit 9  | ⇒   |                          |       |                                       |
|                     |                     | 1010 - spare    | ⇒   |                          |       |                                       |
|                     |                     | 1111 - reserved | ⇒   |                          |       |                                       |



**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM         |                             |                                                          | Dir | ITU R2 SZG/SZA |       |           |
|----------------------|-----------------------------|----------------------------------------------------------|-----|----------------|-------|-----------|
| Parameter            | Field                       | Field Value                                              |     | Field Value    | Field | Parameter |
| Calling Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                        | ⇒   | No Mapping     |       |           |
|                      |                             | 1 - Odd Number of Address Digits                         | ⇒   | No Mapping     |       |           |
|                      | Nature of Address Indicator | 0000000 - Spare                                          | ⇒   | No Mapping     |       |           |
|                      |                             | 0000001 - unique subscriber number                       | ⇒   | No Mapping     |       |           |
|                      |                             | 0000010 - Spare, Reserve for national Use                | ⇒   | No Mapping     |       |           |
|                      |                             | 0000011 - unique national number                         | ⇒   | No Mapping     |       |           |
|                      |                             | 0000100 - unique international number                    | ⇒   | No Mapping     |       |           |
|                      |                             | 0000101 to 1110000 - Spare                               | ⇒   | No Mapping     |       |           |
|                      |                             | 1110001 - non-unique subscriber number,                  | ⇒   | No Mapping     |       |           |
|                      |                             | 1110010 - spare, reserved for national use               | ⇒   | No Mapping     |       |           |
|                      |                             | 1110011 - non-unique national number                     | ⇒   | No Mapping     |       |           |
|                      |                             | 1110100 - non-unique international number                | ⇒   | No Mapping     |       |           |
|                      |                             | 1110101 - spare                                          | ⇒   | No Mapping     |       |           |
|                      |                             | 1110110 - spare                                          | ⇒   | No Mapping     |       |           |
|                      |                             | 1110111 - Test Line Test code                            | ⇒   | No Mapping     |       |           |
|                      |                             | 1111000 - to 1111110 - reserved for network specific use | ⇒   | No Mapping     |       |           |
|                      |                             | 1111111 - spare                                          | ⇒   | No Mapping     |       |           |
|                      | Numbering plan              | 000 - Unknown                                            | ⇒   | No Mapping     |       |           |
|                      |                             | 001 - ISDN (Telephony) Numbering Plan                    | ⇒   | No Mapping     |       |           |
|                      |                             | 010 - Spare                                              | ⇒   | No Mapping     |       |           |
|                      |                             | 011 - reserved (CCITT: Data numbering plan)              | ⇒   | No Mapping     |       |           |
|                      |                             | 100 - reserved (CCITT: Telex numbering plan)             | ⇒   | No Mapping     |       |           |
|                      |                             | 101 - private numbering plan                             | ⇒   | No Mapping     |       |           |
|                      |                             | 110 - spare                                              | ⇒   | No Mapping     |       |           |
|                      |                             | 111 - spare                                              | ⇒   | No Mapping     |       |           |

**Parameter Mapping - ISUP FGD IAM -> ITU R2 SZG/SZA**

| ISUP FGD IAM                          |                                                   |                              | Dir | ITU R2 SZG/SZA |       |           |
|---------------------------------------|---------------------------------------------------|------------------------------|-----|----------------|-------|-----------|
| Parameter                             | Field                                             | Field Value                  |     | Field Value    | Field | Parameter |
| Calling Party Number                  | Pres. (Address presentation restricted indicator) | 00 - presentation allowed    | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 01 - presentation restricted | ⇒   | No Mapping     |       |           |
|                                       | Address information                               | 0000 - Digit 0               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0001 - Digit 1               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0010 - Digit 2               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0011 - Digit 3               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0100 - Digit 4               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0101 - Digit 5               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0110 - Digit 6               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 0111 - Digit 7               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 1000 - Digit 8               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 1001 - Digit 9               | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 1010 - spare                 | ⇒   | No Mapping     |       |           |
|                                       |                                                   | 1111 - reserved              | ⇒   | No Mapping     |       |           |
| Charge Number                         |                                                   |                              | ⇒   | No Mapping     |       |           |
| Originating line information          |                                                   |                              | ⇒   | No Mapping     |       |           |
| Transit network selection             |                                                   |                              | ⇒   | No Mapping     |       |           |
| Carrier selection                     |                                                   |                              | ⇒   | No Mapping     |       |           |
| Service code                          |                                                   |                              | ⇒   | No Mapping     |       |           |
| Carrier Identification Code Parameter |                                                   |                              | ⇒   | No Mapping     |       |           |
| Hop Counter                           |                                                   |                              | ⇒   | No Mapping     |       |           |
| Jurisdiction Information              |                                                   |                              | ⇒   | No Mapping     |       |           |
| Original Called Number                |                                                   |                              | ⇒   | No Mapping     |       |           |
| Redirecting Number                    |                                                   |                              | ⇒   | No Mapping     |       |           |
| Access Transport                      |                                                   |                              | ⇒   | No Mapping     |       |           |
| Generic Address                       |                                                   |                              | ⇒   | No Mapping     |       |           |
| Generic Name                          |                                                   |                              | ⇒   | No Mapping     |       |           |

a. For ISUP FGD to FDCP R2, in order to have Regular Intl as the CPC on R2 side, table CATCLASS should be datafilled as BOTH in CATDATA for the. Example datafill: ITUR2CAT REGULAR\_INTL BOTH

**Parameter Mapping - ITU R2 Group B -> ISUP FGD ACM**

| ISUP FGD ACM             |                                   |                                                    | Dir | ITU R2 Group B   |       |           |
|--------------------------|-----------------------------------|----------------------------------------------------|-----|------------------|-------|-----------|
| Parameter                | Field                             | Field Value                                        |     | Field Value      | Field | Parameter |
| Backward call indicators | Charge Indicator                  | 10 - Charge                                        | ⇐   | Connect_Call_CHG | B-6   | Group B   |
|                          | Called Party's Status Indicator   | 00 - No Indication                                 | ⇐   |                  |       |           |
|                          | Called Party's Category Indicator | 00 - No Indication                                 | ⇐   |                  |       |           |
|                          | End-to-End Method Indicator       | 00 - No End to End Method Available                | ⇐   |                  |       |           |
|                          | Interworking Indicator            | 1 - Interworking Encountered                       | ⇐   |                  |       |           |
|                          | IAM Segmentation indicator        | 0 - no indication                                  | ⇐   |                  |       |           |
|                          | ISDN User Part Indicator          | 0 - ISDN User Part not Used All the Way            | ⇐   |                  |       |           |
|                          | Holding Indicator                 | 0 - Holding not required                           | ⇐   |                  |       |           |
|                          | ISDN Access Indicator             | 0 - Terminating Access Non-ISDN                    | ⇐   |                  |       |           |
|                          | Echo Control Device Indicator     | 0 - Incoming Half Echo Control Device not Included | ⇐   |                  |       |           |
|                          | SCCP Method Indicator             | 00 - No Indication                                 | ⇐   |                  |       |           |

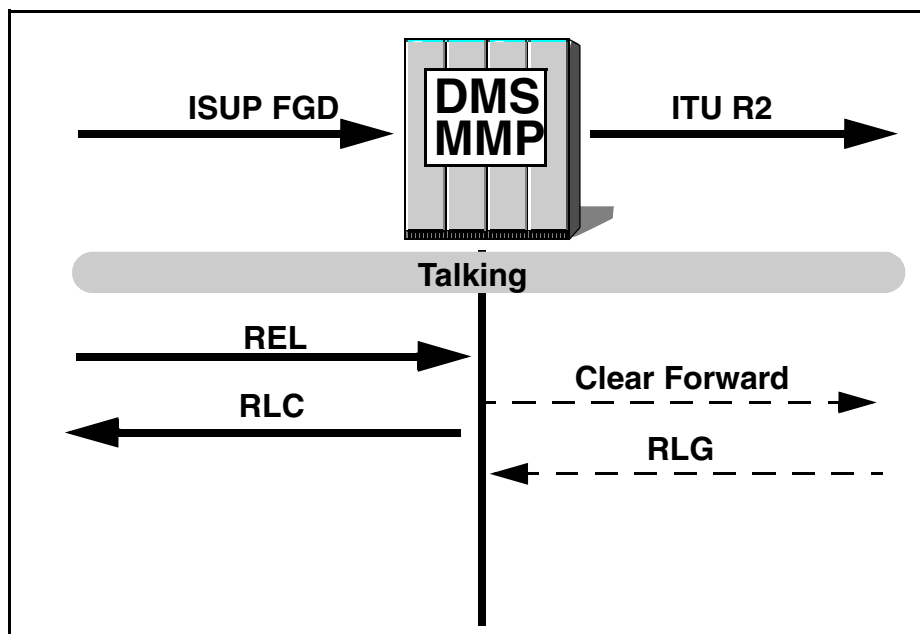
**Parameter Mapping - ITU R2 Answer -> ISUP FGD ANM**

| ISUP FGD ANM |       |             | Dir | ITU R2 Answer |       |           |
|--------------|-------|-------------|-----|---------------|-------|-----------|
| Parameter    | Field | Field Value |     | Field Value   | Field | Parameter |
| ANM          |       |             | ⇐   | Answer Signal |       |           |

## Normal Call Clearing

### Calling Party Clear

ISUP FGD -> ITU R2: Calling Party Clear



### Calling Party Clear Message Mappings

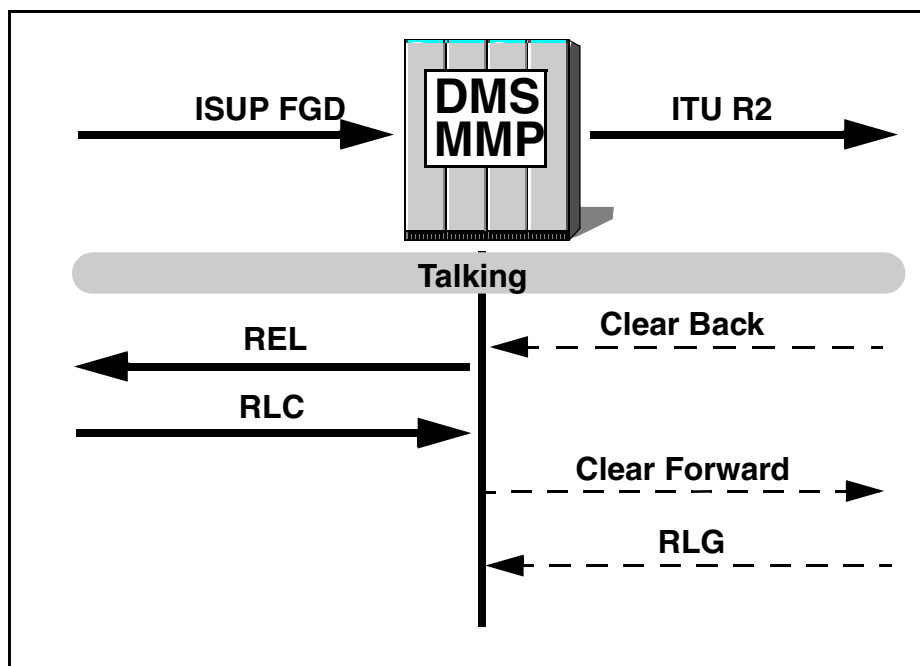
| ISUP FGD Message | Trigger Direction | ITU R2 Line Signals |
|------------------|-------------------|---------------------|
| REL              | ⇒                 | CLF                 |
| RLC              | ⇐                 | No Trigger          |
| No Mapping       | ⇐                 | RLG                 |

### Parameter Mappings: ISUP FGD REL -> ITU R2 CLF

| ISUP FGD REL               |       |             | Dir | ITU R2 CLF           |       |           |
|----------------------------|-------|-------------|-----|----------------------|-------|-----------|
| Parameter                  | Field | Field Value |     | Field Value          | Field | Parameter |
| Cause Indicators           |       |             | ⇒   | Clear Forward Signal |       |           |
| Automatic congestion level |       |             | ⇒   |                      |       |           |
| Access Transport           |       |             | ⇒   |                      |       |           |

## Called Party Clear

ISUP FGD -> ITU R2: Called Party Clear



## Called Party Clear Message Mapping

| ISUP FGD Message | Trigger Direction | ITU R2 Line Signal |
|------------------|-------------------|--------------------|
| REL              | ←                 | CLB                |
| RLC              | ⇒                 | No Mapping         |
| No Trigger       | ⇒                 | CLF                |
| No Mapping       | ←                 | RLG                |

## Parameter Mappings: ITU R2 CLB -> ISUP FGD REL

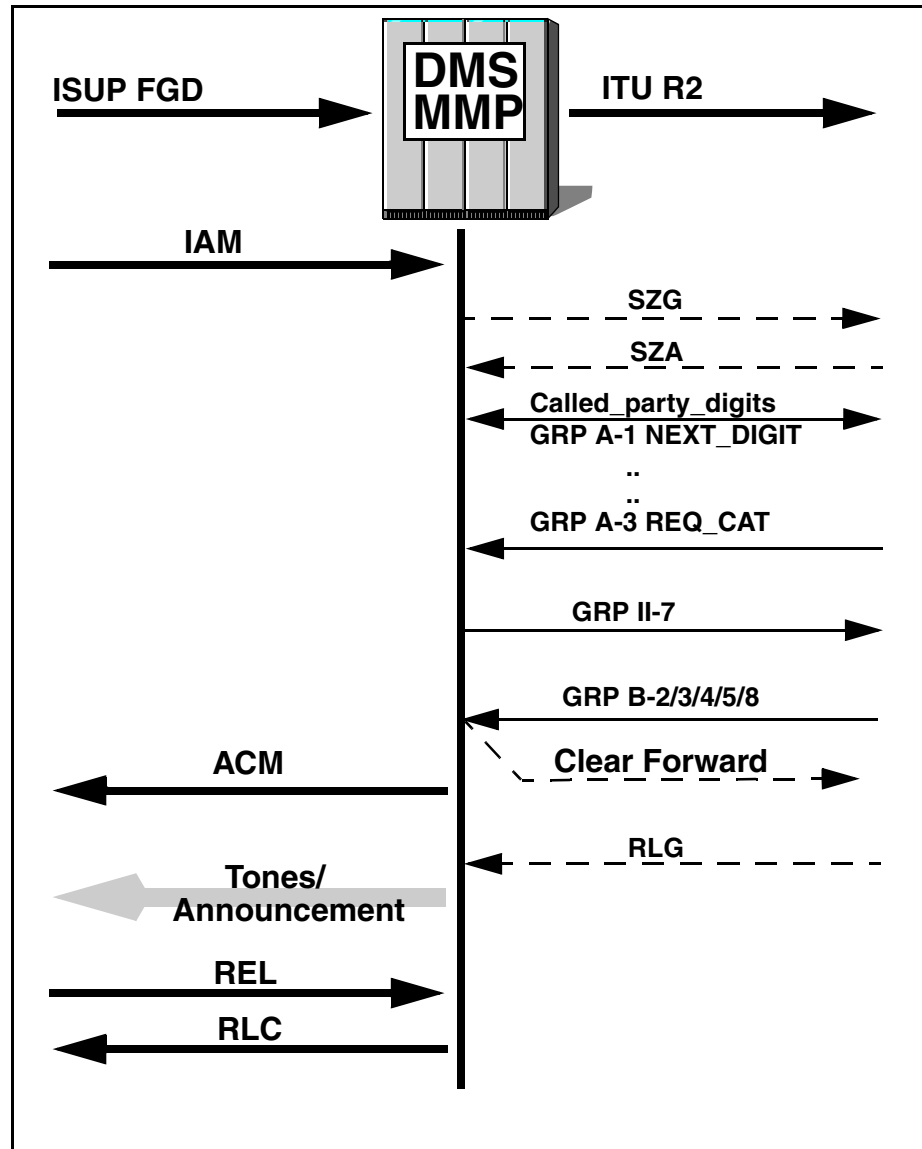
| ISUP FGD REL                                                             |       |             | Dir | ITU R2 CLB        |       |           |
|--------------------------------------------------------------------------|-------|-------------|-----|-------------------|-------|-----------|
| Parameter                                                                | Field | Field Value |     | Field Value       | Field | Parameter |
| Cuase Indicator [ Mapping as described in " REL Generation and Mapping"] |       |             | ←   | Clear Back Signal |       |           |
|                                                                          |       |             | ←   |                   |       |           |
|                                                                          |       |             | ←   |                   |       |           |
|                                                                          |       |             | ←   |                   |       |           |

### Unsuccessful Call Attempt

Please refer to Section “REL Generation and Mapping” on page 691.

### Unsuccessful Call Attempt with Treatment

ISUP FGD -> ITU R2: Unsuccessful Call Attempt with Treatment



**Unsuccessful Call Attempt with Treatment Message Mappings**

| ISUP FGD Message        | Trigger Direction | ITU R2 Line Signal                 |
|-------------------------|-------------------|------------------------------------|
| IAM                     | ⇒                 | SZG                                |
|                         |                   | SZA                                |
|                         |                   | GRP I-A<br>NEXT_DIGIT <sup>a</sup> |
|                         |                   | Called Party Digit <sup>b</sup>    |
|                         |                   | GRP A-3<br>REQ_CAT                 |
| No Mapping              | ⇐                 | GRP II - 7                         |
|                         |                   | GRP B - 2/3/4/5/8                  |
| ACM                     | ⇐                 | No Trigger <sup>c</sup>            |
| No Trigger <sup>d</sup> | ⇒                 | Clear Forward                      |
| REL                     | ⇒                 | No Mapping                         |
| No Mapping              | ⇐                 | RLG                                |
| RLC                     | ⇐                 | No Trigger                         |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

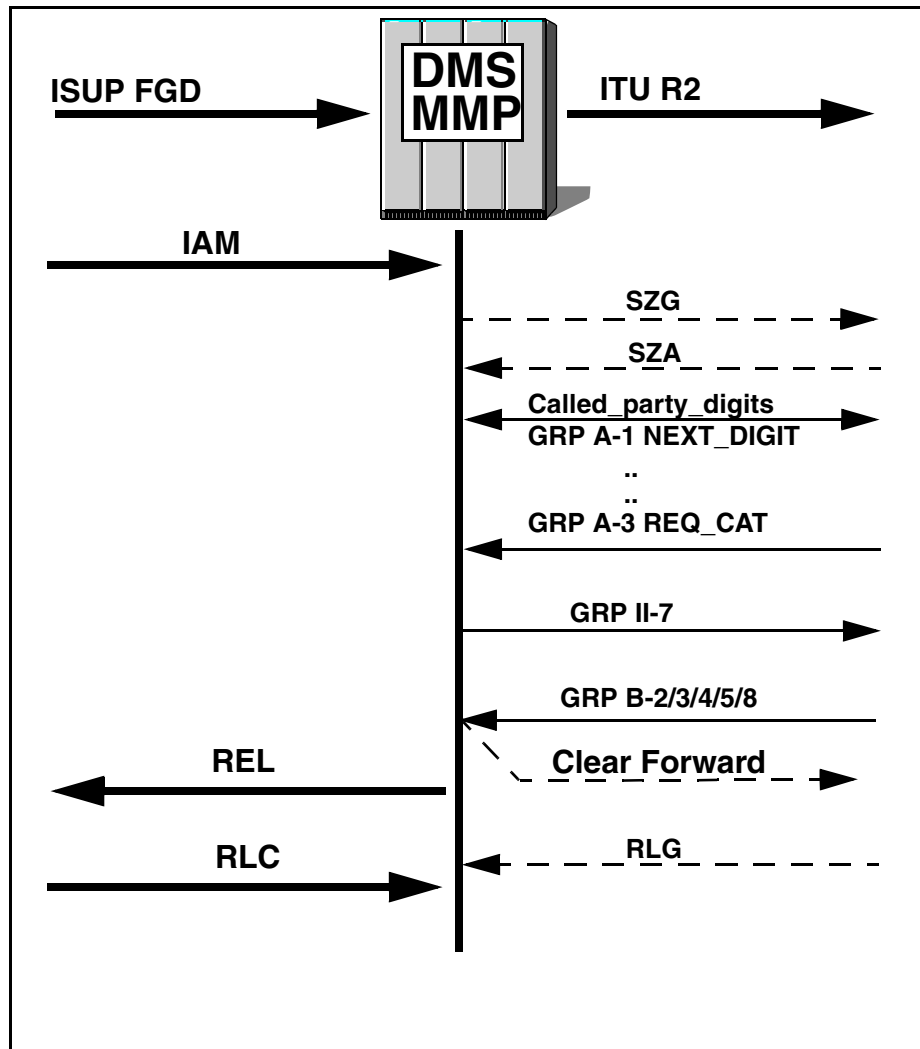
b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

c. ACM message is sent to cut voice path for tones/announcement.

d. Clear Forward triggered by receipt of GRP B R2 signal.

**Unsuccessful Call Attempt with Cause**

ISUP FGD -&gt; ITU R2: Unsuccessful Call Attempt with Cause





**Unsuccessful Call Attempt with Cause Message Mappings**

| ISUP FGD Message        | Trigger Direction | ITU R2 Line Signal              |
|-------------------------|-------------------|---------------------------------|
| IAM                     | ⇒                 | SZG                             |
|                         |                   | SZA                             |
|                         |                   | GRP I-A                         |
|                         |                   | NEXT_DIGIT <sup>a</sup>         |
|                         |                   | Called Party Digit <sup>b</sup> |
| REL                     | ⇐                 | GRP A-3<br>REQ_CAT              |
|                         |                   | GRP II - 7                      |
|                         |                   | GRP B - 2/3/4/5/8               |
| No Trigger <sup>c</sup> | ⇒                 | Clear Forward                   |
| No Mapping              | ⇐                 | RLG                             |
| RLC                     | ⇒                 | No Mapping                      |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

c. Clear Forward triggered by receipt of GRP B R2 signal.

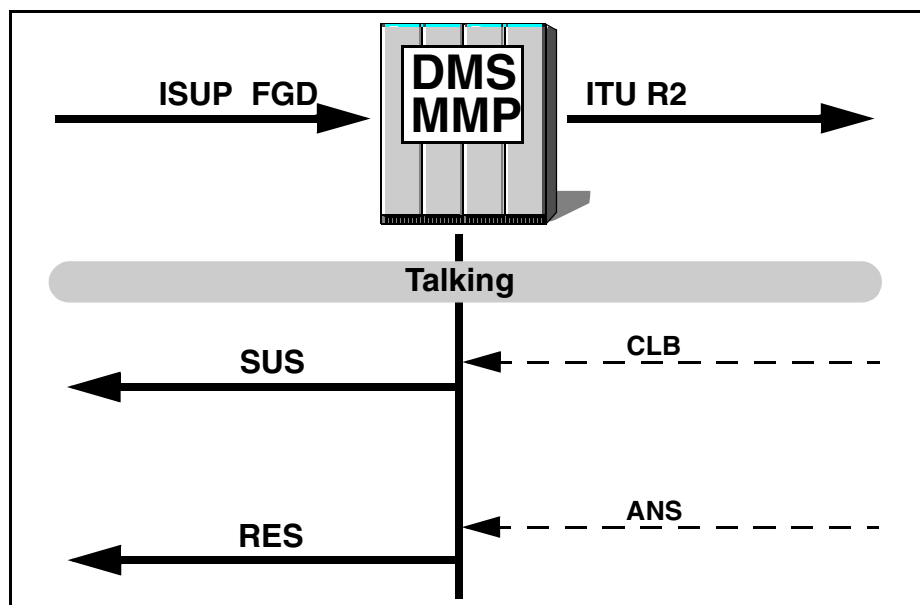
**Parameter Mapping: ITU R2 Group B -> ISUP FGD REL**

| ISUP FGD REL                                                              |       |             | Dir          | ITU R2 Group B |         |           |
|---------------------------------------------------------------------------|-------|-------------|--------------|----------------|---------|-----------|
| Parameter                                                                 | Field | Field Value |              | Field Value    | Field   | Parameter |
| Cause Indicator [ Mapping as described in “ REL Generation and Mapping” ] |       |             | ⇐            |                |         |           |
|                                                                           |       |             | ⇐            |                |         |           |
|                                                                           |       |             | ⇐            |                |         |           |
|                                                                           |       |             | ⇐            |                |         |           |
|                                                                           | ⇐     |             | INFOR_TONE   | B-2            | Group B |           |
|                                                                           |       |             | SUB_BUSY     | B-3            |         |           |
|                                                                           |       |             | CONGESTION   | B-4            |         |           |
|                                                                           |       |             | UNASSIGN_NUM | B-5            |         |           |
|                                                                           |       |             | SUB_OUT_ORD  | B-8            |         |           |
|                                                                           |       |             | ⇐            |                |         |           |

## Suspend/Resume

### Suspend with Resume

ISUP FGD -> ITU R2: Suspend with Resume



### Suspend with Resume Message Mapping

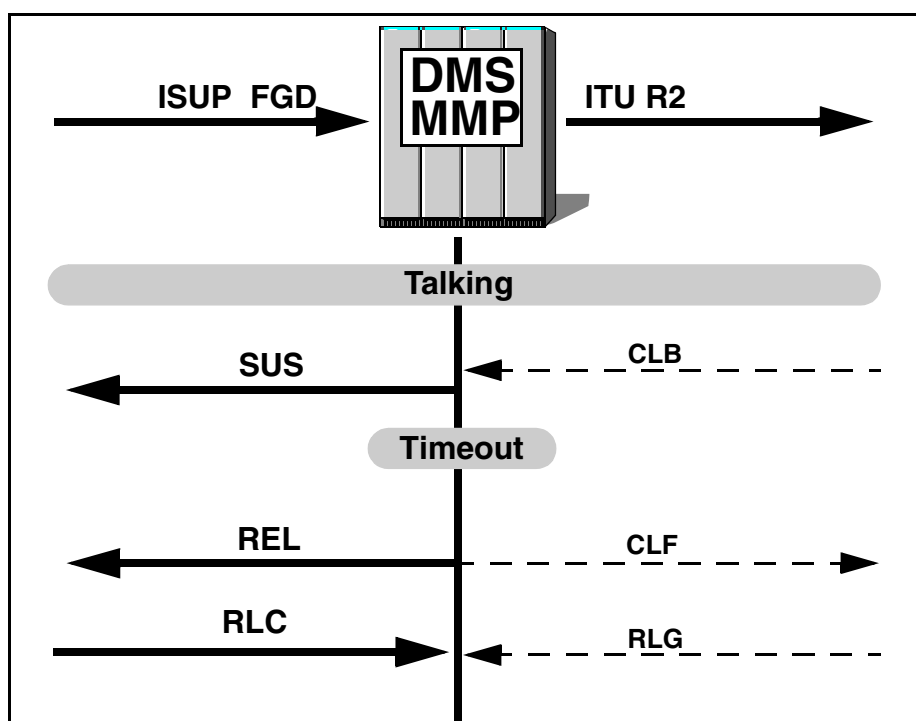
| ISUP FGD Message | Trigger | ITU R2 Line Signals |
|------------------|---------|---------------------|
| SUS              | ←       | CLB                 |
| RES              | ←       | ANS                 |

### Parameter Mapping - ITU R2 CLB -> ISUP FGD SUS

| ISUP FGD SUS              |                          |                       | Dir | ITU R2 CLB  |       |           |
|---------------------------|--------------------------|-----------------------|-----|-------------|-------|-----------|
| Parameter                 | Field                    | Field Value           |     | Field Value | Field | Parameter |
| Suspend/Resume indicators | Suspend/Resume Indicator | 1 - Network Initiated | ←   |             |       |           |
|                           | Spare                    | 0000000               | ←   |             |       |           |

**Parameter Mapping - ITU R2 ANS -> ISUP FGD RES**

| ISUP FGD RES              |                          |                       | Dir | ITU R2 ANS  |       |           |
|---------------------------|--------------------------|-----------------------|-----|-------------|-------|-----------|
| Parameter                 | Field                    | Field Value           |     | Field Value | Field | Parameter |
| Suspend/Resume indicators | Suspend/Resume Indicator | 1 - Network Initiated | ⇐   |             |       |           |
|                           | Spare                    | 0000000               | ⇐   |             |       |           |

**Suspend Timer Time-out****ISUP FGD -> ITU R2: Suspend Timer Time-out****Suspend Timer Time-out Message Mapping**

| ISUP FGD Message | Trigger | ITU R2 Line Signals |
|------------------|---------|---------------------|
| SUS              | ⇐       | CLB                 |
| REL              | ⇐       | No Trigger          |
| No Trigger       | ⇒       | Clear Forward       |
| No Mapping       | ⇐       | RLG                 |
| RLC              | ⇒       | No Mapping          |

## Overlap Call Setup

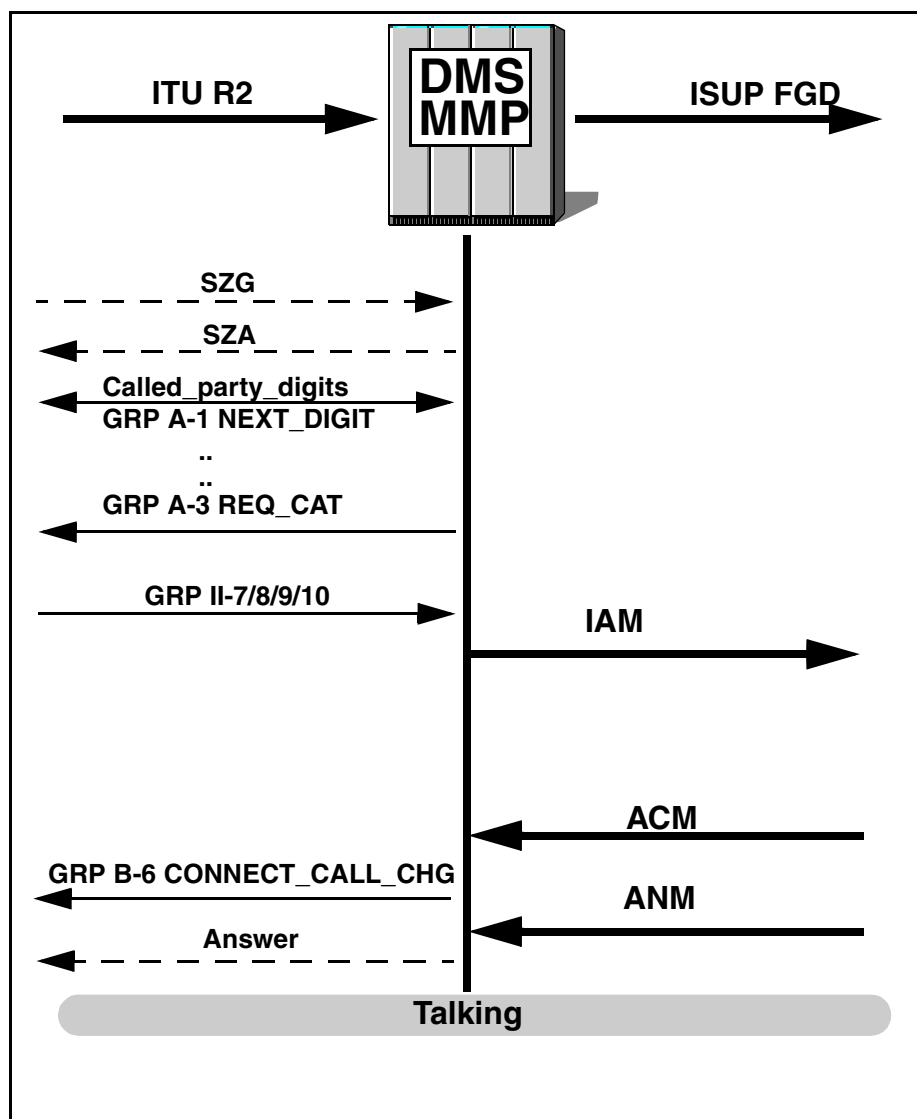
Overlap in pulsing is not supported for ISUP FGD.

## ITU R2 -> ISUP FGD Interworking

### Normal Call Setup

The following tables show the ITU R2 to ISUP FGD detailed message mapping. They include all the possible ITU R2 line signals, and details how they are mapped to their corresponding ISUP FGD counterparts.

#### ITU R2 -> ISUP FGD: Normal Call Setup



**Normal Call Setup Message Mapping**

| ITU R2 Line<br>Signal              | Trigger<br>Direction | ISUP FGD<br>Message |
|------------------------------------|----------------------|---------------------|
| SZG                                |                      |                     |
| SZA                                |                      |                     |
| GRP I-A<br>NEXT_DIGIT <sup>a</sup> | ⇒                    | IAM                 |
| Called Party Digit <sup>b</sup>    |                      |                     |
| GRP A-3<br>REQ_CAT                 |                      |                     |
| GRP II - 7/8/9/10                  |                      |                     |
| GRP B-6<br>CONNECT_<br>CALL_CHG    | ⇐                    | ACM                 |
| Answer                             | ⇐                    | ANM                 |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

## Parameter Mapping - ITU R2 SZG/SZA -&gt; ISUP FGD IAM

| ITU R2 SZG/SZA                               |       |                 | Dir | ISUP FGD IAM                                                                |                                          |                                 |
|----------------------------------------------|-------|-----------------|-----|-----------------------------------------------------------------------------|------------------------------------------|---------------------------------|
| Parameter                                    | Field | Field Value     |     | Field Value                                                                 | Field                                    | Parameter                       |
| Called Party Number<br>(Forward Group I)     | I-10  | DIGIT_0         | ⇒   | Based on MMP translations                                                   | Address information                      | Called Party Number             |
|                                              | I-1   | DIGIT_1         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-2   | DIGIT_2         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-3   | DIGIT_3         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-4   | DIGIT_4         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-5   | DIGIT_5         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-6   | DIGIT_6         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-7   | DIGIT_7         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-8   | DIGIT_8         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-9   | DIGIT_9         | ⇒   |                                                                             |                                          |                                 |
|                                              | I-15  | END_OF_DIGS     | ⇒   |                                                                             |                                          |                                 |
|                                              |       |                 | ⇒   | Based on MMP translations                                                   | Odd Even Indicator                       | Called Party Number             |
|                                              |       |                 | ⇒   | Based on MMP translations                                                   | Nature of Address Indicator <sup>a</sup> |                                 |
|                                              |       |                 | ⇒   | 001 - ISDN (Telephony) Numbering Plan                                       | Numbering plan                           |                                 |
| Calling Party Category<br>(Forward Group II) | II-7  | Regular (Intl)  | ⇒   | 0000 0000 - calling party's category unknown                                |                                          | Calling Party's Category        |
|                                              | II-8  | Data (Intl)     | ⇒   | 0000 0000 - calling party's category unknown                                |                                          |                                 |
|                                              | II-9  | Priority (Intl) | ⇒   | 0000 0000 - calling party's category unknown                                |                                          |                                 |
|                                              | II-10 | Operator (Intl) | ⇒   | 0000 0000 - calling party's category unknown                                |                                          |                                 |
|                                              |       |                 | ⇒   | Please refer to Section "Nature of Connection Mapping for IAM" on page 691. |                                          | Nature of connection indicators |

| ITU R2 SZG/SZA |       |             | Dir | ISUP FGD IAM                                       |                                       |                          |
|----------------|-------|-------------|-----|----------------------------------------------------|---------------------------------------|--------------------------|
| Parameter      | Field | Field Value |     | Field Value                                        | Field                                 | Parameter                |
|                |       |             | ⇒   | Based on call processing                           | National/International Call Indicator | Forward Call Indicator   |
|                |       |             | ⇒   | 00 - No End to End Method Available                | End to End Method Indicator           |                          |
|                |       |             | ⇒   | 1 - Interworking Encountered                       | Interworking Indicator                |                          |
|                |       |             | ⇒   | 0 - no indication                                  | IAM Segmentation indicator            |                          |
|                |       |             | ⇒   | 0 - ISDN User Part not used all the way            | ISDN User Part Indicator              |                          |
|                |       |             | ⇒   | ISUP Preference not required all the way.          | ISDN User Part Preference Indicator   |                          |
|                |       |             | ⇒   | 0 - Originating Access Non-ISDN                    | ISDN Access Indicator                 |                          |
|                |       |             | ⇒   | 00 - no indication                                 | SCCP Mode Indicator                   |                          |
| Group II       | II-8  | Data (INTL) | ⇒   |                                                    |                                       | User Service Information |
|                |       |             | ⇒   | Based on datafill                                  |                                       | Calling Party Number     |
|                |       |             | ⇒   | Please refer to Section "Hop Counter" on page 686. |                                       | Hop Counter              |

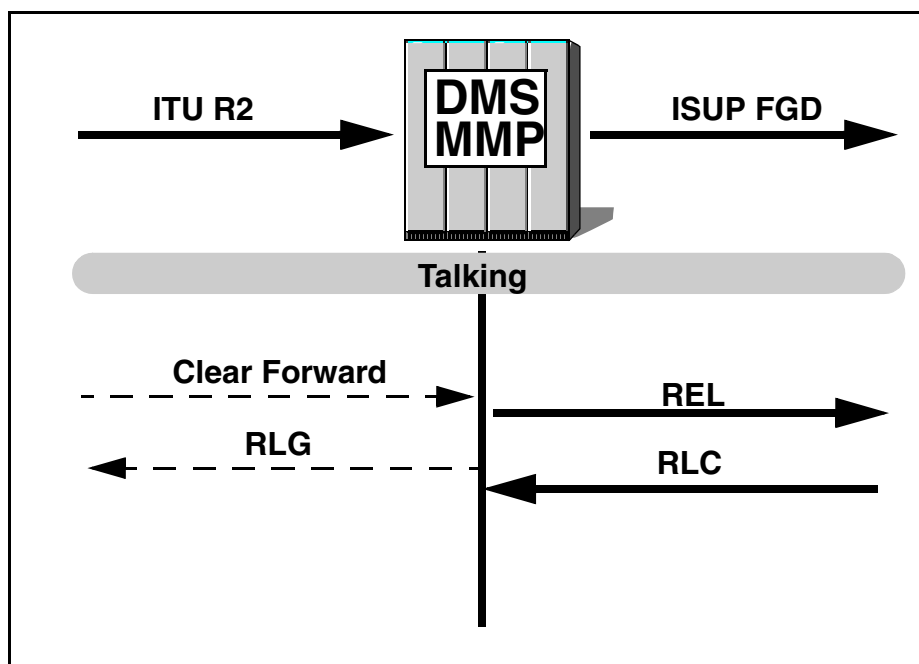
a. Please refer to Section "NOA/TON Mapping" on page 689. Only CDN option in the UXLA tables is supported.

### Parameter Mapping - ISUP FGD ACM -> ITU R2 Group B

| ITU R2 Group B |       |                  | Dir | ISUP FGD ACM |       |                                   |
|----------------|-------|------------------|-----|--------------|-------|-----------------------------------|
| Parameter      | Field | Field Value      |     | Field Value  | Field | Parameter                         |
| Group B        | B-6   | Connect_Call_CHG | ⇐   |              |       | Backward call indicators          |
|                |       | No Mapping       | ⇐   |              |       | Optional backward call indicators |
|                |       | No Mapping       | ⇐   |              |       | Cause indicators                  |
|                |       | No Mapping       | ⇐   |              |       | Access Transport                  |

**Parameter Mapping - ISUP FGD ANM -> ITU R2 Answer**

| ITU R2 Answer |       |             | Dir | ISUP FGD ANM |       |           |
|---------------|-------|-------------|-----|--------------|-------|-----------|
| Parameter     | Field | Field Value |     | Field Value  | Field | Parameter |
| Answer Signal |       |             | ←   | ANM          |       |           |

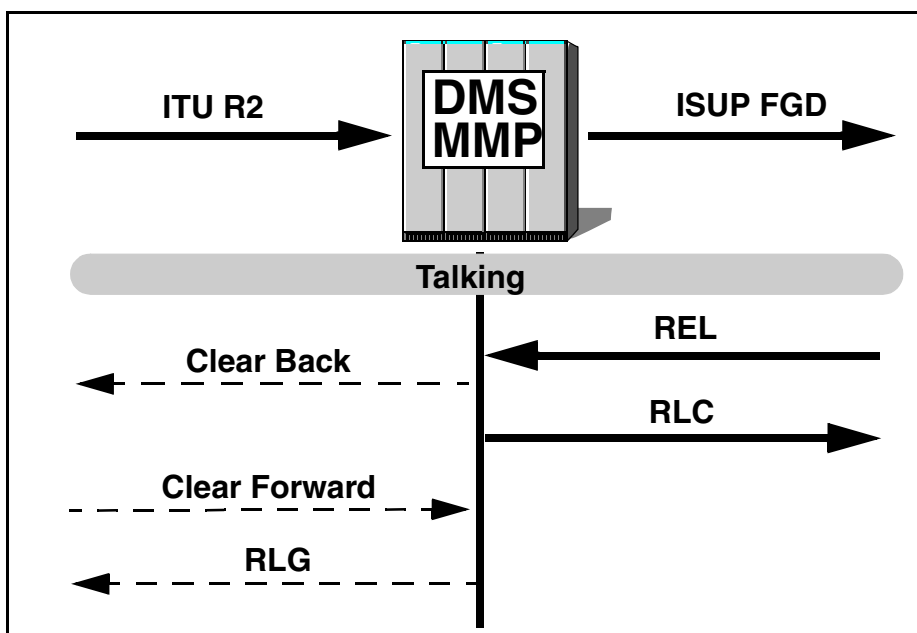
**Normal Call Clearing****Calling Party Clear****ITU R2 -> ISUP FGD: Calling Party Clear****Calling Party Clear Message Mappings**

| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| CLF                | ⇒                 | REL              |
| RLG                | ←                 | No Trigger       |
| No Mapping         | ←                 | RLC              |



**Parameter Mappings: ITU R2 CLF -> ISUP FGD REL**

| ITU R2 CLF           |       |             | DI<br>R | ISUP FGD REL                                                      |       |           |
|----------------------|-------|-------------|---------|-------------------------------------------------------------------|-------|-----------|
| Parameter            | Field | Field Value |         | Field Value                                                       | Field | Parameter |
| Clear forward signal |       |             | ⇒       | Cause Indicator [ Mapping based on “REL Generation and Mapping” ] |       |           |
|                      |       |             | ⇒       |                                                                   |       |           |
|                      |       |             | ⇒       |                                                                   |       |           |
|                      |       |             | ⇒       |                                                                   |       |           |
|                      |       |             | ⇒       |                                                                   |       |           |
|                      |       |             | ⇒       |                                                                   |       |           |

**Called Party Clear****ITU R2 -> ISUP FGD: Called Party Clear****Called Party Clear Message Mapping**

| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| CLB                | ⇐                 | REL              |
| CLF                | ⇒                 | No Mapping       |
| No Trigger         | ⇒                 | RLC              |

| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| RLG                | ←                 | No Trigger       |

#### Parameter Mappings: ISUP FGD REL -> ITU R2 CLB

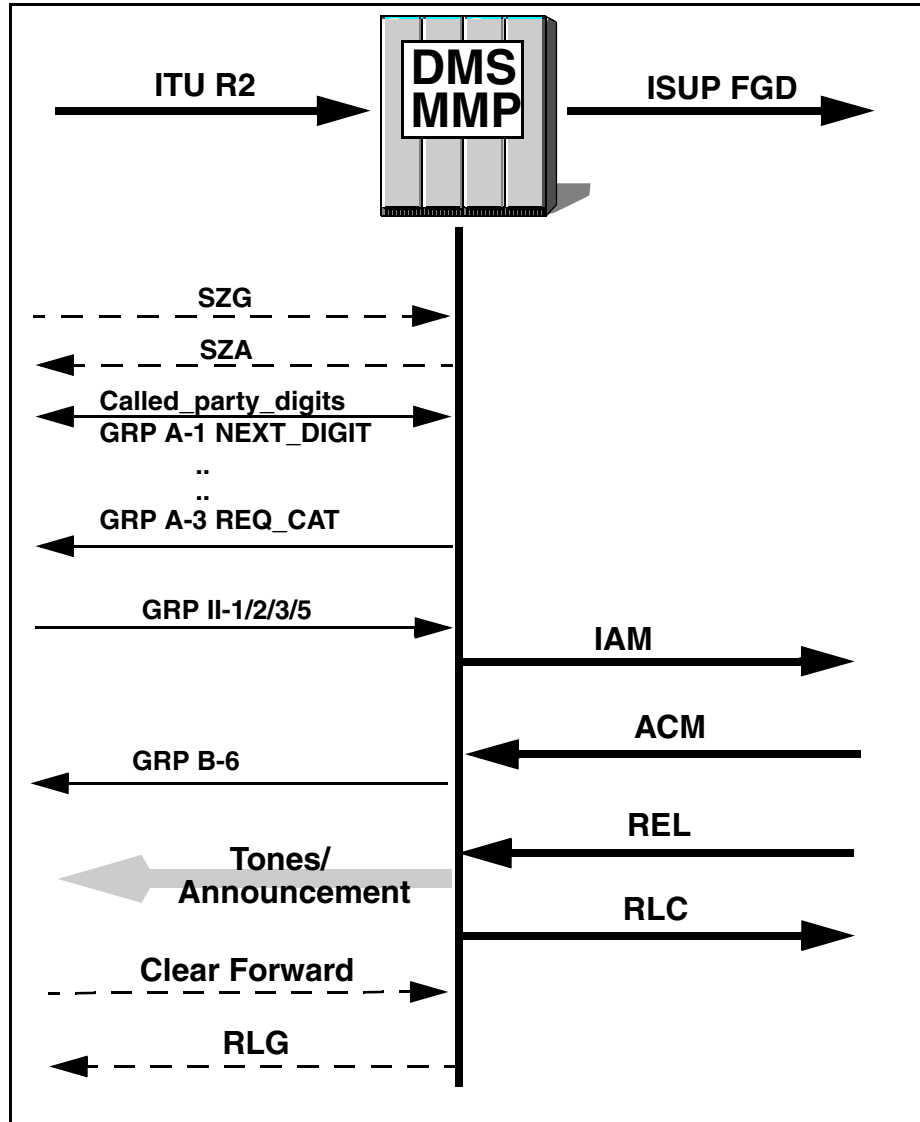
| ITU R2 CLB |       |             | DI<br>R | ISUP FGD REL               |       |           |
|------------|-------|-------------|---------|----------------------------|-------|-----------|
| Parameter  | Field | Field Value |         | Field Value                | Field | Parameter |
| No Mapping |       |             | ←       | Cause Indicators           |       |           |
| No Mapping |       |             | ←       | Automatic congestion level |       |           |
| No Mapping |       |             | ←       | Access Transport           |       |           |

#### Unsuccessful Call Attempt

Please refer to Section “REL Generation and Mapping” on page 691.

## Unsuccessful Call Attempt with Treatment

ITU R2 -> ISUP FGD: Unsuccessful Call Attempt with Treatment



**Unsuccessful Call Attempt with Treatment Message Mappings**

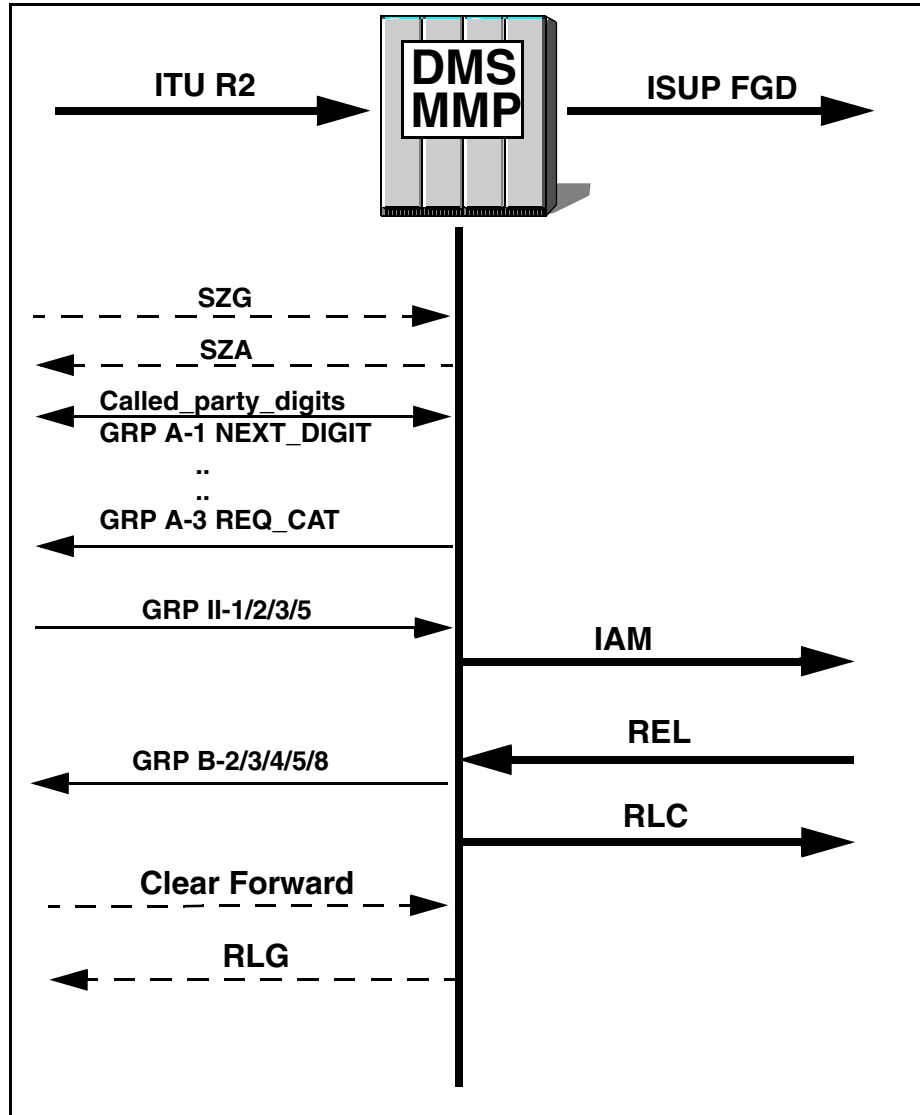
| ITU R2 Line Signal                 | Trigger Direction | ISUP FGD Message |
|------------------------------------|-------------------|------------------|
| SZG                                |                   |                  |
| SZA                                |                   |                  |
| GRP I-A<br>NEXT_DIGIT <sup>a</sup> | ⇒                 | IAM              |
| Called Party Digit <sup>b</sup>    |                   |                  |
| GRP A-3<br>REQ_CAT                 |                   |                  |
| GRP II - 1/2/3/5                   |                   |                  |
| GRP B - 6                          | ⇐                 | ACM              |
| No Mapping                         | ⇐                 | REL              |
| Clear Forward                      | ⇒                 | No Mapping       |
| No Trigger                         | ⇒                 | RLC              |
| RLG                                | ⇐                 | No Trigger       |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

## Unsuccessful Call Attempt with Cause

ITU R2 -> ISUP FGD: Unsuccessful Call Attempt with Cause



**Unsuccessful Call Attempt with Treatment Message Mappings**

| ITU R2 Line Signal                 | Trigger Direction | ISUP FGD Message |
|------------------------------------|-------------------|------------------|
| SZG                                |                   |                  |
| SZA                                |                   |                  |
| GRP I-A<br>NEXT_DIGIT <sup>a</sup> | ⇒                 | IAM              |
| Called Party Digit <sup>b</sup>    |                   |                  |
| GRP A-3<br>REQ_CAT                 |                   |                  |
| GRP II - 1/2/3/5                   |                   |                  |
| GRP B - 2/3/4/5/8                  | ⇐                 | REL              |
| Clear Forward                      | ⇒                 | No Mapping       |
| No Trigger                         | ⇒                 | RLC              |
| RLG                                | ⇐                 | No Trigger       |

a. Multiple NEXT\_DIGIT signals will be sent until all Called Party Digits have been collected.

b. One Called Party Digit will be sent in response to each NEXT\_DIGIT signal received.

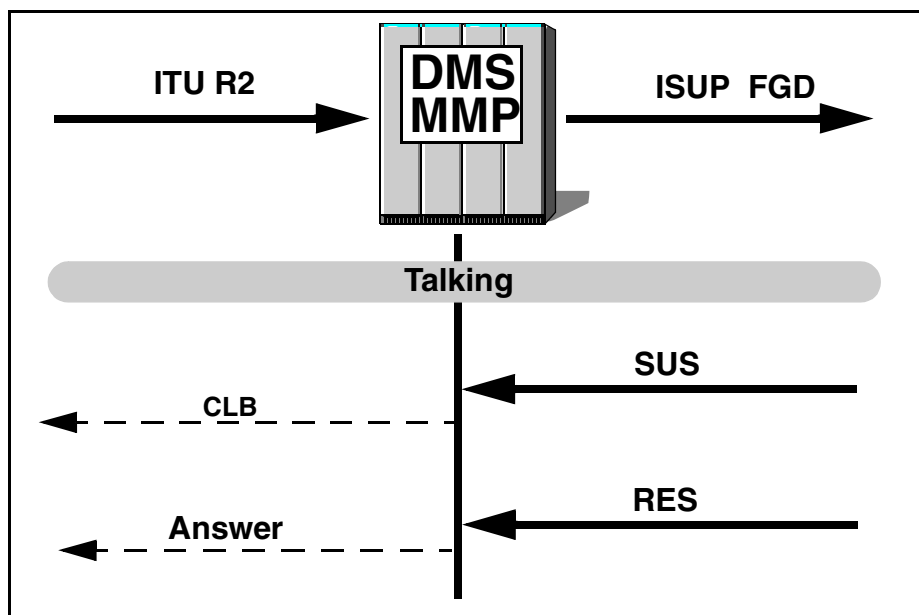
**Parameter Mapping: ISUP FGD REL -> ITU R2 Group B**

| ITU R2 Group B |                          |             | DI<br>R | ISUP FGD REL |                  |                            |
|----------------|--------------------------|-------------|---------|--------------|------------------|----------------------------|
| Parameter      | Field                    | Field Value |         | Field Value  | Field            | Parameter                  |
| No Mapping     |                          |             | ⇐       |              | General Location | Cause Indicators           |
| No Mapping     |                          |             |         |              | spare            |                            |
| No Mapping     |                          |             |         |              | Coding Standard  |                            |
| No Mapping     |                          |             |         |              | ext              |                            |
| Group B        | Based on call processing |             |         |              | Cause Value      |                            |
| No Mapping     |                          |             |         |              | ext              |                            |
| No Mapping     |                          |             | ⇐       |              |                  | Automatic congestion level |
| No Mapping     |                          |             | ⇐       |              |                  | Access Transport           |

## Suspend/Resume

### Suspend with Resume

ITU R2 -> ISUP FGD: Suspend with Resume



### Suspend with Resume Message Mapping

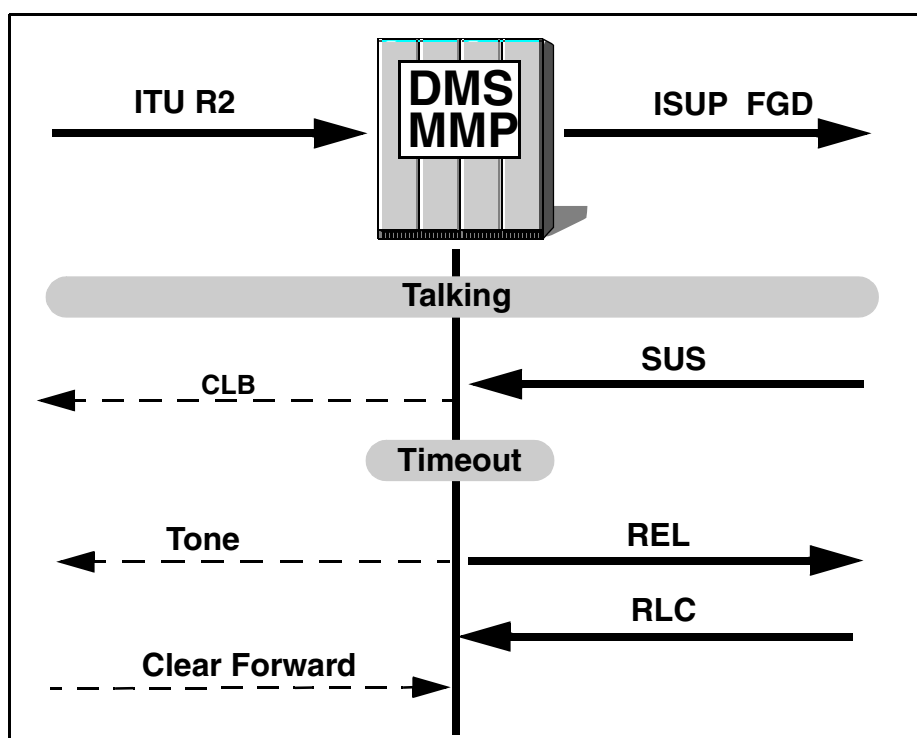
| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| CLB                | ←                 | SUS              |
| ANS                | ←                 | RES              |

### Parameter Mapping - ISUP FGD SUS -> ITU R2 CLB

| ITU R2 CLB |       |             | Dir | ISUP FGD SUS          |                          |                           |
|------------|-------|-------------|-----|-----------------------|--------------------------|---------------------------|
| Parameter  | Field | Field Value |     | Field Value           | Field                    | Parameter                 |
|            |       |             | ←   | 1 - Network Initiated | Suspend/Resume Indicator | Suspend/Resume indicators |
|            |       |             | ←   | xxxxxxx               | Spare                    |                           |

**Parameter Mapping - ISUP FGD RES -> ITU R2 ANS**

| ITU R2 ANS |       |             | Dir | ISUP FGD RES          |                          |                           |
|------------|-------|-------------|-----|-----------------------|--------------------------|---------------------------|
| Parameter  | Field | Field Value |     | Field Value           | Field                    | Parameter                 |
|            |       |             | ←   | 1 - Network Initiated | Suspend/Resume Indicator | Suspend/Resume indicators |
|            |       |             | ←   | xxxxxxx               | Spare                    |                           |

**Suspend Timer Time-out****ITU R2 -> ISUP FGD: Suspend Timer Time-out****Suspend Timer Time-out Message Mapping**

| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| CLB                | ←                 | SUS              |
| CLB                | ←                 | No Trigger       |
| No Trigger         | ⇒                 | REL              |
| No Mapping         | ←                 | RLC              |



| ITU R2 Line Signal | Trigger Direction | ISUP FGD Message |
|--------------------|-------------------|------------------|
| CLF                | ⇒                 | No Mapping       |

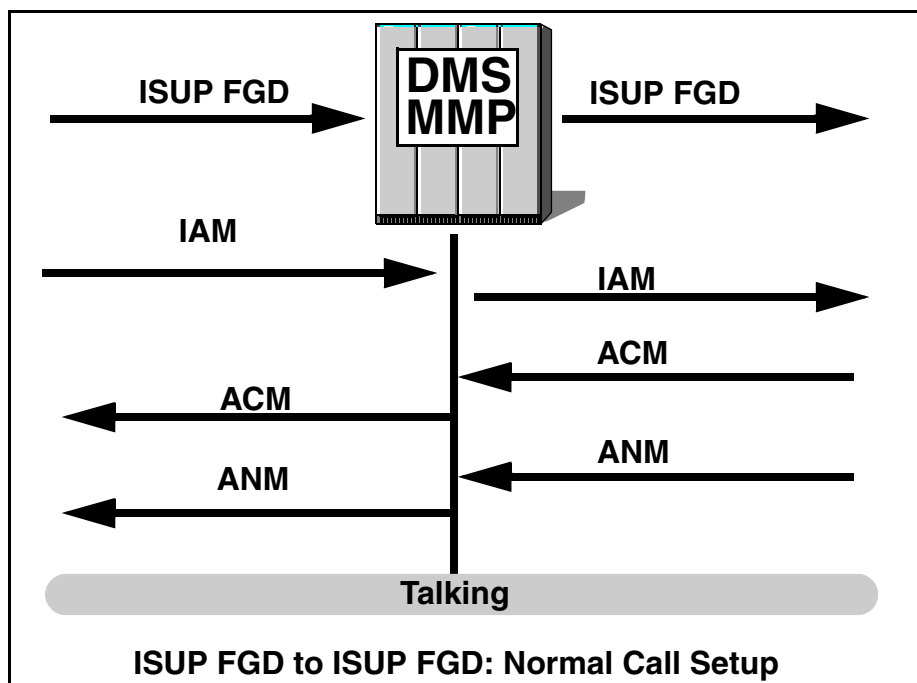
### Overlap Call Setup

Overlap outpulsing is not supported for ISUP FGD.

### ISUP FGD -> ISUP FGD Interworking

#### Normal Call Setup

The following tables show the ISUP FGD to ISUP FGD detailed message mapping. They include all the possible ISUP FGD parameters, and details how they are mapped to their corresponding ISUP FGD counterparts.



| ISUP FGD Message | Trigger Direction | ISUP FGD Message |
|------------------|-------------------|------------------|
| IAM              | ⇒                 | IAM              |
| ACM              | ⇐                 | ACM              |
| ANM              | ⇐                 | ANM              |

**Parameter Mapping - ISUP FGD IAM to ISUP FGD IAM**

| ISUP FGD IAM                    |                            |                                                       | Dir | ISUP FGD IAM                                          |                                            |                                              |
|---------------------------------|----------------------------|-------------------------------------------------------|-----|-------------------------------------------------------|--------------------------------------------|----------------------------------------------|
| Parameter                       | Field                      | Field Value                                           |     | Field Value                                           | Field                                      | Parameter                                    |
| Nature of connection indicators | Satellite indicator        | 00 - No Satellite Circuit in the Connection           | ⇒   | 00 - No Satellite Circuit in the Connection           | Satellite indicator                        | Nature of connection indicators <sup>a</sup> |
|                                 |                            | 01 - One Satellite Circuit in the Connection          | ⇒   | 01 - One Satellite Circuit in the Connection          |                                            |                                              |
|                                 |                            | 10 - Two Satellite Circuit in the Connection          | ⇒   | 10 - Two Satellite Circuit in the Connection          |                                            |                                              |
|                                 |                            | 11 -Three Satellite Circuit in the Connection         | ⇒   | 11 -Three Satellite Circuit in the Connection         |                                            |                                              |
|                                 | Continuity check indicator | 00 - Continuity Check not Required                    | ⇒   | 00 - Continuity Check not Required                    | Continuity check indicator <sup>a</sup>    |                                              |
|                                 |                            | 01 - Continuity Check Required on This Circuit        | ⇒   | 01 - Continuity Check Required on This Circuit        |                                            |                                              |
|                                 |                            | 10 - continuity check performed on a previous circuit | ⇒   | 10 - continuity check performed on a previous circuit |                                            |                                              |
|                                 |                            | 11 - spare                                            | ⇒   | 00 - Continuity Check not Required                    |                                            |                                              |
|                                 | Echo Suppressor indicator  | 0 - Outgoing Half Echo Control Device not Included    | ⇒   | 0 - Outgoing Half Echo Control Device not Included    | Echo Control Device Indicator <sup>a</sup> |                                              |
|                                 |                            | 1 - Outgoing Half Echo Control Device Included        | ⇒   | 1 - Outgoing Half Echo Control Device Included        |                                            |                                              |

| ISUP FGD IAM             |                                       |                                                                                                          | Dir | ISUP FGD IAM                                                                                             |                                                    |                          |
|--------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|
| Parameter                | Field                                 | Field Value                                                                                              |     | Field Value                                                                                              | Field                                              | Parameter                |
| Forward Call Indicator   | National/International Call Indicator | 0 - incoming national call                                                                               | ⇒   | 0 - incoming national call                                                                               | National/International Call Indicator <sup>b</sup> | Forward Call Indicator   |
|                          |                                       | 1 - incoming International call                                                                          | ⇒   | 1 - incoming international                                                                               |                                                    |                          |
|                          | End to End Method Indicator           | 00 - No End to End Method Available                                                                      | ⇒   | 00 - No End to End Method Available                                                                      | End to End Method Indicator                        |                          |
|                          |                                       | 01 - pass along method available                                                                         | ⇒   | 01 - pass along method available                                                                         |                                                    |                          |
|                          |                                       | 10 - SCCP method available                                                                               | ⇒   | 10 - SCCP method available                                                                               |                                                    |                          |
|                          |                                       | 11 - pass along and SCCP methods available                                                               | ⇒   | 11 - pass along and SCCP methods available                                                               |                                                    |                          |
|                          | Interworking Indicator                | 0 - No Interworking Encountered (SS7 all the way)                                                        | ⇒   | 0 - No Interworking Encountered                                                                          | Interworking Indicator                             |                          |
|                          |                                       | 1 -Interworking Encountered                                                                              | ⇒   | 1 -Interworking Encountered                                                                              |                                                    |                          |
|                          | IAM Segmentation indicator            | 0 - no indication                                                                                        | ⇒   | 0 - no indication                                                                                        | IAM Segmentation indicator                         |                          |
|                          |                                       | 1 - additional information has been received and incorporated into call setup                            | ⇒   | 1 - additional information has been received and incorporated into call setup                            |                                                    |                          |
|                          | ISDN User Part Indicator              | 0 - ISDN User Part not used all the way                                                                  | ⇒   | 0 - ISDN User Part not used all the way                                                                  | ISDN User Part Indicator                           |                          |
|                          |                                       | 1 - ISDN User Part used all the way                                                                      | ⇒   | 1 - ISDN User Part used all the way                                                                      |                                                    |                          |
|                          | ISDN User Part Preference Indicator   | 00 - ISDN User Part Preferred All the Way                                                                | ⇒   | 00 - ISDN User Part Preferred All the Way                                                                | ISDN User Part Preference Indicator <sup>a</sup>   |                          |
|                          |                                       | 01 - ISDN User Part not Required All the Way                                                             | ⇒   | 01 - ISDN User Part not Required All the Way                                                             |                                                    |                          |
|                          |                                       | 10 - ISDN User Part Required All the Way                                                                 | ⇒   | 10 - ISDN User Part Required All the Way                                                                 |                                                    |                          |
|                          |                                       | 11 - Spare                                                                                               | ⇒   | 11 - Spare                                                                                               |                                                    |                          |
|                          | ISDN Access Indicator                 | 0 - Originating Access Non-ISDN                                                                          | ⇒   | 0 - Originating Access Non-ISDN                                                                          | ISDN Access Indicator                              |                          |
|                          |                                       | 1 - Originating Access ISDN                                                                              | ⇒   | 1 - Originating Access ISDN                                                                              |                                                    |                          |
|                          | SCCP Mode Indicator                   | 00 - no indication                                                                                       | ⇒   | 00 - no indication                                                                                       | SCCP Mode Indicator                                |                          |
|                          |                                       | 01 - connectionless method available (No procedure specified for U.S. networks)                          | ⇒   | 01 - connectionless method available (No procedure specified for U.S. networks)                          |                                                    |                          |
|                          |                                       | 10 - connection oriented method available (No procedure specified for U.S. networks)                     | ⇒   | 10 - connection oriented method available (No procedure specified for U.S. networks)                     |                                                    |                          |
|                          |                                       | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. networks) | ⇒   | 11 - connectionless and connection oriented methods available (No procedure specified for U.S. networks) |                                                    |                          |
|                          |                                       |                                                                                                          |     |                                                                                                          |                                                    |                          |
| Calling Party's Category | N/A                                   | 00000000 - calling party's category's unknown                                                            | ⇒   | 00000000 - calling party's category's unknown                                                            | N/A                                                | Calling Party's Category |
|                          |                                       | 00001010 - Ordinary Calling Subscriber                                                                   | ⇒   | 00001010 - Ordinary Calling Subscriber                                                                   |                                                    |                          |
|                          |                                       | 00001101 - Test Call                                                                                     | ⇒   | 00001101 - Test Call                                                                                     |                                                    |                          |
|                          |                                       | All other values - treat as 0                                                                            | ⇒   | 00000000 - calling party's category's unknown                                                            |                                                    |                          |

| ISUP FGD IAM             |                                                  |                                        | Dir | ISUP FGD IAM                           |                                                  |                          |
|--------------------------|--------------------------------------------------|----------------------------------------|-----|----------------------------------------|--------------------------------------------------|--------------------------|
| Parameter                | Field                                            | Field Value                            |     | Field Value                            | Field                                            | Parameter                |
| User Service Information | Extension Indicator                              | 1 - not extended (last octet)          | ⇒   | 1 - last octet                         | Extension Indicator                              | User Service Information |
|                          | Coding Standard                                  | 00 - CCITT                             | ⇒   | 00 - CCITT                             | Coding Standard                                  |                          |
|                          | Information transfer capability                  | 00000 - speech                         | ⇒   | 00000 - speech                         | Information transfer capability                  |                          |
|                          |                                                  | 10000 - 3.1 kHz audio                  | ⇒   | 10000 - 3.1 kHz audio                  |                                                  |                          |
|                          | Transfer Mode                                    | 00 - circuit mode                      | ⇒   | 00 - circuit mode                      | Transfer Mode                                    |                          |
|                          | Information transfer rate                        | 10000 - 64 Kbit/s                      | ⇒   | 10000 - 64 kbit/s                      | Information transfer rate                        |                          |
|                          | User layer protocol identification               | 01 - user information layer 1 protocol | ⇒   | 01 - user information layer 1 protocol | User layer protocol identification               |                          |
|                          | User information layer 1 protocol identification | 00010 - <i>u</i> -law                  | ⇒   | 00010 - <i>u</i> - law                 | User information layer 1 protocol identification |                          |

| ISUP FGD IAM        |                             |                                                                                                | Dir | ISUP FGD IAM                                 |                                          |                     |
|---------------------|-----------------------------|------------------------------------------------------------------------------------------------|-----|----------------------------------------------|------------------------------------------|---------------------|
| Parameter           | Field                       | Field Value                                                                                    |     | Field Value                                  | Field                                    | Parameter           |
| Called Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                                                              | ⇒   | 0 - Even Number of Address Digits            | Odd Even Indicator                       | Called Party Number |
|                     |                             | 1 - Odd Number Of Address Digits                                                               | ⇒   | 1 - Odd Number Of Address Digits             |                                          |                     |
|                     | Nature of Address Indicator | 0000000 - Spare                                                                                | ⇒   | Based on translations                        | Nature of Address Indicator <sup>c</sup> |                     |
|                     |                             | 0000001 - Subscriber number                                                                    | ⇒   |                                              |                                          |                     |
|                     |                             | 0000010 - Spare, Reserve for national Use                                                      | ⇒   |                                              |                                          |                     |
|                     |                             | 0000011 - National Number                                                                      | ⇒   |                                              |                                          |                     |
|                     |                             | 0000100 - International Number                                                                 | ⇒   |                                              |                                          |                     |
|                     |                             | 0000101 to 1110000 - Spare                                                                     | ⇒   |                                              |                                          |                     |
|                     |                             | 1110001 - subscriber number, operator requested (0+ call)                                      | ⇒   |                                              |                                          |                     |
|                     |                             | 1110010 - National number, operator requested (0+ call)                                        | ⇒   |                                              |                                          |                     |
|                     |                             | 1110011 - International number, operator requested (0+ call)                                   | ⇒   |                                              |                                          |                     |
|                     |                             | 1110100 - no address present, operator requested (0-, 10XXX+0(0), or 00- call)                 | ⇒   |                                              |                                          |                     |
|                     |                             | 1110101 - no address present, cut-through call to carrier                                      | ⇒   |                                              |                                          |                     |
|                     |                             | 1110110 - 950+ call from local exchange carrier public station or hotel/motel line or non-EAEO | ⇒   |                                              |                                          |                     |
|                     |                             | 1110111 - Test Line Test code                                                                  | ⇒   |                                              |                                          |                     |
|                     |                             | 1111000 - to 1111110 - reserved for network specific use                                       | ⇒   |                                              |                                          |                     |
|                     |                             | 1111111 - reserved                                                                             | ⇒   |                                              |                                          |                     |
|                     | Numbering plan              | 000 - Unknown                                                                                  | ⇒   | 000 - Unknown                                | Numbering Plan Indicator                 |                     |
|                     |                             | 001 - ISDN (Telephony) Numbering Plan                                                          | ⇒   | 001 - ISDN (Telephony) Numbering Plan        |                                          |                     |
|                     |                             | 010 - Spare                                                                                    | ⇒   | 010 - Spare                                  |                                          |                     |
|                     |                             | 011 - reserved (CCITT: Data numbering plan)                                                    | ⇒   | 011 - reserved (CCITT: Data numbering plan)  |                                          |                     |
|                     |                             | 100 - reserved (CCITT: Telex numbering plan)                                                   | ⇒   | 100 - reserved (CCITT: Telex numbering plan) |                                          |                     |
|                     |                             | 101 - private numbering plan                                                                   | ⇒   | 101 - private numbering plan                 |                                          |                     |
|                     |                             | 110 - spare                                                                                    | ⇒   | 110 - spare                                  |                                          |                     |
|                     |                             | 111 - spare                                                                                    | ⇒   | 111 - spare                                  |                                          |                     |

| ISUP FGD IAM        |                     |                 | Dir | ISUP FGD IAM               |                |                                  |
|---------------------|---------------------|-----------------|-----|----------------------------|----------------|----------------------------------|
| Parameter           | Field               | Field Value     |     | Field Value                | Field          | Parameter                        |
| Called Party Number | Address information | 0000 - Digit 0  | ⇒   | Based on MMP translations. | Address signal | Called Party Number <sup>b</sup> |
|                     |                     | 0001 - Digit 1  | ⇒   |                            |                |                                  |
|                     |                     | 0010 - Digit 2  | ⇒   |                            |                |                                  |
|                     |                     | 0011 - Digit 3  | ⇒   |                            |                |                                  |
|                     |                     | 0101 - Digit 4  | ⇒   |                            |                |                                  |
|                     |                     | 0101 - Digit 5  | ⇒   |                            |                |                                  |
|                     |                     | 0110 - Digit 6  | ⇒   |                            |                |                                  |
|                     |                     | 0111 - Digit 7  | ⇒   |                            |                |                                  |
|                     |                     | 1000 - Digit 8  | ⇒   |                            |                |                                  |
|                     |                     | 1001 - Digit 9  | ⇒   |                            |                |                                  |
|                     |                     | 1111 - reserved | ⇒   |                            |                |                                  |

| ISUP FGD IAM         |                             |                                                          | Dir | ISUP FGD IAM                                             |                             |                      |
|----------------------|-----------------------------|----------------------------------------------------------|-----|----------------------------------------------------------|-----------------------------|----------------------|
| Parameter            | Field                       | Field Value                                              |     | Field Value                                              | Field                       | Parameter            |
| Calling Party Number | Odd Even Indicator          | 0 - Even Number of Address Digits                        | ⇒   | 0 - Even Number of Address Digits                        | Odd Even Indicator          | Calling Party Number |
|                      |                             | 1 - Odd Number of Address Digits                         | ⇒   | 1 - Odd Number of Address Digits                         |                             |                      |
|                      | Nature of Address Indicator | 0000000 - Spare                                          | ⇒   | 0000000 - Spare <sup>d</sup>                             | Nature of Address Indicator |                      |
|                      |                             | 0000001 - unique subscriber number                       | ⇒   | 0000001 - unique subscriber number                       |                             |                      |
|                      |                             | 0000010 - Spare, Reserve for national Use                | ⇒   | 0000010 - Spare, Reserve for national Use                |                             |                      |
|                      |                             | 0000011 - unique national number                         | ⇒   | 0000011 - unique national number                         |                             |                      |
|                      |                             | 0000100 - unique international number                    | ⇒   | 0000100 - unique international number                    |                             |                      |
|                      |                             | 0000101 to 1110000 - Spare                               | ⇒   | 0000101 to 1110000 - Spare                               |                             |                      |
|                      |                             | 1110001 - non-unique subscriber number,                  | ⇒   | 1110001 - non-unique subscriber number,                  |                             |                      |
|                      |                             | 1110010 - spare, reserved for national use               | ⇒   | 1110010 - spare, reserved for national use               |                             |                      |
|                      |                             | 1110011 - non-unique national number                     | ⇒   | 1110011 - non-unique national number                     |                             |                      |
|                      |                             | 1110100 - non-unique international number                | ⇒   | 1110100 - non-unique international number                |                             |                      |
|                      |                             | 1110101 - spare                                          | ⇒   | 1110101 - spare                                          |                             |                      |
|                      |                             | 1110110 - spare                                          | ⇒   | 1110110 - spare                                          |                             |                      |
|                      |                             | 1110111 - Test Line Test code                            | ⇒   | 1110111 - Test Line Test code                            |                             |                      |
|                      |                             | 1111000 - to 1111110 - reserved for network specific use | ⇒   | 1111000 - to 1111110 - reserved for network specific use |                             |                      |
|                      |                             | 1111111 - spare                                          | ⇒   | 1111111 - spare                                          |                             |                      |
|                      | Numbering plan              | 000 - Unknown                                            | ⇒   | 000 - Unknown                                            | Numbering Plan Indicator    |                      |
|                      |                             | 001 - ISDN (Telephony) Numbering Plan                    | ⇒   | 001 - ISDN (Telephony) Numbering Plan                    |                             |                      |
|                      |                             | 010 - Spare                                              | ⇒   | 010 - Spare                                              |                             |                      |
|                      |                             | 011 - reserved (CCITT: Data numbering plan)              | ⇒   | 011 - reserved (CCITT: Data numbering plan)              |                             |                      |
|                      |                             | 100 - reserved (CCITT: Telex numbering plan)             | ⇒   | 100 - reserved (CCITT: Telex numbering plan)             |                             |                      |
|                      |                             | 101 - private numbering plan                             | ⇒   | 101 - private numbering plan                             |                             |                      |
|                      |                             | 110 - spare                                              | ⇒   | 110 - spare                                              |                             |                      |
|                      |                             | 111 - spare                                              | ⇒   | 111 - spare                                              |                             |                      |

| ISUP FGD IAM                          |                                                   |                              | Dir                                          | ISUP FGD IAM                 |                                           |                      |
|---------------------------------------|---------------------------------------------------|------------------------------|----------------------------------------------|------------------------------|-------------------------------------------|----------------------|
| Parameter                             | Field                                             | Field Value                  |                                              | Field Value                  | Field                                     | Parameter            |
| Calling Party Number                  | Pres. (Address presentation restricted indicator) | 00 - presentation allowed    | ⇒                                            | 00 - presentation allowed    | Address presentation restricted indicator | Calling Party Number |
|                                       |                                                   | 01 - presentation restricted | ⇒                                            | 01 - presentation restricted |                                           |                      |
|                                       | Address information                               | 0000 - Digit 0               | ⇒                                            | 0000 - Digit 0               | Address signal                            |                      |
|                                       |                                                   | 0001 - Digit 1               | ⇒                                            | 0001 - Digit 1               |                                           |                      |
|                                       |                                                   | 0010 - Digit 2               | ⇒                                            | 0010 - Digit 2               |                                           |                      |
|                                       |                                                   | 0011 - Digit 3               | ⇒                                            | 0011 - Digit 3               |                                           |                      |
|                                       |                                                   | 0100 - Digit 4               | ⇒                                            | 0100 - Digit 4               |                                           |                      |
|                                       |                                                   | 0101 - Digit 5               | ⇒                                            | 0101 - Digit 5               |                                           |                      |
|                                       |                                                   | 0110 - Digit 6               | ⇒                                            | 0110 - Digit 6               |                                           |                      |
|                                       |                                                   | 0111 - Digit 7               | ⇒                                            | 0111 - Digit 7               |                                           |                      |
|                                       |                                                   | 1000 - Digit 8               | ⇒                                            | 1000 - Digit 8               |                                           |                      |
|                                       |                                                   | 1001 - Digit 9               | ⇒                                            | 1001 - Digit 9               |                                           |                      |
|                                       |                                                   | 1010 - spare                 | ⇒                                            | 0000 - Digit 0               |                                           |                      |
|                                       |                                                   | 1111 - reserved              | ⇒                                            | 1111 - reserved              |                                           |                      |
| Charge Number                         |                                                   | ⇒                            |                                              |                              | Charge Number                             |                      |
| Originating line information          |                                                   | ⇒                            |                                              |                              | Originating line information              |                      |
| Transit network selection             |                                                   | ⇒                            |                                              |                              | Transit network selection                 |                      |
| Carrier selection                     |                                                   | ⇒                            |                                              |                              | Carrier selection                         |                      |
| Service code                          |                                                   | ⇒                            |                                              |                              | Service code                              |                      |
| Carrier Identification Code Parameter |                                                   | ⇒                            |                                              |                              | Carrier Identification Code Parameter     |                      |
| Hop Counter                           |                                                   | ⇒                            | [ Detailed description as in “ Hop Counter”] |                              | Hop Counter                               |                      |

a. Please refer to Section "Nature of Connection Mapping for IAM" on page 691.

b. Please refer to Section "Additional SS7 procedures" on page 683.

c. Please refer to Section "NOA/TON Mapping" on page 689.

d. Field is set according to the length of calling party number



**Parameter Mapping - ISUP FGD ACM to ISUP FGD ACM**

| ISUP FGD ACM             |                                   |                                                    | Dir | ISUP FGD ACM                                       |                                   |                          |
|--------------------------|-----------------------------------|----------------------------------------------------|-----|----------------------------------------------------|-----------------------------------|--------------------------|
| Parameter                | Field                             | Field Value                                        |     | Field Value                                        | Field                             | Parameter                |
| Backward call indicators | Charge Indicator                  | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Charge Indicator                  | Backward call indicators |
|                          |                                   | 01 - No Charge                                     | ⇐   | 01 - No Charge                                     |                                   |                          |
|                          |                                   | 10 - Charge                                        | ⇐   | 10 - Charge                                        |                                   |                          |
|                          |                                   | 11 - spare                                         | ⇐   | 11 - spare                                         |                                   |                          |
|                          | Called Party's Status Indicator   | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Called Party's Status Indicator   |                          |
|                          |                                   | 01 - Subscriber Free                               | ⇐   | 01 - Subscriber Free                               |                                   |                          |
|                          |                                   | 10 - connect when free                             | ⇐   | 10 - connect when free                             |                                   |                          |
|                          |                                   | 11 - spare                                         | ⇐   | 11 - spare                                         |                                   |                          |
|                          | Called Party's Category Indicator | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | Called Party's Category Indicator |                          |
|                          |                                   | 01 - Ordinary Subscriber                           | ⇐   | 01 - Ordinary Subscriber                           |                                   |                          |
|                          |                                   | 10 - Payphone                                      | ⇐   | 10 - Payphone                                      |                                   |                          |
|                          |                                   | 11 - spare                                         | ⇐   | 11 - spare                                         |                                   |                          |
|                          | End-to-End Method Indicator       | 00 - No End to End Method Available                | ⇐   | 00 - No End to End Method Available                | End-to-End Method Indicator       |                          |
|                          |                                   | all other values                                   | ⇐   | all other values                                   |                                   |                          |
|                          | Interworking Indicator            | 0 - No Interworking Encountered                    | ⇐   | 0 - No Interworking Encountered                    | Interworking Indicator            |                          |
|                          |                                   | 1 - Interworking Encountered                       | ⇐   | 1 - Interworking Encountered                       |                                   |                          |
|                          | End-to-End Information Indicate   | 00 - No End to End Information Available           | ⇐   | 00 - No End to End Information Available           | End-to-End Information Indicator  |                          |
|                          | ISDN User Part Indicator          | 0 - ISDN User Part not Used All the Way            | ⇐   | 0 - ISDN User Part not Used All the Way            | ISDN User Part Indicator          |                          |
|                          |                                   | 1 - ISDN User Part Used All the Way                | ⇐   | 1 - ISDN User Part Used All the Way                |                                   |                          |
|                          | Holding Indicator                 | 0 - Holding not required                           | ⇐   | 0 - Holding not required                           | Holding Indicator                 |                          |
|                          |                                   | 1 - not used                                       | ⇐   | 1 - not used                                       |                                   |                          |
|                          | ISDN Access Indicator             | 0 - Terminating Access Non-ISDN                    | ⇐   | 0 - Terminating Access Non-ISDN                    | ISDN Access Indicator             |                          |
|                          |                                   | 1 - Terminating Access ISDN                        | ⇐   | 1 - Terminating Access ISDN                        |                                   |                          |
|                          | Echo Control Device Indicator     | 0 - Incoming Half Echo Control Device not Included | ⇐   | 0 - Incoming Half Echo Control Device not Included | Echo Control Device Indicator     |                          |
|                          |                                   | 1 - Incoming Half Echo Control Device Included     | ⇐   | 1 - Incoming Half Echo Control Device Included     |                                   |                          |
|                          | SCCP Method Indicator             | 00 - No Indication                                 | ⇐   | 00 - No Indication                                 | SCCP Method Indicator             |                          |
|                          |                                   | all other values                                   | ⇐   | all other values                                   |                                   |                          |
|                          | Optional backward call indicators |                                                    |     | ⇐                                                  |                                   |                          |
| Cause Indicator          |                                   |                                                    | ⇐   |                                                    |                                   | Cause Indicator          |
| Access Transport         |                                   |                                                    | ⇐   |                                                    |                                   | Access Transport         |

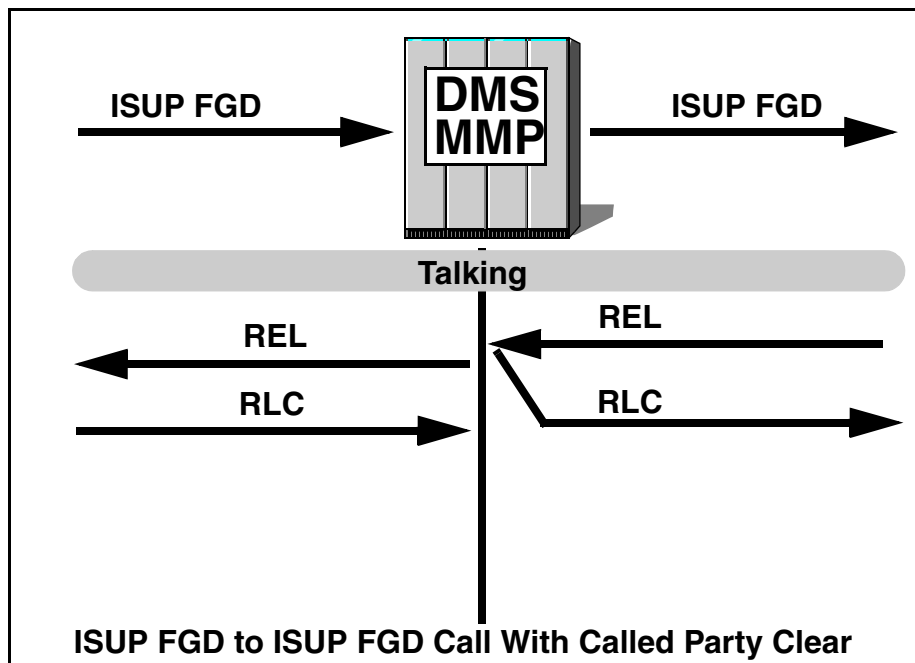
| ISUP FGD ACM             |       |             | Dir | ISUP FGD ACM |       |                          |
|--------------------------|-------|-------------|-----|--------------|-------|--------------------------|
| Parameter                | Field | Field Value |     | Field Value  | Field | Parameter                |
| User to User Indicator   |       |             | ⇐   |              |       | User to User Indicator   |
| User to user information |       |             | ⇐   |              |       | User to user information |

**Parameter Mapping - ISUP FGD ANM to ISUP FGD ANM**

| ISUP FGD ANM               |                                        |             | Dir | ISUP FGD ANM |                                        |                            |
|----------------------------|----------------------------------------|-------------|-----|--------------|----------------------------------------|----------------------------|
| Parameter                  | Field                                  | Field Value |     | Field Value  | Field                                  | Parameter                  |
| Backward Call Indicators   | Refer to ACM: Backward Call Indicators |             | ⇐   |              | Refer to ACM: Backward Call Indicators | Backward Call Indicators   |
| Connected Number           |                                        |             | ⇐   |              |                                        | Connected Number           |
| Access Transport           |                                        |             | ⇐   |              |                                        | Access Transport           |
| User to user information   |                                        |             | ⇐   |              |                                        | User to user information   |
| End of optional parameters |                                        |             | ⇐   |              |                                        | End of optional parameters |

## Normal Call Clearing

### Called Party Clear



### Called Party Clear Message Mappings

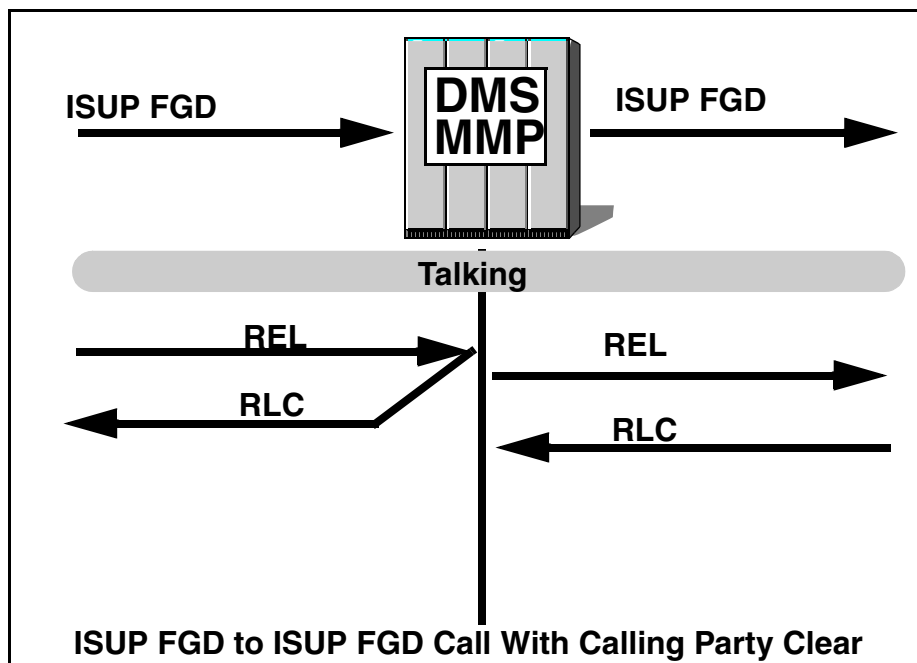
| ISUP FGD Message | Trigger Direction | ISUP FGD Message |
|------------------|-------------------|------------------|
| REL              | ←                 | REL              |
| No trigger       | ⇒                 | RLC <sup>1</sup> |
| RLC              | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message

### Parameter Mapping - ISUP FGD REL to ISUP FGD REL

| ISUP FGD REL                                                    |       |             | Dir | ISUP FGD REL     |       |                            |
|-----------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                       | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as in "REL Generation and Mapping" ] |       |             | ←   | Cause Indicators |       |                            |
| No Mapping                                                      |       |             | ←   |                  |       | Automatic Congestion Level |
| User-to-user information                                        |       |             | ←   |                  |       | User-to-user information   |

### Calling Party Clear



### Calling Party Clear Message Mappings

| ISUP FGD Message | Trigger Direction | ISUP FGD Message |
|------------------|-------------------|------------------|
| REL              | ⇒                 | REL              |
| RLC <sup>1</sup> | ⇐                 | No trigger       |
| No mapping       | ⇐                 | RLC              |

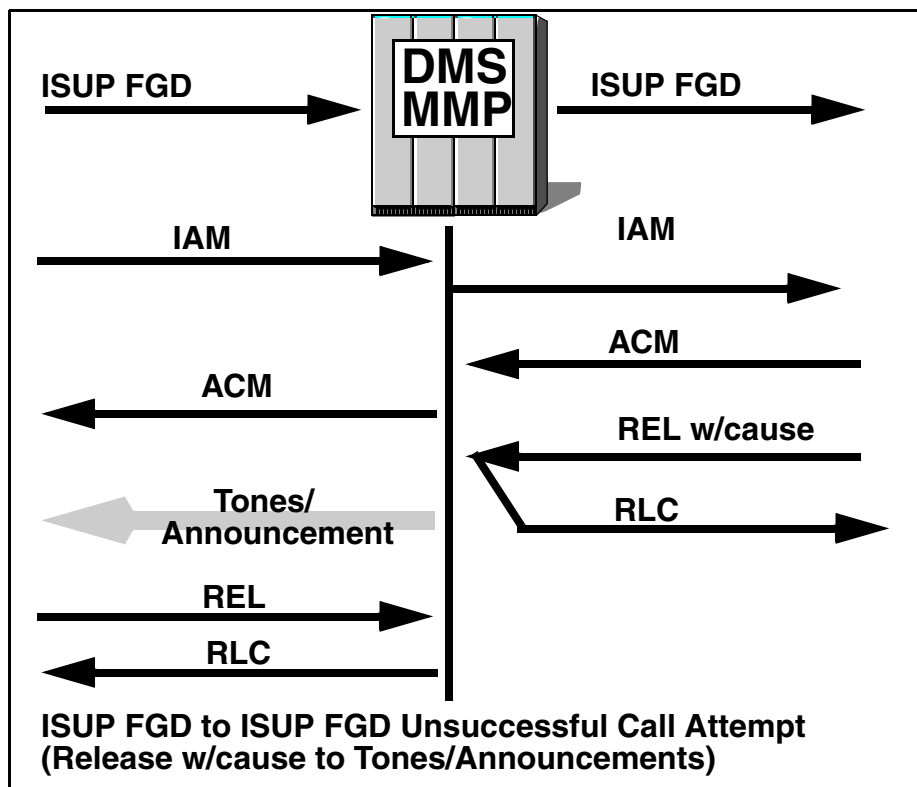
<sup>1</sup> - RLC triggered by receipt of REL, RLC has no parameters in message.

### Parameter Mapping - ISUP FGD REL to ISUP FGD REL

| ISUP FGD REL               |       |             | Dir | ISUP FGD REL                                                    |       |                          |
|----------------------------|-------|-------------|-----|-----------------------------------------------------------------|-------|--------------------------|
| Parameter                  | Field | Field Value |     | Field Value                                                     | Field | Parameter                |
| Cause Indicators           |       |             | ⇒   | Cause Indicators [ Mapping as in "REL Generation and Mapping" ] |       |                          |
| Automatic Congestion Level |       |             | ⇒   |                                                                 |       | No Mapping               |
| User to User Information   |       |             | ⇒   |                                                                 |       | User-to-user information |

### Unsuccessful Call Attempt

Please refer to Section “REL Generation and Mapping” on page 691.



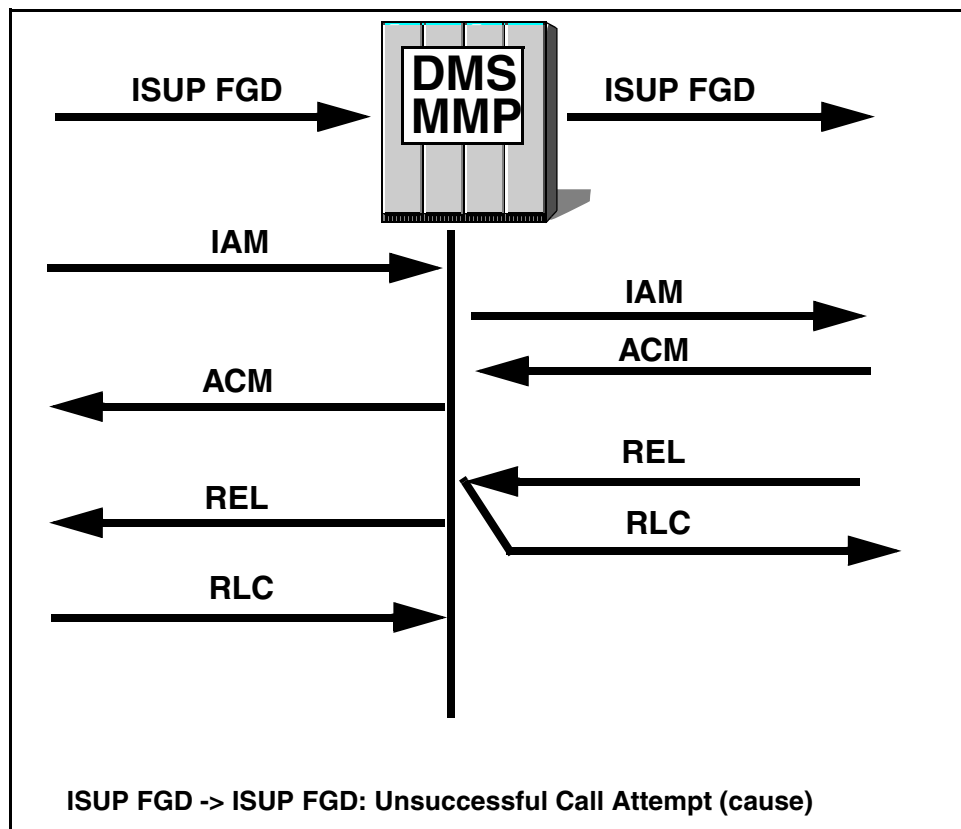
### Message Mappings

| ISUP FGD Message        | Trigger Direction | ISUP FGD Message        |
|-------------------------|-------------------|-------------------------|
| IAM <sup>1</sup>        | ⇒                 | IAM                     |
| ACM <sup>1</sup>        | ⇐                 | ACM                     |
| No Mapping              | ⇐                 | REL                     |
| No Trigger <sup>2</sup> | ⇒                 | RLC                     |
| REL                     | ⇒                 | No Mapping              |
| RLC                     | ⇐                 | No Trigger <sup>3</sup> |

<sup>1</sup> -IAM and ACM mappings are defined in previous section

<sup>2</sup> -RLC triggered by receipt of REL message.

<sup>3</sup> - RLC triggered by receipt of Forward Release.



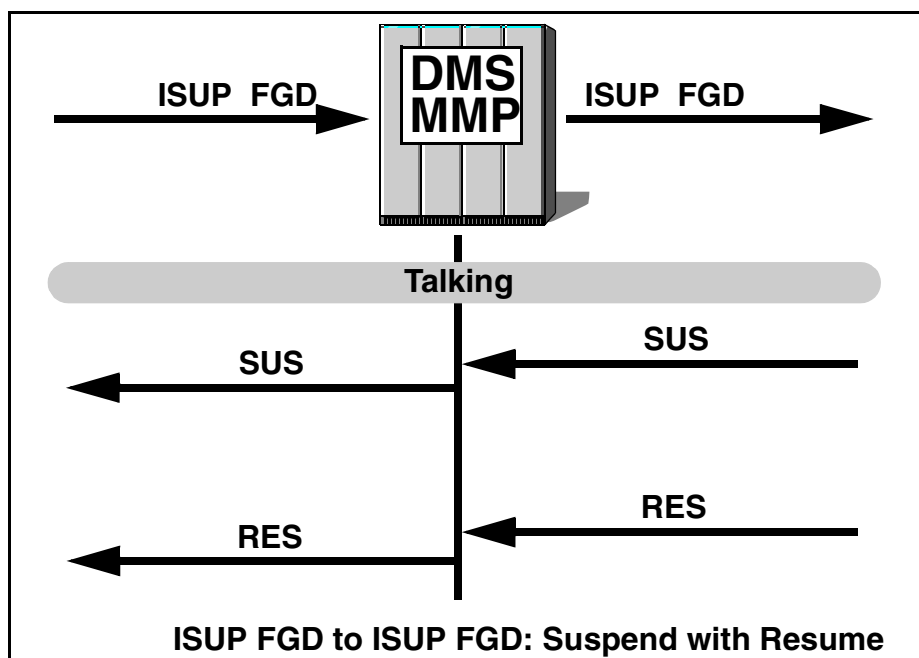
#### Unsuccessful Call Attempt (cause) Message Mapping

| ISUP FGD Message | Trigger Direction | ISUP FGD Message |
|------------------|-------------------|------------------|
| IAM              | ⇒                 | IAM              |
| ACM              | ⇐                 | ACM              |
| REL              | ⇐                 | REL              |
| No trigger       | ⇒                 | RLC <sup>1</sup> |
| RLC              | ⇒                 | No mapping       |

<sup>1</sup> - RLC triggered by receipt of REL. RLC has no parameters in message

**Parameter Mapping - ISUP FGD REL to ISUP FGD REL**

| ISUP FGD REL                                                               |       |             | Dir | ISUP FGD REL     |       |                            |
|----------------------------------------------------------------------------|-------|-------------|-----|------------------|-------|----------------------------|
| Parameter                                                                  | Field | Field Value |     | Field Value      | Field | Parameter                  |
| Cause Indicators [ Mapping as described in “ REL Generation and Mapping” ] |       |             | ⇐   | Cause Indicators |       |                            |
| No Mapping                                                                 |       |             | ⇐   |                  |       | Automatic Congestion Level |
| User to User information                                                   |       |             | ⇐   |                  |       | User-to-user information   |

**Suspend/Resume****Message/Signal Mappings**

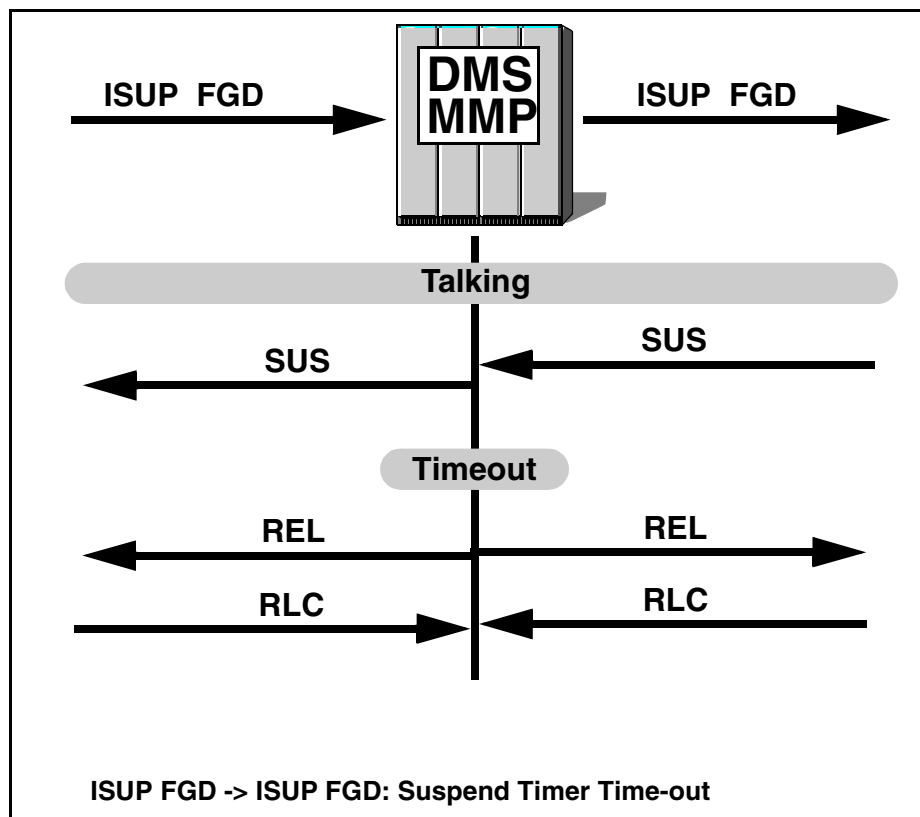
| ISUP FGD Message | Trigger | ISUP FG-Message |
|------------------|---------|-----------------|
| SUS              | ⇐       | SUS             |
| RES              | ⇐       | RES             |

**Parameter Mapping - ISUP FGD SUS to ISUP FGD SUS**

| ISUP FGD SUS              |                    |                               | Dir | ISUP FGD SUS                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       |     | 0000000                       | Spare              |                           |

**Parameter Mapping - ISUP FGD RES to ISUP FGD RES**

| ISUP FGD RES              |                    |                               | Dir | ISUP FGD RES                  |                    |                           |
|---------------------------|--------------------|-------------------------------|-----|-------------------------------|--------------------|---------------------------|
| Parameter                 | Field              | Field Value                   |     | Field Value                   | Field              | Parameter                 |
| Suspend/Resume Indicators | Suspend/Resume Ind | 0 - ISDN subscriber-initiated | ⇐   | 0 - ISDN subscriber-initiated | Suspend/Resume Ind | Suspend/Resume Indicators |
|                           |                    | 1 - network initiated         | ⇐   | 1 - network initiated         |                    |                           |
|                           | Spare              | 0000000                       | ⇐   | 0000000                       | Spare              |                           |





### Suspend Timer Time-out Message Mapping

| ISUP FGD Message        | Trigger | ISUP FGD Message        |
|-------------------------|---------|-------------------------|
| SUS                     | ⇐       | SUS                     |
| No Trigger <sup>a</sup> | ⇒       | REL                     |
| REL                     | ⇐       | No Trigger <sup>b</sup> |
| No Mapping              | ⇐       | RLC                     |
| RLC                     | ⇒       | No Mapping              |

*a. REL triggered by Time-out of Suspend timer.*

*b. REL triggered by Time-out of Suspend timer.*

### Overlap Call Setup

ISUP FGD ->ISUP FGD Interworking do not support Overlap Call Setup

### Hardware Requirements or Dependencies

No special hardware required. The ISUP FGD is supported on DTC peripheral for a T1 carrier.

### Software Requirements or Dependencies

The Functionality Order Code for this feature is NETK0073.

### Limitations and restrictions

- Automatic Congestion Level Parameter in the REL message is blocked. If received, DMS will remove it from the outgoing message.
- Non Compliancy: The messages which are supported on ANSI (e.g., FAA, FAR, etc.) but not on ISUP FGD will be passed by ISUP FGD as in the case of ANSI ISUP.
- No Line Interactions are supported by this feature.
- ISUP FGD will not be supported on SPM.
- IN Services will not be supported in Phase I of ISUP FGD
- This feature is supported only on SX05 XPM loads.

Further limitations are mentioned along with the description of each functionality.

## Interactions

The Interactions are mentioned along with the description of each functionality.

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description                              |
|------|------------------------------------------|
| ACM  | Address Complete Message                 |
| ANSI | American National Standards Institute    |
| BCI  | Backward Call Indicator                  |
| BRI  | Basic Rate Interface                     |
| CAS  | Channel Associated Signaling             |
| CFN  | Confusion Message                        |
| CIC  | Circuit Identification Code              |
| CIP  | Circuit Identification code Parameter    |
| CLIP | Calling Line Identification Presentation |
| CLIR | Calling Line Identification Restriction  |
| CPG  | Call Progress Message                    |

|        |                                                 |
|--------|-------------------------------------------------|
| DDI    | Direct Dialling In                              |
| DMS    | Digital Multiplex System                        |
| EDP    | Event Detection Point                           |
| ETSI   | European Telecommunications Standards Institute |
| FAA    | Facility Accepted Message                       |
| FAD    | Facility Deactivated Message                    |
| FAR    | Facility Request Message                        |
| FCI    | Forward Call Indicator                          |
| FGD    | Feature Group D                                 |
| FOT    | Forward-Transfer Message                        |
| FRJ    | Facility Reject Message                         |
| IEC    | Inter Exchange Carrier                          |
| INF    | Information Message                             |
| INR    | Information Request Message                     |
| ISDN   | Integrated Services Digital Network             |
| ISDNUP | ISDN User Part                                  |
| ISUP   | ISDN User Part                                  |
| ITU    | International Telecommunication Union           |
| IXC    | Inter Exchange Carrier                          |
| LEC    | Local Exchange Carrier                          |
| LPA    | Loopback Acknowledgment Message                 |
| MSN    | Multiple Subscriber Number                      |
| NOA    | Nature of Address                               |
| OM     | Operational Measurement                         |
| PAM    | Pass Along Message                              |
| PRI    | Primary Rate Interface                          |
| PSTN   | Public Switched Telephone Network               |
| QSIG   | Q Interface Signaling                           |
| R2     | Binary Raster Operation                         |
| RPM    | Reconfiguration Progress Message                |

|     |                         |
|-----|-------------------------|
| SS7 | Signaling System No. 7  |
| SUB | Sub addressing          |
| TDP | Trigger Detection Point |
| TON | Type of Network         |
| TP  | Terminal Portability    |
| TUP | Telecom User Part       |

[16] GR-317-CORE, Telcordia, Switching System Generic Requirements for Call Control Using the Integrated Services Digital Network User Part. Issue 1, Revision 1, September 1994.

[17] A59028040: "SS7ATTR equivalence"

[18] DMS-100 Family ISDN ETSI BRI Translations Guide

[19] A59026196 -Destination & Route Based OMs

[20] A59023556 Calling Line Identity (CLI) Screening Support for International Numbering

[21] A59023300 -CLI Delivery Control

[22] A59028834 -CLI Default Number

[23] A59028040 - Attributes Equivalence

[24] A59028846 -Multiple Failure Announcements

[25] A59023331 - Serving Country Code

[26] A59023338 -Class Of Service Screening

[27] A59023153 - Account Code Validation & Protocol Support

## ***Configuration for A00006475***

### **Hardware and Software Requirements**

N/A

**Initial Configuration**

N/A

**Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema****New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| TRKOPTS        | CHANGED                  | UNCHANGED                         |

**Table/MIB/Remote Database Schema information****Name: TRKOPTS**

Trunk Options

**Functional description**

There are no changes to the purpose or description of table TRKOPTS.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| TRKOPTS                | unchanged      | unchanged      | unchanged             |

**Fields/OIDs**

The following table lists fields/OIDs for TRKOPTS.

The new option FGD can be datafilled only for ANSI ISUP (IBN7) trunks.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry | Explanation and action                                                                                                                                                                                                                                             |
|---------|----------------|------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OPTINFO | changed        | OPTION                 | FGD   | This indicates that the protocol of the trunk is ISUP FGD.                                                                                                                                                                                                         |
|         | new            | FGD                    | IXC   | This indicates that the ISUP FGD trunk is the IXC end.                                                                                                                                                                                                             |
| OPTINFO | changed        | OPTION                 | FCI   | This indicates that the National/international call indicator in the outgoing FCI (in IAM message) is to be set as per this datafill. First the outgoing trunk will be checked, if datafill is present it will be used, if not the incoming trunk will be checked. |
|         | new            | FCI                    | NATL  | This indicates that the National/international call indicator in the outgoing FCI (in IAM message) should be set to "call to be treated as a national call".                                                                                                       |
|         | new            | FCI                    | INTL  | This indicates that the National/international call indicator in the outgoing FCI (in IAM message) should be set to "call to be treated as an international call".                                                                                                 |

**Datafill example**

The following example shows sample datafill for table TRKOPTS.

```
OPTKEY OPTINFO
```

```
-----
```

```
ANSI7LPB FGD FGD IXC
```

```
ANSI7LPB FCI FCI NATL
```

```
ANSI7LPA FCI FCI INTL
```

**Table release history update**

The following information was added:

- FGD was created as a new TRKOPTS option. IXC was created as a new sub-option for this option.
- FCI was created as a new TRKOPTS option. NATL and INTL were created as new sub-options for this option.

**Supplementary information**

NONE

**Translation verification other tools**

TRKOPTS does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = CS 2000*****A00003696 -- G-ISUP Routing enhancements (Int'l PT-IP)*****Functional Description***

This feature focuses on the routing enhancement for Deutsche Telecom G-ISUP, using the new national parameter UKK (#F5).

Additionally it also covers the

- Identification procedures for T-ISUP.
- Capturing of Originating ISC point Code.
- Blocking of Connected Number and Calling Party Number based on presentation indicator

These are described in the subsection below

## Routing Enhancement for DTAG GISUP

DTAG Specifications introduces a new field Kundenkennung (KK) i.e Customer ID for the special routing.

KK is field in the national Parameter UKK, received in the IAM, from DTAG network.

The special routing is based on the following Criteria.

- Customer ID
- Destination
- IPI
- TMR

### Routing based on Kundenkennung

To provide the ability to allow a different routing depending on the special routing criteria, the call control and universal screen framework is used (A59028780, A59033687). This frame work already provides the ability to route depending on BC and IPI.

Since TMR and BC are correlated, we use the BC screening, in place of the TMR screening,

#### TMR - BC correlation

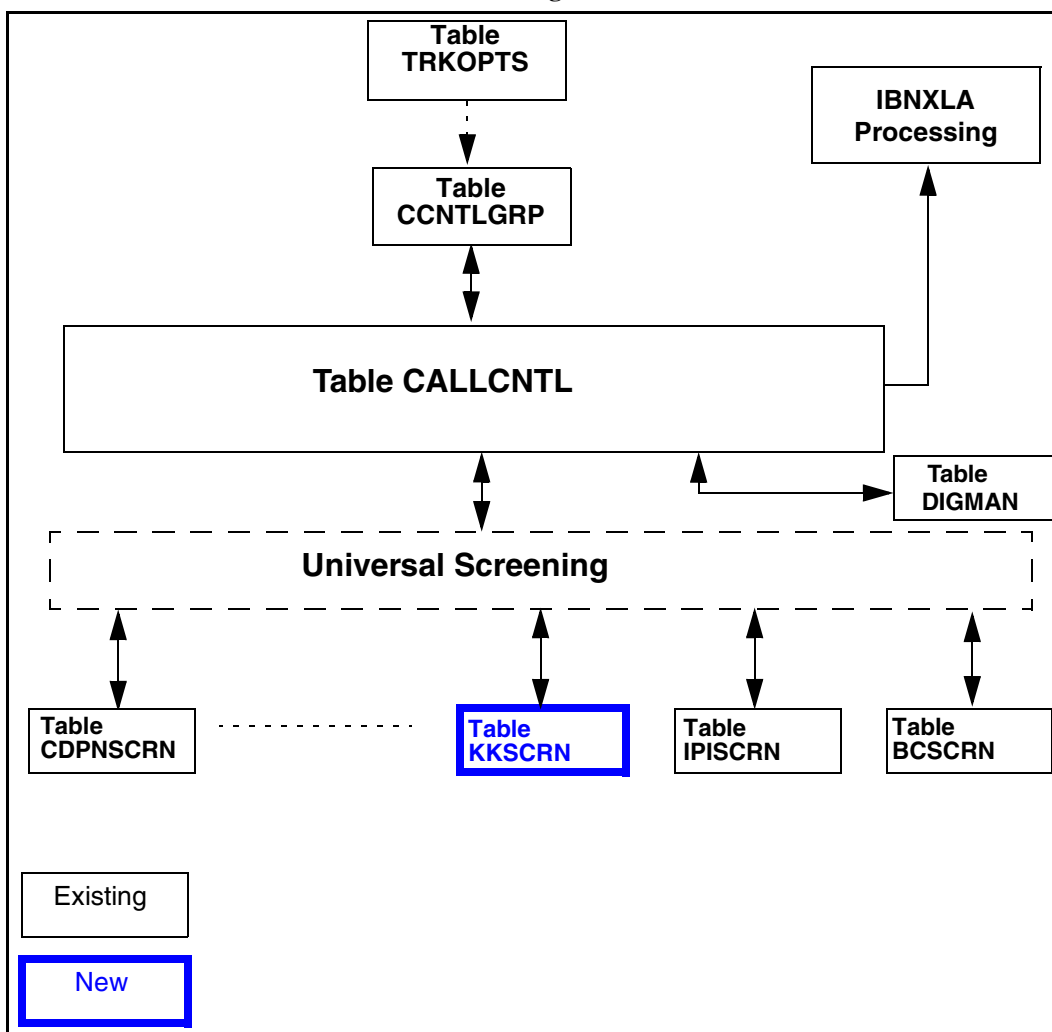
| TMR                       | BC                                                                     |
|---------------------------|------------------------------------------------------------------------|
| TMR_SPEECH                | BC_SPEECH                                                              |
| TMR_64KB_UNRES            | BC_64K_DATA                                                            |
|                           | BC_7_KHZ: ITC -<br>GEN_ITC_DIG_TONES_ANNOUNC or<br>GEN_ITC_7_KHZ_AUDIO |
| TMR_3_1KHZ_AUDIO          | BC_3_1_KHZ                                                             |
| TMR_ALT_SPEECH_64KB_UNRES | BC_64K_DATA                                                            |
| TMR_ALT_64KB_UNRES_SPEECH | BC_64K_DATA                                                            |
| TMR_64KB_PREFERRED        | BC_64K_RES                                                             |

Table , “TMR - BC correlation.” captures the correlation of TMR and BC. The value TMR\_64KB\_UNRES, has different BC values based on ITC, hence TELCO will have to provision both these BC values for handling TMR\_64KB\_UNRES.



A new Table KKSCRN is created to store the KK values and the framework is extended to also allow routing dependent on KK. Please refer to Figure , on page 869 .

#### Call control and Universal screening Tables



The screening framework provides a flexible structure for modifying translations. For the purpose of DTAG, the recommended usage is as follows:

An entry screen index is datafilled against the trunk group and the table to screen against first (KKSCRN). The format of the table is as shown in the following table:

**Format of Table KKSCRN**

| Field            | Range of Values                                                            | Description                                                                             |
|------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| SCRN_KEY         | Any valid index from table CALLCNTL                                        | Key Field: Index from table CALLCNTL                                                    |
| KK               | KK value {0-16383}                                                         | Key Field: Kundenkennung.                                                               |
| NEWSCRN_KEY      | Any valid index in table CALLCNTL                                          | Updated CALLCNTL Index                                                                  |
| CALLCNTL_OPTIONS | Call Control Options:<br>CUSTGRP, TREAT,<br>POECNAME, DIGEDIT,<br>CLICNTL. | Allows setting of call processing variables or treatment as performed in table CALLCNTL |

1. The KK for the call is used along with this screen index to look up the entry in table KKSCRN. This entry can specify a customer group to use for translations (if no other BC or IPI specific routing is required), or a new screen index and the next screening table (IPISCRN).
2. The IPI for the call is used along with the current screen index to look up the entry in table IPISCRN. This entry can specify a customer group to use for translations (if no other IPI specific routing is required), or a new screen index and the next screening table (BCSCRN).
3. The BC for the call is used along with the current screen index to look up the entry in BCSCRN. This entry specifies the customer group to use for translations.

The datafill is as shown in the following figure:

**Sample datafill for KK/IPI/BC routing**

```
TABLE TRKOPTS
STEP27ISUPV2 CCNTLIDX CCNTLIDX INDEX

TABLE CALLCNTL
INDEX (SCRN (KK) (IPI) (BC) $)$

TABLE KKSCRN
INDEX 5 KK5 $

TABLE IPISCRN
KK5 PREFERRED KK5_PREF $

TABLE BCSCRN
KK5_PREF          SPEECH          KK5_PREF_SP          (CUSTGRP
KK5_PREFERRED_SPEECH_CUSTGRP1) $
```

The end result is that the customer group for the call can be specified uniquely for each KK/IPI/BC combination. These customer groups can each have their own translations defined.

The special routing will be invoked based if either Bit A = 1 or Bit C = 1 is set in the message, else it proceeds for Normal routing.



The flow diagram shown in “[Flow Diagram for KK screening](#)” on page 872 captures the screening (routing) done based on the sample datafill for KK/IPI/BC combination.

The flow captures only a part of the screening framework, concentrating on the KK screening.

In cases where special routing is not required, the flow would proceed to normal routing. If the normal routing requires the IPI and BC to be screened, then IPISCRN tables and BCSCRN table should have provisioning to handle the index provisioned in Call Control table.

The translation for updated custgrp are set to route the call based on the called party number to a restricted routelist, as needed by the special routing KK/IPI/BC combination.

*Interworking of Customer Id screening with other possible screening options may lead to incorrect result, if the index are not handled properly. This may even lead to have no KK screening done in spite of the UKK parameter available in the IAM.*

### **Handling of failures for special routing**

The routelist obtained after screening of KK/IPI/BC, restricts the available routes as compared to the default routes.

In cases where this special routing fails, the decision to fall back to the default routing is based on capabilities provided.

This is handled by adding all the default routes to routelist for the customer groups where the customer ID demands to fall back to the default Routing.

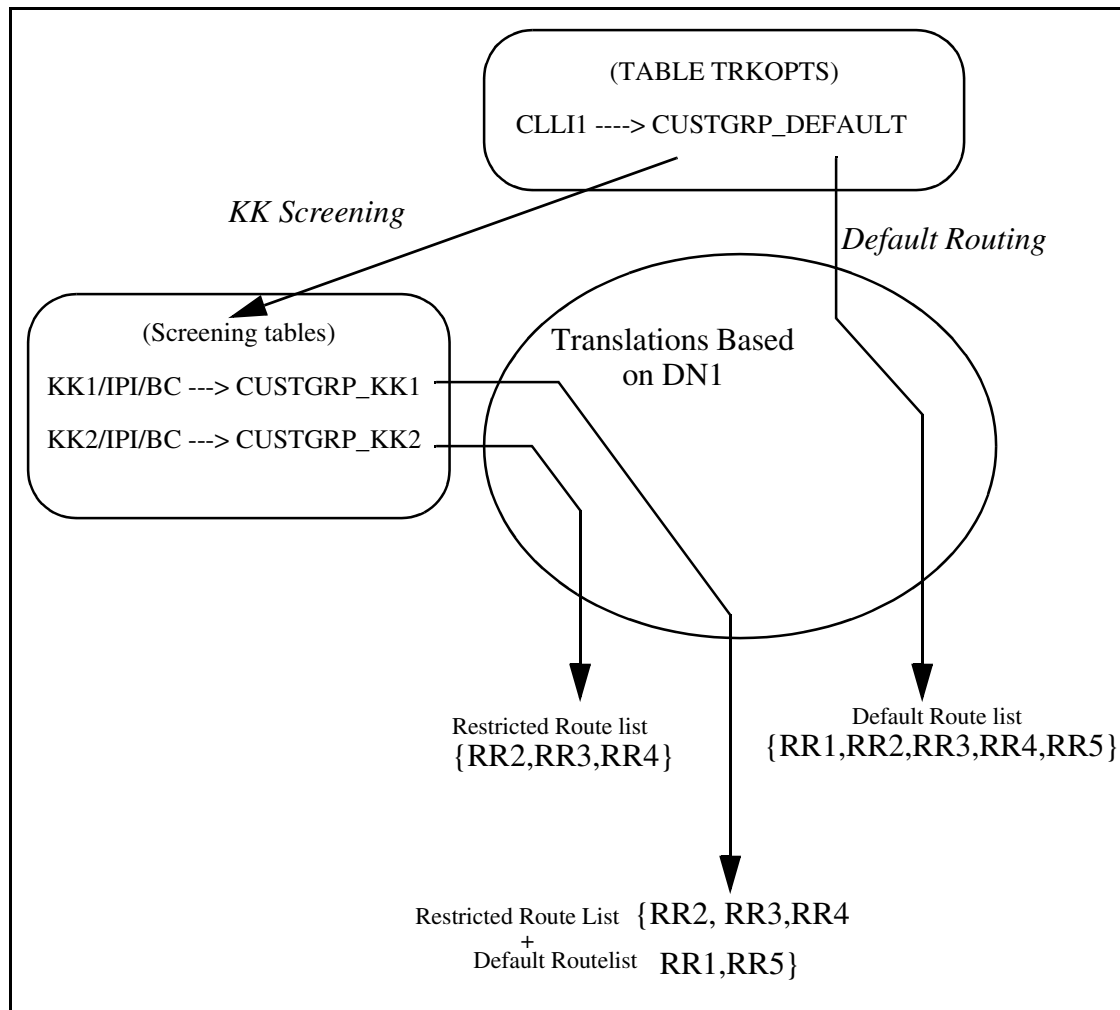
The example below details the handling.

### **Scenario**

- The default routelist for all customers with calls coming on Trunk CLLI1 for Called party number DN1 is {RR1, RR2, RR3, RR4, RR5}
- For the customers with Kundenkennung KK1 and KK2 the routes are restricted to {RR2,RR3,RR4}.
- But customer with KK1 have the facility to fallback back to the default routing when special routing to the restricted routelist fails.

### **Provisioning**

The provisioning for the above scenario is as explained in the Figure , on page 874 .

**Provisioning for special routing****Capacity for provisioning of Kundenkennung**

The Feature approach suggested derives the Customer group, based on the KK/IPI/BC combinations. The Translations system completes the further routing based on the called number using Customer Group as index.

With the current provisioning capacity, total number of customer groups allowed is 4094.

In a completely unoptimized system, the resulting combinations can lead to  $64000 \text{ KKs} \times 3 \text{ IPIs} \times 11 \text{ BCs} = 2,112,000$  different routing systems. This far exceeds the abilities of the CS2K XLA system.

But the realistic requirement specifies the International Gateway should support an average of 1000 Customer ID (KK), 80 destinations per customer

group and an average of 2 IPI/BC combinations per destination. Since the screening of destination is done in translations, we do the IPI/BC screening before the destination. Thus the system will provide support for all 9 combinations of IPI/TMR. This results to 9000 customer group, which is beyond the current capacity of 4086.

But it is expected that there will be a significant number of combinations of KK/IPI/BC that result in the same routing. For example, two KK may share the same routing or one KK may have one routing for all IPI/BC combinations. Refer to the Appendix section “Example Datafill Setup” on page 892 for examples of how this can be done.

### Handling of the Bit E

In addition to special routing, the UKK parameter also provides information regarding bypassing the Black List numbers using Bit E (Blocking Indicator). If bit E = 1, then the black list will be ignored.

Screening for Bit E is handled by providing an additional screen option UKKCDPN in the table CALLCNTL. This option will use the existing CDPNSCRN table in conjunction with bit i.e it will not perform CDPN screening if the bit E is set to 1.

**Table CALLCNTL(UKKCDPN option)**

```
TABLE: CALLCNTL
CALCTL_KEY CALCTL_OPTIONS
-----
ENTRY (SCRN (UKKCDPN) (KK) (IPI) (BC) ($) $
```

**Sample datafill for table CDPNSCRN**

```
TABLE TRKOPTS
STEP27ISUPV2 CCNTLIDX CCNTLIDX INDEX

TABLE: CALLCNTL
ENTRY (SCRN (UKKCDPN) (KK) (IPI) (BC) ($) $

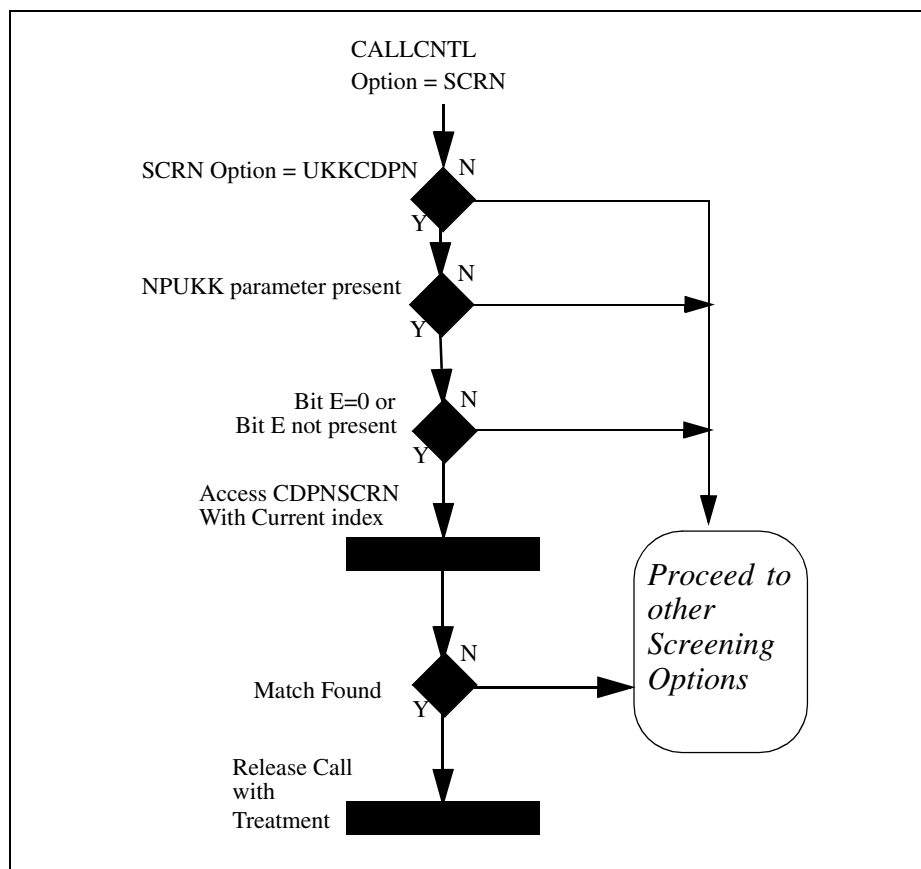
TABLE: CDPNSCRN
ENTRY (1)
.....SUBTABLE CDPNDATA
003336 003336 NO_KEY (TREAT PDIL) $ $

TABLE KKSCRN
INDEX 5 KK5 $

Proceed as described in sample datafill for KKSCRN
```

The flowchart for the above datafill is as shown in the following figure.

#### Handling of Bit E



#### Setup of UKK

The UKK parameter needs to be setup trunk based, for incoming International calls coming on GISUP/V1 trunks.

This capability is provided by providing a new option in table TRKOPTS.

The Option will allow the complete parameter to be provisioned, as per its specification. Please refer to the following figure:

#### NP.UKK parameter layout

|       |   |   |   |   |   |   |   |
|-------|---|---|---|---|---|---|---|
| 8     | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Ext.i | G | F | E | D | C | B | A |



|       |                                          |                                                     |
|-------|------------------------------------------|-----------------------------------------------------|
| Ext.i | Kundenkennung (customer ID)              | Kundenindikator<br>(customer indicator)             |
| Ext.i | Dienst-Typenkennung (type of service ID) | Registrierungsindikator<br>(registration indicator) |

The OPTINFO will contain fields, representing from A to G, the Customer ID (Kundenkennung) and the Service ID.

Please refer to section 3.118 of TISUP Q.763 for:

- **parameter NP.UKK and its fields.**
- **coding of Kundenkennung (customer ID)**

**Table TRKOPTS (UKK option)**

| TABLE: TRKOPTS |     |  |         |   |   |   |   |   |   |   |     |   |
|----------------|-----|--|---------|---|---|---|---|---|---|---|-----|---|
| OPTKEY         |     |  | OPTINFO |   |   |   |   |   |   |   |     |   |
| -----          |     |  |         |   |   |   |   |   |   |   |     |   |
| STEP27ISUPV2   | UKK |  | UKK     | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 |

The provisioned parameter will only be used to transit it in outgoing IAM on TISUP (National trunks) or GISUP (supt) and not for routing.

The provisioning of the NPUKK on the trkopts is allowed on all ISUP trunk AGent. But interworking are currently supported only for GISUP,TISUP, ETSI V2 and ETSI V1 trunks.

**Note: Bit A to E can take values '0' or '1'. Bit F and Bit G are spare bits and hence accept value '0' ONLY**

The format of trunk option NPUKK is given below:

**Format of trunk option NPUKK**

| Field                    | Range of Values | Description                |
|--------------------------|-----------------|----------------------------|
| UKK_SPECIAL_ROUT_IND     | { 0 to 1}       | Bit A of octate 1 (NP.UKK) |
| UKK_SPECIAL_ZONE_IND     | { 0 to 1}       | Bit B of octate 1 (NP.UKK) |
| UKK_SPECIAL_INTL_CAR_IND | { 0 to 1}       | Bit C of octate 1 (NP.UKK) |
| UKK_SPECIAL_NTL_CAR_IND  | { 0 to 1}       | Bit D of octate 1 (NP.UKK) |
| UKK_SPECIAL_BLOCK_IND    | { 0 to 1}       | Bit E of octate 1 (NP.UKK) |
| BIT_F_SPARE              | { 0 to 1}       | Bit F of octate 1 (NP.UKK) |

**Format of trunk option NPUKK**

| Field                    | Range of Values | Description                |
|--------------------------|-----------------|----------------------------|
| BIT_G_SPARE              | { 0 to 1}       | Bit F of octate 1 (NP.UKK) |
| KUNDENKENNUNG            | {0 to 16383}    | Octate 2 & 2a (NP.UKK)     |
| REGISTRIERUNGS_INDICATOR | {0 to 127}      | Octate 3 (NP.UKK)          |

**Interworking for NP.UKK**

The table below captures the Interworking for the NPUKK parameter.

Since the NPUKK parameter is only built for TISUP and GISUP-T. The interworking having these trunks as outgoing are considered.

**Interworking For NPUKK**

|                            |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| Interworking               | NPUKK on the outgoing end.                                                                       |
| GISUP->TISUP               | Built if provisioned on the GISUP                                                                |
| ETSI V1->TISUP             | Built if provisioned on the ETSI V1                                                              |
| ETSI V2->TISUP             | Built if provisioned on the ETSI V2                                                              |
| GISUP(sipt)->TISUP         | If NPUKK is received in IAM, then it is transited, otherwise built if provisioned on GISUP(sipt) |
| TISUP -> TISUP             | If NPUKK is received in IAM, then it is transited, otherwise built if provisioned on TISUP       |
| TISUP -> GISUP(sipt)       | If NPUKK is received in IAM, then it is transited, otherwise built if provisioned on TISUP       |
| ETSI V1 -> GISUP(sipt)     | Built if provisioned on the ETSI V1                                                              |
| ETSI V2 -> GISUP(sipt)     | Built if provisioned on the ETSI V2                                                              |
| GISUP(sipt) -> GISUP(sipt) | If NPUKK is received in IAM, then it is transited, otherwise built if provisioned on GISUP(sipt) |
| GISUP->GISUP(sipt)         | Built if provisioned on the GISUP                                                                |

**Translation Verification Tool Support**

The TRAVER tool is updated to support the new screening options, KK and UKKCDPN.

Figure , on page 879 and Figure , on page 880 show the travers output involving KK and UKKCDPN screening, where Bit E is set to 1, hence the CDPN table is skipped.

**Example Traver for UKKCDPN, KK screen**

```

>traver tr step27isupv2 0033391234 b

TABLE TRKGRP

STEP27ISUPV2 IBNT2 0 NPDGP NCRT STEPDEFAULT 0 ASEQ 0 7848810022
ANSDISC 0 N N N

    N N N N 0 0 N 0 0 0 0 N N N N N N N N N NATL (BCNAME 3_1KHZ) $

TABLE TRKOPTS

STEP27ISUPV2 CCNTLIDX CCNTLIDX ENTRY

TABLE CALLCNTL

ENTRY

    (SCRN (UKKCDPN) ( KK ) ( IPI ) ( BC ) $) $

PLEASE ENTER VALUE FOR NPUKK:

>PRESENT

PLEASE ENTER VALUE FOR ENTER BIT E:

>BIT_E_1

PLEASE ENTER VALUE FOR SPECIALROUTING INDICATOR

>1

PLEASE ENTER VALUE FOR KUNDENKENNUNG:

>5

    . . TABLE KKSCRN
    . . ENTRY 5 KK5 $

PLEASE ENTER VALUE FOR ISDN PREFERENCE INDICATOR:

>preferred

    . . TABLE IPISCRN
    . . KK5_PREFERRED KK5_PREFERRED $

PLEASE ENTER VALUE FOR BEARER CAPABILITY:

>speech

    . . TABLE BCSCRN
    . . KK5_PREFERRED SPEECH KK5_PREFERRED_SPEECH (CUSTGRP
    RUADefault) $

    . TABLE CALLCNTL
    . TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP DFLTGRP

INAP Origination Attempt TDP:  no subscribed trigger.

TABLE NCOS

```

**Example Traver for UKKCDPN, KK screen (continued)**

```

RUADEFAULT 0 0 0 RUTRK $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RUADEFAULT NXLA RUADef NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE IBNXLA: XLANAME RUADef
TUPLE NOT FOUND
Default from table XLANAME:
RUADef
      (NET N N 0 N NDGT N N DOD N 69 NPRT_2 NLCA_NILLA_1 NONE $) $ F
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
69 NLCC NONE NT 1 1 NILSFC 0 PX RUAINTL NIL 00 NPRT_10 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
RUAINTL SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
0033481111
TABLE PXCODE
RUAINTL 00 00 CONT ( PF 2) ( CLASS INTL) ( CONSUME 2) ( XLT CT
RUAXLCT)$
TABLE CTHEAD
RUAXLCT DFLT RTE ( DEST 100)$ NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
33481111
TABLE CTCODE

```

**Example Traver for UKKCDPN, KK screen (continued)**

```
RUAXLCT 334 334 RTE ( PF 3 ) ( MM 4 18 ) ( DEST 14 ) ( LNET INTERNAT )
( MZONE 3 )$
TABLE: CTRTE
KEY:  RUAXLCT  14
    . S RUA14ISUPV2LP
EXIT TABLE CTRTE
TABLE TRIGGRP
DFLTGRP INFOANAL
    . GENTRIG ( CDPN TDP3INST )$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP:  trigger criteria not met.
INAP Route Select Failure TDP:  no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES

1 STEP39ISUPV2          0033491111          ST

TREATMENT ROUTES.  TREATMENT IS: GNCT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Figure , on page 882 shows the traver with UKKCDPN screening, with Bit E=0 and the dialed number is in the black list.

**Example Traver for UKKCDPN scrn, with Bit E=0**

```

>traver tr STEP25ISUPV2 0033361111 b
TABLE TRKGRP
STEP25ISUPV2 IBNT2 0 NPDGP NCRT STEPDEFAULT 0 ASEQ 0 7848810020 ANSDISC 0 N N N
      N N N N 0 0 N 0 0 0 0 N N N N N N N N NATL (BCNAME 3_1KHZ) $
TABLE TRKOPTS
STEP25ISUPV2 CCNTLIDX CCNTLIDX ENTRY
TABLE CALLCNTL
ENTRY
      (SCRN (UKKCDPN) ( KK ) (IPI ) (BC ) $)$
PLEASE ENTER VALUE FOR NPUKK:
>PRESENT
PLEASE ENTER VALUE FOR ENTER BIT E:
>BIT_E_0
. . TABLE CDPNSCRN
. . ENTRY (1)
. . SUBTABLE CDPNDATA
. . 0033361111 0033361111 NO_KEY ( TREAT PDIL)$ $

+++ TRAVER: TREATMENT SET +++

```

**Identification procedures for T-ISUP**

DTAG specifications enhances the current IDR-IRS functionality for Gateway switch by

- Introducing additional timer T39A
- Additional Identification procedures.

The Timer T39A functionality is covered by the feature A00002908.

This feature covers the additional Identification procedures. DTAG enhances the Identification procedure by adding two new messages.

- NANA (#FF)
- EHZA (#FC)

The procedures are described below.

## Procedures for Incoming international Call, terminating on DTAG network (for G -> T and V1 -> T).

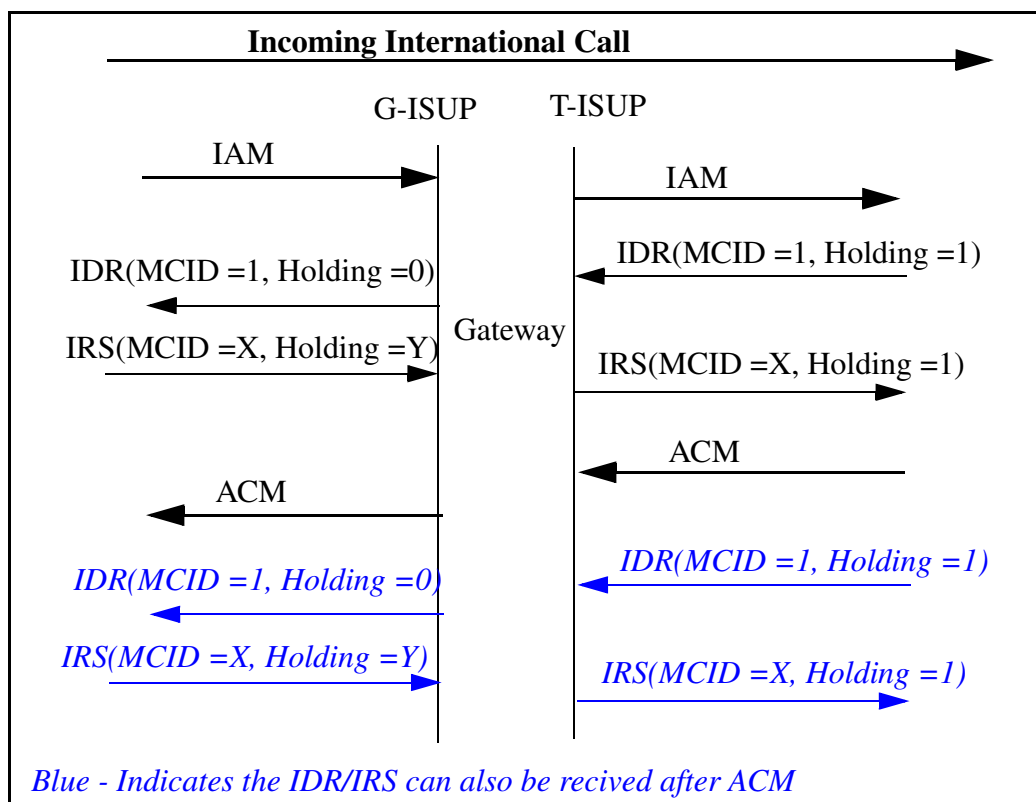
### Activation

The enhanced identification procedures are activated by receiving the IDR with Holding bit set to 1. DTAG requires the flexibility that the IDR can be received before or after ACM. The Outgoing IDR on the International gateway will always have the holding Indicator set to zero.

The IRS received from the International network, will be transited to the National network, with Holding Indicator as received in the in IDR. Please refer to the following figure.

**Note:** The Timer T39A and the procedures associated with it are not shown in the Figure, to make it simple.

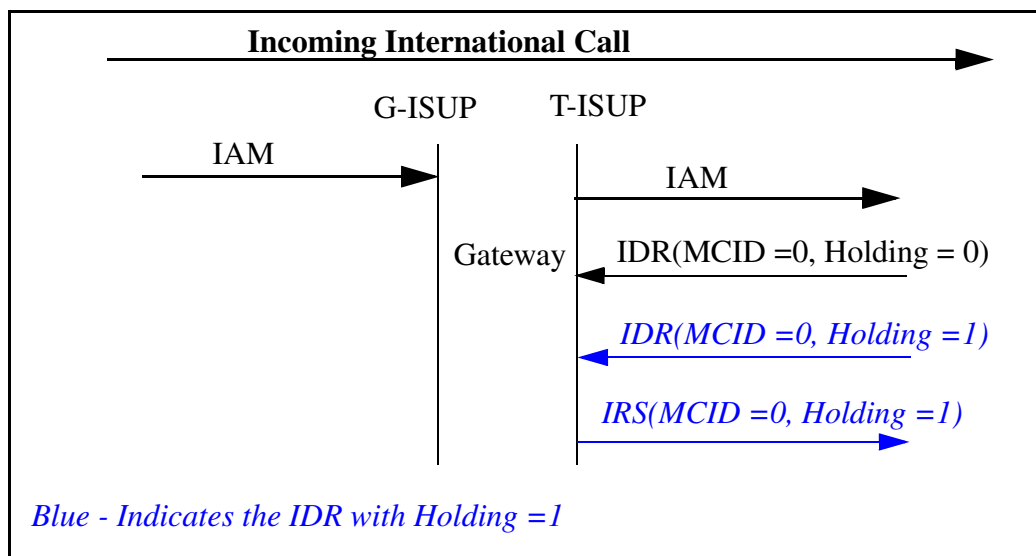
### Transit of IDR-IRS on International Gateway



If the received IDR has MCID indicator set to zero, i.e **MCID not requested** and Holding Indicator set to zero i.e. **Holding not requested**, then the IDR is **discarded and is NOT responded with a IRS**.

If the received IDR has MCID indicator set to zero, i.e **MCID not requested** and Holding Indicator set to one i.e. **Holding requested**, then the IDR is not transited to the International network. **Also the CS2K responds with a IRS message ( MCID response Indicator bit set to zero and Holding Bit set to one) and holding procedures are activated on the Avst. Figure captures this behavior.**

#### IDR-IRS behavior for MCID Indicator to 1



In cases where the incoming International call is from ETSI ISUP V1. The IDR received will be responded with IRS, by TISUP and the holding procedures will be activated based on the holding indicator bit.

#### Behavior for Identification

Once the procedure is activated, the NANA message is handled as below.

When a NANA message is received with Message Indicator field in NP.FF set to IDF, the identification data will be printed. The the content of the printout is analogous to the printout of the ETSI MCID service”. Hence a new report MCID 600 is added to the MCID log. This log will be generated will be generated on the receipt of the NANA message. The content of the log is as shown in Figure , on page 885 .

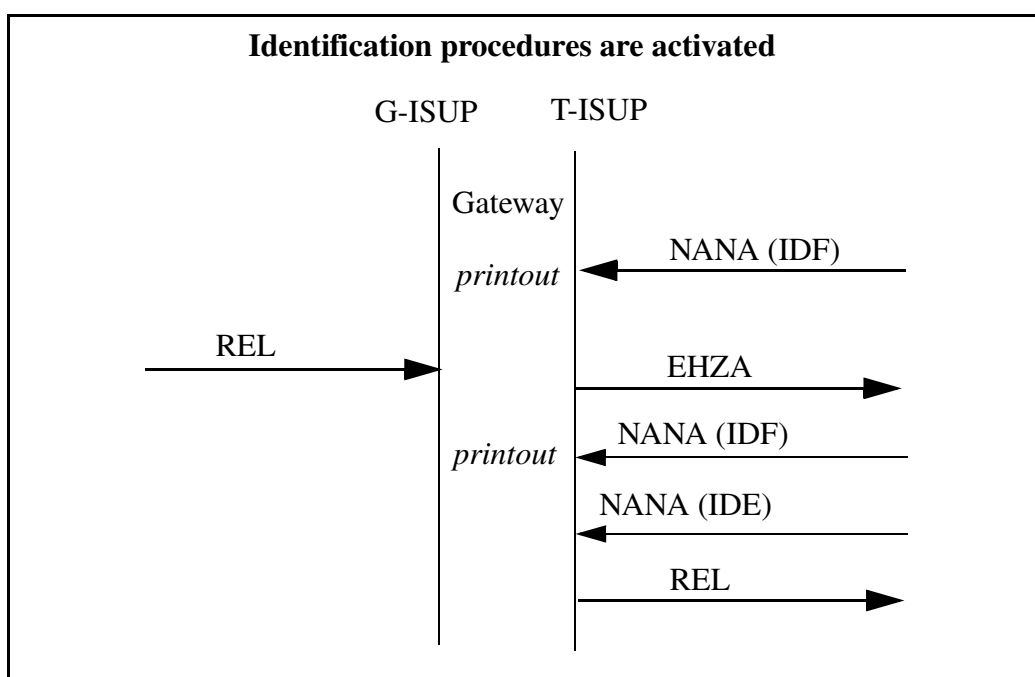


**MCID Log capturing printout for Identification**

```

AVST1_LOG  MCID600 DEC09 18:12:57 5700 INFO IDENTIFICATION DATA
Calling_Agent : CKT  STEP36ISUPV2 628
Called_Agent  : CKT  STEP39ISUPV2 632
Calling_Number : 7848810036
Called_Number  : 003349777799
Date : 09.12.2003
Time : 18:12:57

```

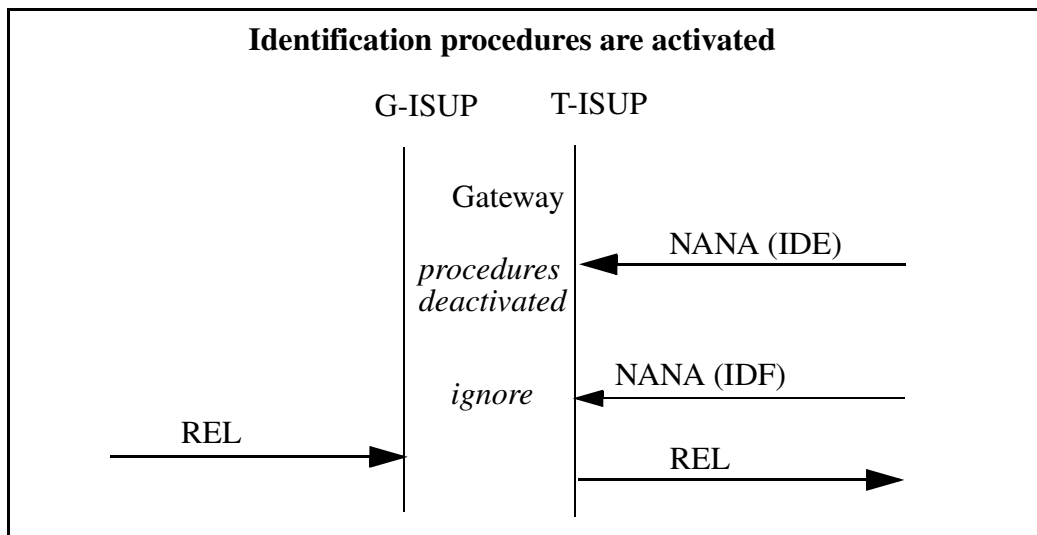
**Behavior for Identification**

When Release is received from international side, it is not transmitted to national end. The new EHZA message is sent. The international call leg is disconnected while national leg remains active till NANA(IDE) is received. Any NANA(IDF) is received a printout will be generated as mentioned above. On receipt of NANA(IDE), a release message is sent if an EHZA message is already sent. Please refer to “Behavior for Identification” on page 885.

**Deactivation**

The enhanced identification procedures are deactivated on the receipt of NANA message with the Message Indicator field in NP.FF set to IDE (Identification Ende). Any additional NANA (IDF) and NANA(IDE) message received is ignored.

### Deactivation of Identification procedures

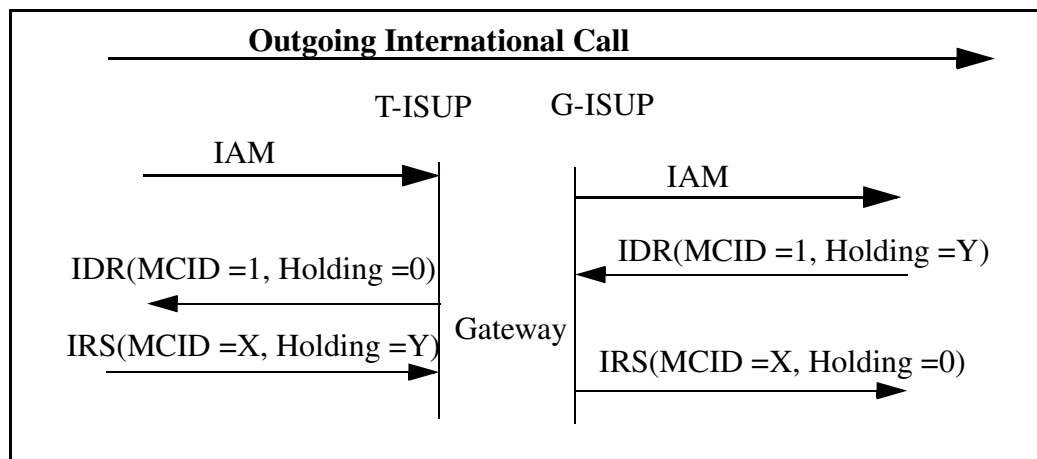


### Procedures for Outgoing International Call from a DTAG network

For outgoing international calls from a DTAG network, the existing IDR-IRS functionality will be used for identification. no additional capability is being provided.

The holding indicator will be set to set zero when the IDR is transited to the national network and the response IRS will also have the holding bit set to zero, when it is sent on the International network. This is as shown in Figure .

### Procedures on outgoing International Gateway



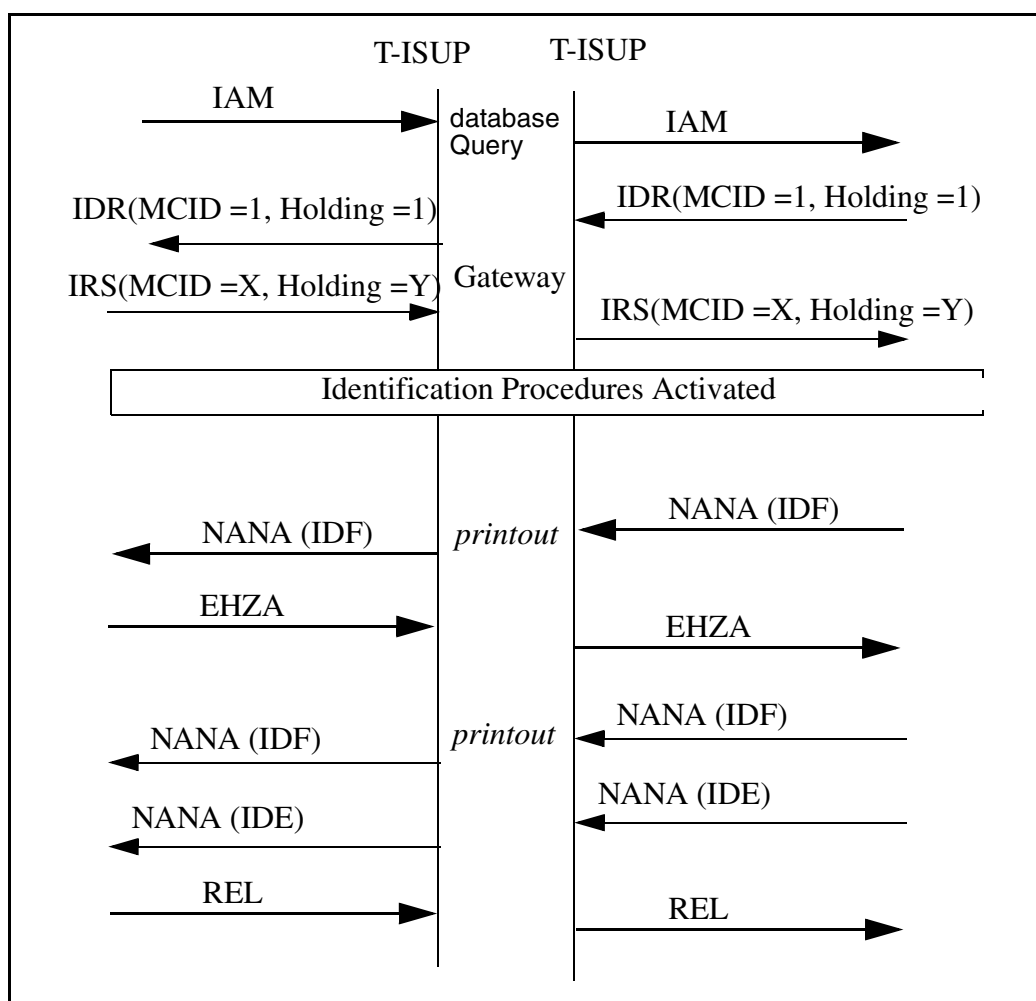
### Procedures for TISUP - TISUP interworking.

For the procedures for the TISUP-TISUP scenario, please refer to Figure .

**Note:** The TISUP to TISUP interworking on the AVST is only possible, where the AVST acts as an SSP. Since MCID services are not directly related to the IN queries. Also the early ANM is currently not supported. The procedures described here are considering a normal TISUP -TISUP interworking.

All the messages NANA(IDE), NANA(IDF), EHZA will be transited. Identification procedures are also activated on the switch, NANA(IDF) will cause printout, NANA(IDE) will end the Holding. But these message will be transmitted. There is no release for EHZA.

#### Behavior of TISUP-TISUP interworking



## Origination ISC Point Code

DTAG specifies that the origination ISC point code, for an international incoming call, to be captured for statistics purpose. This feature implements the capability to capture the point code and print in a log ISC600

The log is generally generated every 3hrs. It will print the first 480 point code and the count of calls received from that point code respectively.

Additionally, it will also provide a count of all the calls received on the point code. The output of the log based on the point code captured is as below.

- For no Calls coming on GISUP to a national trunk:

### Log for ISC PC for no Calls

```
AVST1_LOG ISC600 NOV28 11:55:28 8900 INFO ISC log report
Originating ISC point Code captured from NOV-28 11:54 to NOV-28 11:55
-----
                No data captured
-----
```

- For calls received with number of distinct point codes less than 480:

### Log for ISC PC for few calls

```
AVST1_LOG ISC600 NOV28 11:55:28 8900 INFO ISC log report
Originating ISC point Code captured from NOV-28 11:58 to NOV-28 12:25
-----
ISCPC Count  ISCPC  Count  ISCPC  Count  ISCPC Count  ISCPC Count
-----
100    5    150    1    230    1    250    1    16000 1
16350 1    16400 1
-----
```

- For calls received from distinct PC more than 480:

**Log for ISC PC with received point codes more than 480**

|                                                                       |       |       |       |       |       |       |       |       |       |
|-----------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AVST1_LOG ISC600 NOV28 13:44:44 5472 INFO ISC log report              |       |       |       |       |       |       |       |       |       |
| Originating ISC point Code captured from NOV-28 13:43 to NOV-28 13:44 |       |       |       |       |       |       |       |       |       |
| -----                                                                 |       |       |       |       |       |       |       |       |       |
| ISCPC                                                                 | Count | ISCPC | Count | ISCPC | Count | ISCPC | Count | ISCPC | Count |
| -----                                                                 |       |       |       |       |       |       |       |       |       |
| 1                                                                     | 5     | 2     | 1     | 5     | 1     | 9     | 1     | 10    | 1     |
| 100                                                                   | 5     | 150   | 1     | 230   | 1     | 250   | 1     | 300   | 1     |
| .....                                                                 |       |       |       |       |       |       |       |       |       |
| 2001                                                                  | 5     | 2608  | 1     | 3230  | 1     | 4250  | 1     | 9300  | 1     |
| 16300                                                                 | 5     | 16301 | 1     | 16302 | 1     | 16303 | 1     | 16304 | 1     |
| -----                                                                 |       |       |       |       |       |       |       |       |       |
| PC not captured : 10                                                  |       |       |       |       |       |       |       |       |       |
| -----                                                                 |       |       |       |       |       |       |       |       |       |

**Note:** The preceding Log figures show the point codes and the their count to be left justified in their respective formatting space. In actual log these numbers are right justified.

This functionality is controlled via and Office parameter CAPTURE\_ISC\_OM, in table OFCENG.

### Blocking of Connected Number and Calling Party Number

DTAG requires blocking of connected number and calling party number if the Address Presentation Restricted Indicator is set to "Presentation Restricted". DTAG also requires the above functionality to be enabled / disabled via a trunk option.

This feature implements the above functionality by creating a new trunk option "BLK\_CGPN\_CONN" in table TRKOPTS. The option has to be set to "Y" for the functionality to be enabled.

An example of datafill for the option "BLK\_CGPN\_CONN" in table TRKOPTS is shown below:

#### datafill in table TRKOPTS

|                |               |               |   |
|----------------|---------------|---------------|---|
| TABLE: TRKOPTS |               |               |   |
| STEP25ISUPV2   | BLK_CGPN_CONN | BLK_CGPN_CONN | Y |

## **Hardware Requirements or Dependencies**

None

## **Software Requirements or Dependencies**

None

## **Limitations and restrictions**

### **Kundenkennung range**

The screening frameworks allows up to 8191 indices.

- This implies that there can for each KK, there can be 8191 different routing paths specified. Similarly, for each BC or IPI, there can also be 8191 different routing paths specified.

The total number of customer groups allowed on a switch is 4094.

- This implies that there can only be a total of 4094 different routing systems to be shared between all KK/BC/IPI combinations.

This is not a limitation considering the current scope of the requirement, but would limit the system if the complete range of Kundenkennung is to be provisioned.

### **Holding Indicator Bit**

The Holding indicator bit for IRS from GISUP (SIPT) to TISUP, should be transmitted unchanged. This functionality would set it to the received value in IDR message, similar to GISUP (nonsipt) to TSIUP interworking.

### **SSP procedures**

Procedures for Early ANM scenario are not covered.

### **Holding procedures for Network initiated SUSPEND timeout.**

Currently the holding procedure for Network initiated SUSPEND timeout is not supported.

### **Calling party DN in IRS**

The current design sends the Billing DN in the IRS, when we do not have a valid calling number available. This is noncompliant with the MCID requirements of the Detusche Telecom.

To satisfy the requirement “It is recommended that the Billing DN is datafilled as \$ and Table DEFNUM is NOT datafilled and trunk option DEFNUM is NOT used”.

## Interactions

This feature interacts with the screening of Number blocking features, where by the blocked numbers can be overridden with Bit E set to 1.

## Applicable customer facing sections

### Fault Management

Logs ☒

Alarms ☐

### Configuration

Data Schema ☒

User Interface ☐

Element Management ☐

Security ☐

Service Order ☐

Office Parameters ☒

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☐

## Glossary

| Term   | Explanation                    |
|--------|--------------------------------|
| BC     | Bearer Capability              |
| CDPN   | Called Party Number            |
| CS2K   | Call Server 2000               |
| DTAG   | Deutsche Telekom AG            |
| G-ISUP | Gateway ISUP                   |
| GWC    | Gateway Controller             |
| IAM    | Initial address Message        |
| IPI    | ISDN Preference Indicator      |
| ISC    | International Switching Center |
| MCID   | Malicious Call Identifier      |
| NP     | National Parameter             |

|        |                                 |
|--------|---------------------------------|
| T-ISUP | Telekom ISUP                    |
| TMR    | Transmission Medium Requirement |
| TRAVER | Translations Verification       |
| UKK    | UrsprungsKundenKennung          |
| XLA    | Translations                    |

## Appendix for A00003696

### Example Datafill Setup

The first table shows the No sharing of customer group (unoptimized) usage of the screening framework. The following tables provide some examples of the re-use that may occur because of common routing attributes for various IPI/KK/BC combinations. The final table shows the resulting datafill that would satisfy this example. Note that the in the worst-case scenario of this example, 18 customer groups would be required to specify the necessary translations. In the example optimization, only 3 are required because of re-use. Also note that only 2 screening indices were required for the optimized example, while in the unoptimized example, 9 would be required.



**No sharing of Customer Group**

| KK      | IPI       | BC       | Resulting Customer Group |
|---------|-----------|----------|--------------------------|
| Default | Preferred | Speech   | C01                      |
|         |           | 64K Data | C02                      |
|         | Req       | Speech   | C03                      |
|         |           | 64K Data | C04                      |
|         | Not Req   | Speech   | C05                      |
|         |           | 64K Data | C06                      |
| A       | Preferred | Speech   | C07                      |
|         |           | 64K Data | C08                      |
|         | Req       | Speech   | C09                      |
|         |           | 64K Data | C10                      |
|         | Not Req   | Speech   | C11                      |
|         |           | 64K Data | C12                      |
| B       | Preferred | Speech   | C13                      |
|         |           | 64K Data | C14                      |
|         | Req       | Speech   | C15                      |
|         |           | 64K Data | C16                      |
|         | Not Req   | Speech   | C17                      |
|         |           | 64K Data | C18                      |

**KK Sharing**

| KK      | IPI       | BC       | Resulting Customer Group |
|---------|-----------|----------|--------------------------|
| Default | Preferred | Speech   | C01                      |
|         |           | 64K Data | C02                      |
|         | Req       | Speech   | C03                      |
|         |           | 64K Data | C04                      |
|         | Not Req   | Speech   | C05                      |
|         |           | 64K Data | C06                      |
| A<br>B  | Preferred | Speech   | C07                      |
|         |           | 64K Data | C08                      |
|         | Req       | Speech   | C09                      |
|         |           | 64K Data | C10                      |
|         | Not Req   | Speech   | C11                      |
|         |           | 64K Data | C12                      |

**IPI Sharing**

| KK      | IPI                         | BC       | Resulting Customer Group |
|---------|-----------------------------|----------|--------------------------|
| Default | Preferred<br>Not Req        | Speech   | C01                      |
|         |                             | 64K Data | C02                      |
|         | Req                         | Speech   | C03                      |
|         |                             | 64K Data | C04                      |
| A<br>B  | Preferred<br>Req<br>Not Req | Speech   | C07                      |
|         |                             | 64K Data | C08                      |

**BC Sharing**

| KK      | IPI                         | BC                 | Resulting Customer Group |
|---------|-----------------------------|--------------------|--------------------------|
| Default | Preferred<br>Not Req        | Speech             | C01                      |
|         |                             | 64K Data           | C02                      |
|         | Req                         | Speech<br>64K Data | C03                      |
| A<br>B  | Preferred<br>Req<br>Not Req | Speech             | C07                      |
|         |                             | 64K Data           | C08                      |

**Customer Group Sharing**

| KK      | IPI                         | BC                 | Resulting Customer Group |
|---------|-----------------------------|--------------------|--------------------------|
| Default | Preferred<br>Not Req        | Speech             | C01                      |
|         |                             | 64K Data           | C02                      |
|         | Req                         | Speech<br>64K Data | C03                      |
| A<br>B  | Preferred<br>Req<br>Not Req | Speech             | C01                      |
|         |                             | 64K Data           | C02                      |

**KK Sharing**

| Initial<br>SCRN<br>Key | KK      | KKSCRN<br>Entry  | New SCR<br>Key | IPI              | IPISCRN<br>Entry            | New SCR<br>Key | BC            | BCSCRN<br>Entry     | Resulting<br>Customer<br>Group |
|------------------------|---------|------------------|----------------|------------------|-----------------------------|----------------|---------------|---------------------|--------------------------------|
| SCRN0                  | Default | No Entry         | SCRN0          | Preferred        | SCRN0<br>Preferred<br>SCRN1 | SCRN1          | Speech        | SCRN1<br>Speech C01 | C01                            |
|                        |         |                  |                | Req              | SCRN0<br>Req<br>C03         | N/A            | Speech<br>64K | SCRN1<br>64k<br>C02 | C02                            |
|                        |         |                  |                | Not Req          | SCRN0<br>Preferred<br>SCRN1 | SCRN1          | Speech<br>64K | No Entry            | C03                            |
|                        | A<br>B  | SCRN0 A<br>SCRN1 | SCRN1          | Preferred<br>Req | No Entry                    | SCRN1          |               |                     |                                |
|                        |         | SCRN0 B<br>SCRN1 | SCRN1          | Not Req          | No Entry                    | SCRN1          |               |                     |                                |
|                        |         |                  |                |                  |                             |                |               |                     |                                |

1. KK Sharing: 2 or more KK share the same routing
2. IPI Sharing: 2 or more IPI values share the same routing
3. BC Sharing: 2 or more BC values share the same routing
4. Customer Group Sharing: The same customer group (translations) are used for 2 or more KK/IPI/BC combinations

## ***Fault Management for A00003696***

### **Fault management strategy**

No change

### **Fault management tools and utilities**

No change

### **Logs: ISC600**

#### **Explanation**

Log Title: ISC600

Name: ISC log Report

Description: Displays the Point Codes and their respective counts for all the calls received on a GISUP trunk, routing to a National variant. It displays up to 480 distinct point Codes with the respective counts. In case the received point codes are more than 480, then these are counted and captured as PC not counted.

Event type: Once in 3 Hours

#### **Format**

Below is the format for the ISC log:

```
TCB2_LOG      ISC600 <mmmmdd hh:mm:dd>INFO ISC log report
Originating ISC point Code captured from <from_time> to <to_time>
-----
ISCPC Count   ISCPC Count   ISCPC Count   ISCPC Count   ISCPC Count
-----
<pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>
<pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>
.....
<pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>
<pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>  <pc> <count>

-----
PC not captured : <overflow>
-----
```

### Examples

- Example 1: No calls on INTL (GISUP)TRK which logs the point Code.

```
TCB2_LOG      ISC600 NOV28 11:55:28 8900 INFO ISC log report
Originating ISC point Code captured from NOV-28 11:54 to NOV-28 11:55
-----
                        No data captured
-----
```

- Example 2: Few calls received on the INTL (GISUP TRK)

```
TCB2_LOG      ISC600 NOV28 11:55:28 8900 INFO ISC log report
Originating ISC point Code captured from NOV-28 11:54 to NOV-28 11:55
-----
ISCPC Count    ISCPC Count    ISCPC Count    ISCPC Count    ISCPC Count
-----
    100      5      150      1      230      1      250      1      16000      1
16350      1      16400      1
-----
```

- Example 3: the number of point codes from where the calls are received, exceeds 480.

```
TCB2_LOG      ISC600 NOV28 13:44:44 5472 INFO ISC log report
Originating ISC point Code captured from NOV-28 13:43 to NOV-28 13:44
-----
ISCPC Count    ISCPC Count    ISCPC Count    ISCPC Count    ISCPC Count
-----
    1      1      5      1      7      1      8      1      10      1
    22      1      25      1      30      1      100      1      153      1

.....

    2001      5      2608      1      3230      1      4250      1      9300      1
16300      5      16301      1      16302      1      16303      1      16304      1
-----
PC not captured : 10
-----
```

## Field descriptions

The Fields in the log format are displayed as per format below.

### Field descriptions

| Field     | Value         | Description                                                                                      |
|-----------|---------------|--------------------------------------------------------------------------------------------------|
| from_time | Date and time | The time when the ISC point Code where captured for the current Log                              |
| to_time   | Date and time | The time till the ISC point Code were captured for the give log.                                 |
| pc        | 0 -16383      | Originating ISC point Code received.                                                             |
| count     | Integer range | Counter displaying the count of the respective point Code                                        |
| overflow  | Integer range | Counts the number point codes from which the calls were received but are not printed in the log. |

## Action

Nil

## Associated Operational Measurements or Performance Measurements

Nil

## Additional information

This data collected form this log will be used for Statistical purpose. The printing of the log is controlled via office parameter CAPTUE\_ISC\_PC.

## Logs: MCID600

### Explanation

Log Title: MCID600

Name: Identification Data

Description: This log is an extension of the MCID logs, introduced for DTAG holding service. It provides information about the Called agent, calling number, called number and the date and time of the call.

Event type: When Holding is activated on the Telco and NANA message is received.

## Format

Below is the format for the MCID log.

```
AVST1_LOG MCID600 DEC04 <mmdd hh:mm:ss> INFO IDENTIFICATION DATA
```

```
Calling_Agent : <originating agent>
```

```
Called_Agent : <terminating agent>
```

```
Calling_Number : <calling number>
```

```
Called_Number : <called number>
```

```
Date : <date>
```

```
Time : <time>
```

## Examples

```
AVST1_LOG MCID600 DEC04 22:23:01 0800 INFO IDENTIFICATION DATA
```

```
Calling_Agent : CKT INTGATEISUP 628
```

```
Called_Agent : CKT TELKOMIUSP 632
```

```
Calling_Number : 033461111
```

```
Called_Number : 033461112
```

```
Date : 05.12.2003
```

```
Time : 22:23:01
```

## Field descriptions

| Field             | Value  | Description                          |
|-------------------|--------|--------------------------------------|
| Originating Agent | -      | CLLI name for the originating agent. |
| Terminating Agent | -      | CLLI name for the terminating agent. |
| calling_number    | digits | Calling party number                 |
| called number     | digits | Called party number                  |
| Date              | date   | Date on which the call was made      |
| time              | time   | time on which the call was made      |

## Action

Nil

## Associated Operational Measurements or Performance Measurements

Nil

## Additional information

This log is currently a temporary place holder for the information to be displayed on the AVST, after receipt of NANA message. It can be further enhanced once the specifications are clear.



**Related documentation**

N/A

***Configuration for A00003696*****Hardware and Software Requirements**

Not Applicable

**Initial Configuration**

Not Applicable

**Office/Subnet parameters (OP/SP) (CM & SESM)****New/modified office/subnet parameters**

| Parm table | Parameter name | NEW/<br>CHANGED/<br>DELETED/<br>RELOCATED | Domain (CM or<br>Subnet<br>Management |
|------------|----------------|-------------------------------------------|---------------------------------------|
| OFCENG     | CAPTURE_ISC_PC | NEW                                       | CM                                    |

**Parameter information****Name:** CAPTURE\_ISC\_PC

Capturing International Switching Center Point Code

**Functional description**

This parameter will enable/disable the printing of LOG that captures ISC Point Code information. This parameter is of type boolean{N,Y}. [The implementation of this parameter is being done in ISN07 \(SNWCSH07\).](#)

**Provisioning rules**

This parameter enables the LOG output when set to TRUE and disables when the value is set to FALSE.

**Range information**

| Minimum      | Maximum | Default |
|--------------|---------|---------|
| Boolean{N,Y} | n/a     | N       |

**Activation**

Any changes are activated immediately.

**Dependencies**

None

**Consequences**

None

**Verification**

No verification required for this parameter.

**Memory requirements**

No memory impact.

**Parameter release history update**

Created office parameter CAPTURE\_ISC\_PC in the table OFCENG.

**Upgrade Impact**

Not Applicable

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| KKSCRN         | NEW                      | OLD                                |

**Table/MIB/Remote Database Schema information****Name: KKSCRN**

KundenKennung Screening

**Functional description**

A mechanism to facilitate KK, IPI and TMR based screening and routing has to be provided as a part of this activity. To organize the data required to fulfill the above requirement, a new table KKSCRN has been created.

Access to this table from call processing and TRAVER starts with table TRKOPTS which then moves to CALLCNTL. After this, all other tables would be accessed depending on the particular datafill in CALLCNTL.

A screening index is datafilled against the trunk group (TRKOPTS) and the same screening index is also datafilled in the table (KKSCRN) which will be screened first.

The KK for the call is used along with this screen index to look up the entry in table KKSCRN. This entry can specify a customer group to use for translations

(if no other BC or IPI specific routing is required), or a new screen index and the next screening table (IPISCRN)

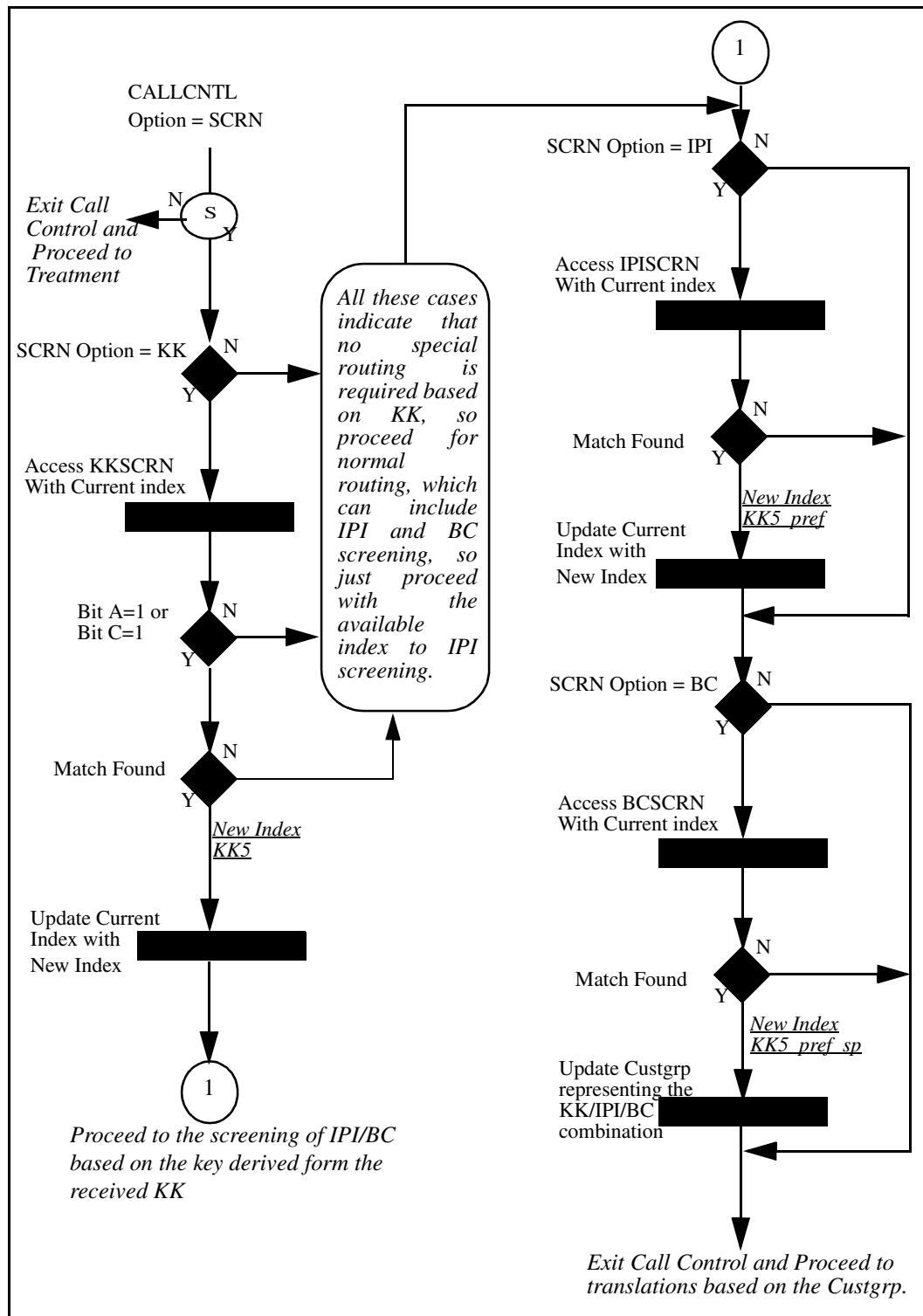
The IPI for the call is used along with the current screen index to look up the entry in table IPISCRN. This entry can specify a customer group to use for translations (if no other IPI specific routing is required), or a new screen index and the next screening table (BCSCRN).

The BC for the call is used along with the current screen index to loop up the entry in BCSCRN. This entry specifies the customer group to use for translations.

The end result is that the customer group for the call can be specified uniquely for each KK/IPI/BC combination.

The special routing will be invoked based Bit A and Bit C of national parameter NP.UKK. if either Bit A = 1 or Bit C = 1 is set in the message, else it proceeds for Normal routing.

Flow Diagram for KK screening



**Usage sequence and implications (CM Only)**

Tables must be datafilled in the following sequence:

TABLE TRKOPTS

TABLE CALLCNTL

TABLE CDPNSCRN

SUBTABLE CDPNDATA

TABLE KKSCRN

TABLE IPISCRN

TABLE BCSCRN

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                 |
|------------------------|----------------|----------------|-------------------------------------------------------|
|                        |                |                |                                                       |
| KKSCRN                 | 0              | 8191           | Memory is automatically allocated for 16 DPC devices. |

**Fields/OIDs**

The following table lists fields/OIDs for KKSCRN.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry                             | Explanation and action                                                                                                                                         |
|-------|----------------|------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KKKEY | NEW            | SCRNKEY                | Any valid index in table CALLCNTL | KundenKennung Key. Subfield KundenKennung Screening Key has to be datafilled first in table TRKOPTS and then table CALLCNTL before datafilling into this table |
|       | NEW            | KK                     | 0-16383                           | KundenKennung.                                                                                                                                                 |

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry                             | Explanation and action                                                                                     |
|----------|----------------|------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------|
| NEWSCKEY | NEW            |                        | Any valid index in table CALLCNTL | New Screening Index. This index must exist in table CALLCNTL. This field is of type THIRTY_TWO_CHAR_VECTOR |
| CCOPTION | NEW            |                        | Call Control Option               | Call Control Option. This field is of type THIRTY_TWO_CHAR_VECTOR                                          |

**Datafill example**

The following example shows sample datafill for table KKSCRN.

```

TABLE TRKOPTS
STEP27ISUPV2 CCNTLIDX CCNTLIDX INDEX

TABLE CALLCNTL
INDEX (SCRN (UKKCDPN) (KK) (IPI) (BC) $)$

TABLE CDPNSCRN
INDEX (1)
.....SUBTABLE CDPNDATA
003336 003336 NO_KEY (TREAT PDIL) $

TABLE KKSCRN
INDEX 5 KK5 $

TABLE IPISCRN
KK5 PREFERRED KK5_PREFERRED $

TABLE BCSCRN
KK5_PREFERRED SPEECH KK5_PREFERRED (CUSTGRP
KK5_PREFERRED_SPEECH_CUSTGRP1) $

```

**Table release history update**

Created table KKSCRN as a part of this activity.

**Supplementary information**

N/A

**Translation verification other tools**

The following example shows the output from TRAVER when it is used to verify KKSCRN.

**Example Traver for UKKCDPN, KK screen**

```

>traver tr step27isupv2 0033391234 b

TABLE TRKGRP

STEP27ISUPV2 IBNT2 0 NPDGP NCRT STEPDEFAULT 0 ASEQ 0 7848810022
ANSDISC 0 N N N

      N N N N 0 0 N 0 0 0 0 N N N N N N N N NATL (BCNAME 3_1KHZ) $

TABLE TRKOPTS

STEP27ISUPV2 CCNTLIDX CCNTLIDX ENTRY

TABLE CALLCNTL

ENTRY

      (SCRN (UKKCDPN) ( KK ) ( IPI ) ( BC ) ) $) $

PLEASE ENTER VALUE FOR NPUKK:

>PRESENT

PLEASE ENTER VALUE FOR ENTER BIT E:

>BIT_E_1

PLEASE ENTER VALUE FOR SPECIALROUTING INDICATOR

>1

PLEASE ENTER VALUE FOR KUNDENKENNUNG:

>5

      . . TABLE KKSCRN
      . . ENTRY 5 KK5 $

PLEASE ENTER VALUE FOR ISDN PREFERENCE INDICATOR:

>preferred

      . . TABLE IPISCRN
      . . KK5_PREFERRED KK5_PREFERRED $

PLEASE ENTER VALUE FOR BEARER CAPABILITY:

>speech

      . . TABLE BCSCRN
      . . KK5_PREFERRED SPEECH KK5_PREFERRED_SPEECH (CUSTGRP
RUADefault) $

      . TABLE CALLCNTL
      . TUPLE NOT FOUND

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN_OFFICE_TRIGGRP DFLTGRP

INAP Origination Attempt TDP: no subscribed trigger.

TABLE NCOS

```



**Example Traver for UKKCDPN, KK screen (continued)**

```

RUADEFAULT 0 0 0 RUTRK $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RUADEFAULT NXLA RUADEF NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
DFLTGRP INFOCOL
. GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP: trigger criteria not met.
TABLE IBNXLA: XLANAME RUADEF
TUPLE NOT FOUND
Default from table XLANAME:
RUADEF
      (NET N N 0 N NDGT N N DOD N 69 NPRT_2 NLCA_NILLA_1 NONE $) $ F
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
69 NLCC NONE NT 1 1 NILSFC 0 PX RUAINTL NIL 00 NPRT_10 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
RUAINTL SDFLT NODFOP NOCON F

```

**Example Traver for UKKCDPN, KK screen (continued)**

```
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
0033481111

TABLE PXCODE

RUAINTL 00 00 CONT ( PF 2) ( CLASS INTL) ( CONSUME 2) ( XLT CT
RUAXLCT)$

TABLE CTHEAD

RUAXLCT DFLT RTE ( DEST 100)$ NODFOP NOCON STD

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
33481111

TABLE CTCODE

RUAXLCT 334 334 RTE ( PF 3) ( MM 4 18) ( DEST 14) ( LNET INTERNAT)
( MZONE 3)$

TABLE: CTRTE

KEY: RUAXLCT 14

. S RUA14ISUPV2LP

EXIT TABLE CTRTE

TABLE TRIGGRP

DFLTGRP INFOANAL

. GENTRIG ( CDPN TDP3INST)$ NIL

Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.
INAP Route Select Failure TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 RUA14ISUPV2LP 0033491111 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

**Service Orders (SO) (CM & SESM)**

Not Applicable

**Software optionality control (SOC)**

Not Applicable

**Element Management**

Not Applicable

**Command interface changes**

Not Applicable

**Security**

Not Applicable

**Configuration Walkthrough**

Not Applicable

***Product = CS 2000*****A00003951 -- CICM i2001 Support (Int'l IAC)****Description**

The i2001 is a reduced functionality sibling of the i2002 to reduce cost of manufacture it has a smaller screen, fewer buttons and a cheaper build

The i2001 is also a Phase II Unistim Terminal. Currently the CICM supports Phase I Terminals, as part of the scope of this feature, existing support for the i2002 and i2004 Phase I Terminals will be updated to support the new range of Phase II i2002 and i2004's.

Phase 1 terminals will be MD when the Phase II terminals become available so support for the whole range of Phase II terminals (i2001, i2002 and i2004) on the CICM will be required

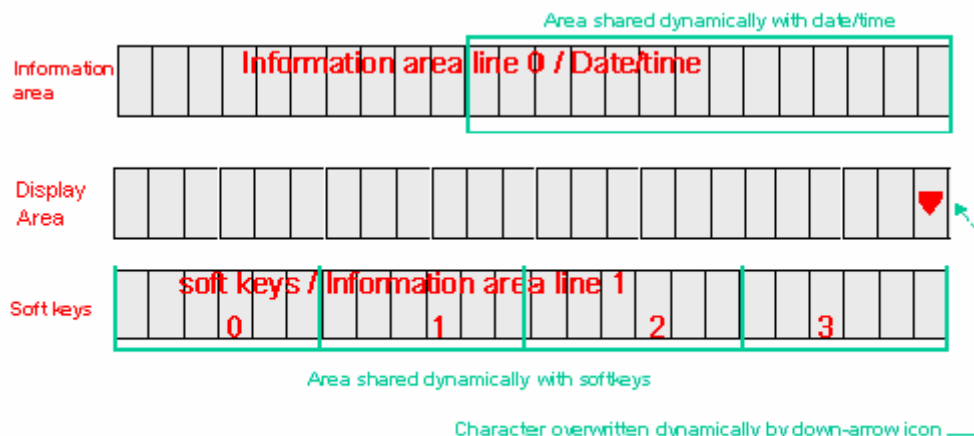
**Table 1** Table 1 i200x Configuration/menu matrix

|          | Function          | Sub-options     | Terminal type |       |       |
|----------|-------------------|-----------------|---------------|-------|-------|
|          |                   |                 | I2001         | I2002 | I2004 |
| Options  | Login/Logoff      | N/A             | ✓             | ✓     | ✓     |
|          | Firmware upgrades | N/A             | ✓             | ✓     | ✓     |
|          | Audio             | Profile         | ✓             | ✓     | ✓     |
|          | Display Contrast  | N/A             | ✓             | ✓     | ✓     |
|          | Feature Keys      | Assign          | ✓             | ✓     | ✓     |
|          |                   | Label           | ✓             | ✓     | ✓     |
|          |                   | Reset           | ✓             | ✓     | ✓     |
|          | Language          | N/A             | ✓             | ✓     | ✓     |
|          | Time              | Time Format     | ✓             | ✓     | ✓     |
|          |                   | Date Format     | ✓             | ✓     | ✓     |
|          |                   | Hours from GMT  | ✓             | ✓     | ✓     |
|          |                   | Daylight Saving | ✓             | ✓     | ✓     |
|          | User              | Username        | ✓             | ✓     | ✓     |
|          |                   | Login Type      | ✓             | ✓     | ✓     |
|          |                   | Auto Login      | ✓             | ✓     | ✓     |
| Services | Inbox             | Display         | ✓             | ✓     | ✓     |
|          |                   | Store           | ✓             | ✓     | ✓     |
|          |                   | Clear           | ✓             | ✓     | ✓     |
|          |                   | Dial            | ✓             | ✓     | ✓     |
|          | Outbox            | Display         | ✓             | ✓     | ✓     |
|          |                   | Store           | ✓             | ✓     | ✓     |
|          |                   | Clear           | ✓             | ✓     | ✓     |
|          |                   | Dial            | ✓             | ✓     | ✓     |
|          | Directory         | Add             | ✓             | ✓     | ✓     |
|          |                   | Edit            | ✓             | ✓     | ✓     |
|          |                   | Delete          | ✓             | ✓     | ✓     |
|          |                   | Dial            | ✓             | ✓     | ✓     |

## Display

The following details apply to the i2001.

- i2001 will have a 32x143 pixel, fully bit-mapped, monochrome, non-grayscale display. This will display 2 lines of 24 5x9 characters.
- The number of Soft labelled feature keys on the i2001 is zero
- Dedicated icon area in the main display area has been removed.
- Dedicated Clock / Calendar area present.
- Dedicated number and context label are present.
- Dedicated down arrow removed.



**Display layout of i2001**

## Generic Display Rules

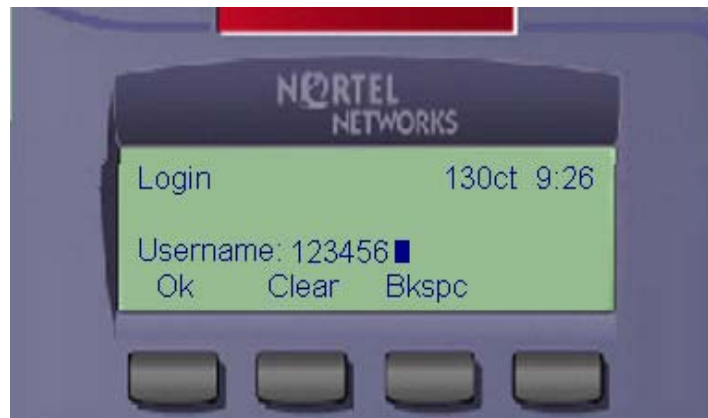
The following rules have been devised for the i200x terminals. These rules have been introduced to allow one common interface across both terminal types and to help avoid issues with Language Translations on soft key strings.

- All strings for menu options should be created with the following rules in mind
  - a. Recommended length 12 characters – strings meeting this condition will always be shown in full (both on the information lines and in the context field)
  - b. Maximum length 20 character – strings above 12 characters in length and equal to or below 20 characters will be fully displayable in the information line but not in the context field. Long strings in the context field will be cropped off to 11 characters and terminated with an ellipsis to indicate they have been cropped.
  - c. Strings above 20 characters to be shown:
    - In the information lines will be cropped off to 19 characters and terminated with an ellipsis to indicate they have been cropped.
    - In the context field will be cropped off to 11 characters and terminated with an ellipsis to indicate they have been cropped.
- The Login Screen echoes entered digits to information line 0 rather than line 1 (see the following figure). The username and passwords entered may be up to a maximum of 15 digits. If the username/password entered is longer than the field space left on the screen (i.e. if the “Username” string

is 14 characters and 12 username digits are to be entered), the digits will be scrolled to the left and an ellipsis will be inserted to the left of the username to indicate this (please see example below).

|   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | S | E | R | N | A | M | E |  |  | T | H | S | : | . | . | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
|---|---|---|---|---|---|---|---|--|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

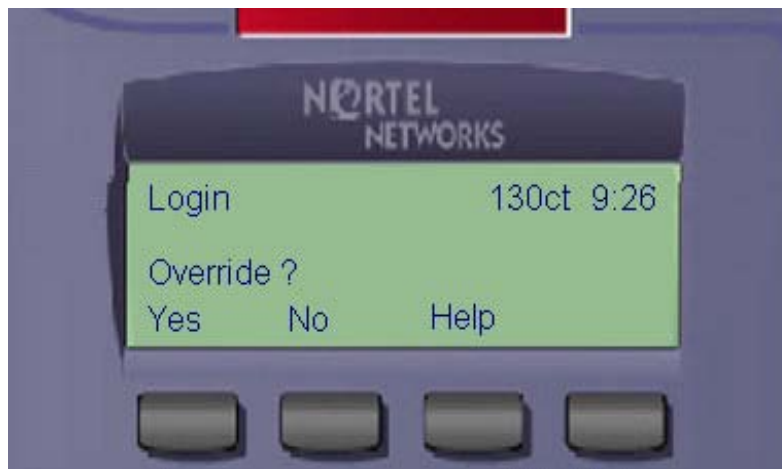
- Bottom Soft key labels are set to a maximum of 5 characters with the exception of the last soft key on the screen which may use up to a maximum of 6 characters (see the following figure). This is due to a limitation of screen space on the i2001.



#### i2001 - Login Display

- Soft key labels are limited to a small generic subsection of the previously used soft keys (“Ok”, “Cancel”, “Clear”, “Bkspc”, “Menu”, “Help”, “Yes” and “No”).
- Menu options are selected via a scrollable list (instead of being assigned to a soft key). Scrolling may be carried out using the up and down navigation. This allows menu options to be displayed in strings which may be up to a maximum of 20 displayable characters (see rule 1). This is advantageous for the following reasons:
  - A greater area makes language translations easier.
  - A more informative string may be displayed.
- The position within a scrollable list is displayed to the far right hand side of the display. 1 character space is reserved to show scroll position.

- All Menu Options in the scrollable list are numerically indexed with the shortcut key number assigned to that option. The numerical indexes will go from 1 – 9. Options above 9 will have no shortcut assigned/displayed next to the menu option
- A menu option may be selected by either highlighting the option (i2004) or viewing the option (i2002, i2001) and selecting “Ok”. Alternatively the appropriate shortcut key assigned to an option may be selected using the key pad. This will cause the user to jump straight into the menu option required without scrolling.
- All Menu Options are set to a recommended length of 12 characters (so they may be displayed in the context field on the i2004). Please see rule number 1) for further details.
- The Logout option is presented as the first option in the Menu Options List. This will avoid language translation issues on when using a soft key for the same operation.
- All user prompts will be presented on Information line 0 on the display. The maximum length of a prompt is 23 characters. Prompts beyond 23 characters will be cropped down to 22 characters and an ellipsis will be presented as the 23<sup>rd</sup> character to indicate cropping has taken place. Further text to describe the prompt is viewable on a help screen which is accessed by selecting a “Help” soft key (See the following figure).

**i2001- Override prompt**

User permissions disabled.

The help screen presents text to the user by using scrolling pages (See the following figure). The help screen has a maximum number of 255 characters (due to the scrolling functionality). The recommended word size is 24 characters (words exceeding this limit will be word wrapped onto the next line of the display).



**i2001 - Override Help screen**

The Menu system is accessible by either selecting the “Menu” softkey or by selecting the “service” physical key (please see at any time (idle or non-idle)).



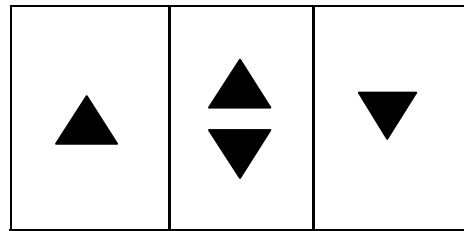
**i2001 - Service key position (used to launch Menu system)**



### **i2001 Display Rules**

To show the information required to the user on such a restricted display, the following list of rules have been devised specifically for the i2001. The context-sensitive display that these rules entail are not as intuitive to use as that of the i2004, however there is no choice but to change the position and visibility of information on the display depending upon context if that information is to be displayed at all.

- The Menu options are selected via a scrollable list.
- The relative position within the list is shown to the far right of information line 0 via up and down arrows.



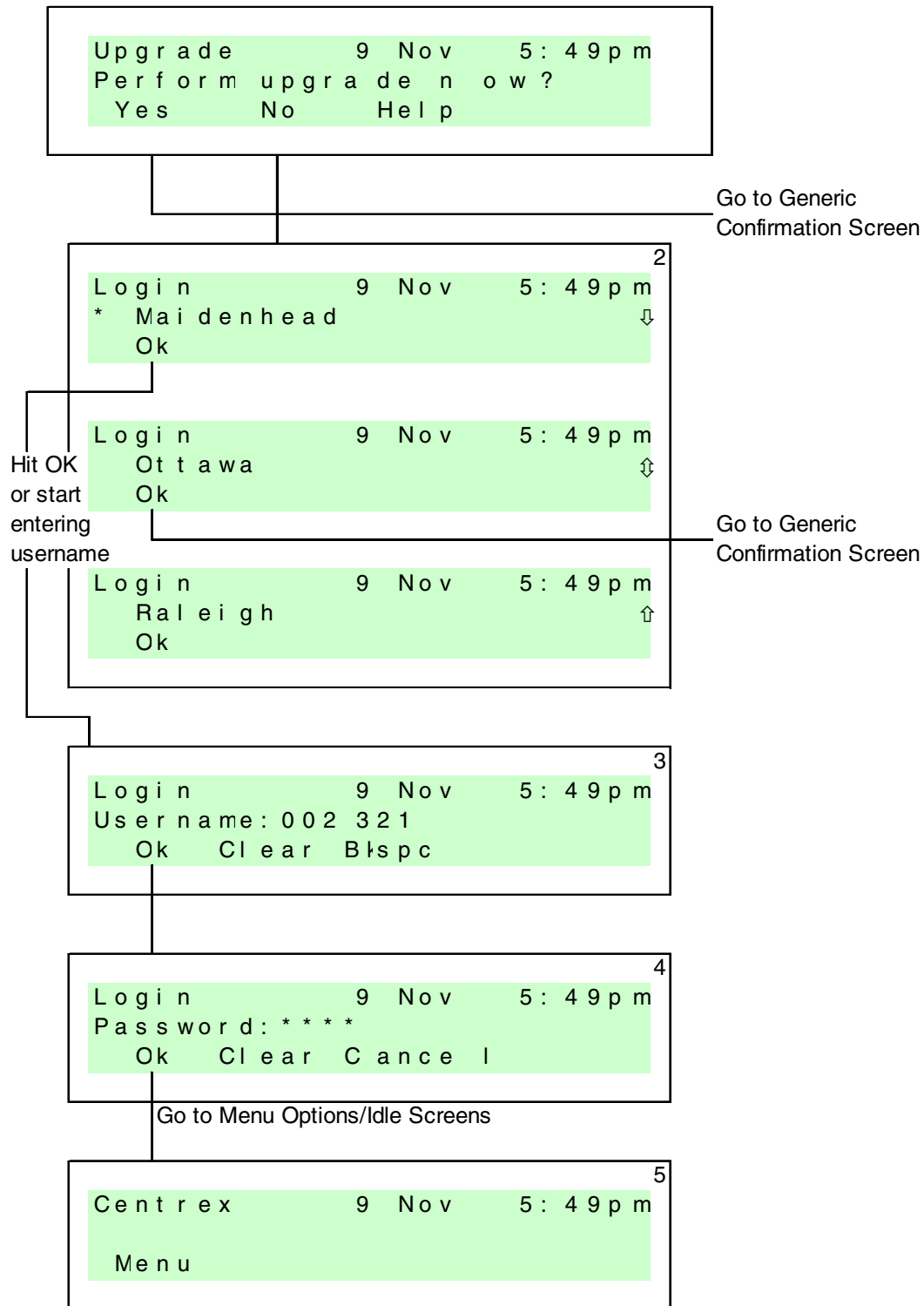
#### **Example of navigation arrows**

- Information line 1 is dedicated for the Soft keys.
- Time / Date displayed on context line.

### **i2001 Menu Map**

The following screen representations show what will be presented to the user when logging on to a gateway, and navigating the menu options of the i2001.

## Login Screens



Screen 1 – Only shown if an upgrade is available / required.

Screen 2 – Selective Gateway Login feature

Screen 2 – A user can either hit “Ok” to accept a gateway to login to, they will then be presented with Screen 3 to login. Alternatively the user may start entering their username digits and this will also accept the currently selected gateway, go to Screen 3 and insert the digit(s) already entered.

Screen 3 – If the username is too long for the display the digits entered will scroll to the left and an ellipsis will be shown to the left of the username to indicate this to the user.

### Menu Option/Idle Screens

|         |             |             |       |  |     |         |  |
|---------|-------------|-------------|-------|--|-----|---------|--|
| M e n u |             | 9           | N o v |  | 5 : | 4 9 p m |  |
| 1 .     | L o g o f f |             |       |  |     | ↓       |  |
| O k     |             | C a n c e l |       |  |     |         |  |

|     |                   |  |  |  |  |   |  |
|-----|-------------------|--|--|--|--|---|--|
| 2 . | S e t t i n g s   |  |  |  |  | ↕ |  |
| 3 . | I n b o x         |  |  |  |  | ↕ |  |
| 4 . | O u t b o x       |  |  |  |  | ↕ |  |
| 5 . | D i r e c t o r y |  |  |  |  | ↑ |  |

- Menu Option 1: Logoff – a Generic confirmation screen is displayed.
- Menu Option 2: Settings – launches the new i2001 settings menu.
- Menu Option 3: Inbox – Launches the inbox, Inbox is also available via dedicated Inbox key on terminal (i200x). The i2002 will be able to launch the inbox via both the menu and the dedicated key, the i2004 will only be able to access via its existing implementation of the dedicated key.
- Menu Option 4: Outbox – Launches the Outbox, the i2001 does not have a dedicated Outbox key and will only be able to access the Outbox via this

menu system, the i2002 and i2004 terminals will be able to launch the Outbox via the dedicated key. The i2002 will be able to access the Outbox via both the menu and the dedicated key. The i2004 will only access the outbox via the dedicated key.

- Menu Option 5:Directory – Launches the directory contact list, the i2001 does not have a dedicated Directory key and will only be able to launch the directory via this menu system, the i2002 and i2004 have dedicated Directory keys to launch the directory

### Menu Option: Settings

|                     |             |             |
|---------------------|-------------|-------------|
| S e t t i n g s     | 9 N o v     | 5 : 4 9 p m |
| 1 . R e g i o n a l | ↓           |             |
| O k                 | C a n c e l |             |

|                     |   |
|---------------------|---|
| 2 . U s e r         | ⇅ |
| 3 . T e r m i n a l | ⇅ |
| 4 . C a l l         | ↑ |

**Menu Option: Regional Settings**

|                    |             |             |
|--------------------|-------------|-------------|
| R e g i o n a l    | 9 N o v     | 5 : 4 9 p m |
| 1. L a n g u a g e | ↓           |             |
| O k                | C a n c e l |             |

|            |   |
|------------|---|
| 2. T i m e | ↕ |
|------------|---|

**Menu Option: User Settings**

|                    |             |             |
|--------------------|-------------|-------------|
| U s e r            | 9 N o v     | 5 : 4 9 p m |
| 1. U s e r n a m e | ↓           |             |
| O k                | C a n c e l |             |

|                      |   |
|----------------------|---|
| 2. L o g i n T y p e | ↕ |
| 3. A u t o L o g i n | ↕ |
| 4. P a s s w o r d   | ↑ |

See the section “User Information Screens” on page 923 for details of user information screens.

**Menu Option: Terminal Settings**

|                            |             |             |
|----------------------------|-------------|-------------|
| T e r m i n a l            | 9 N o v     | 5 : 4 9 p m |
| 1. A u d i o P r o f i l e | ↓           |             |
| O k                        | C a n c e l |             |

|                  |   |
|------------------|---|
| 2. D i s p l a y | ↕ |
| 3. U p g r a d e | ↑ |

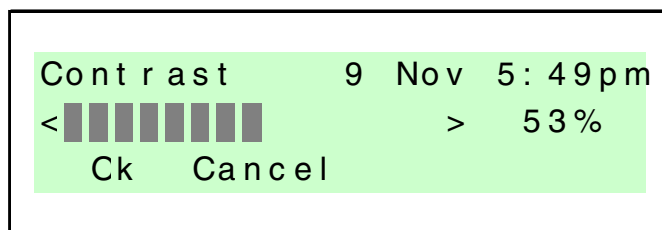
- Terminal Settings Option 1: Launches the Audio Profile menu.
- Terminal Settings Option 2: Launches the display Contrast screen.
- Terminal Settings Option 3: Launches the Upgrade confirmation menu, depending on if an upgrade is available or necessary.

**Menu Option: Call Settings**

|                  |             |             |
|------------------|-------------|-------------|
| C a l l          | 9 N o v     | 5 : 4 9 p m |
| 1. F e a t u r e | ↓           |             |
| O k              | C a n c e l |             |

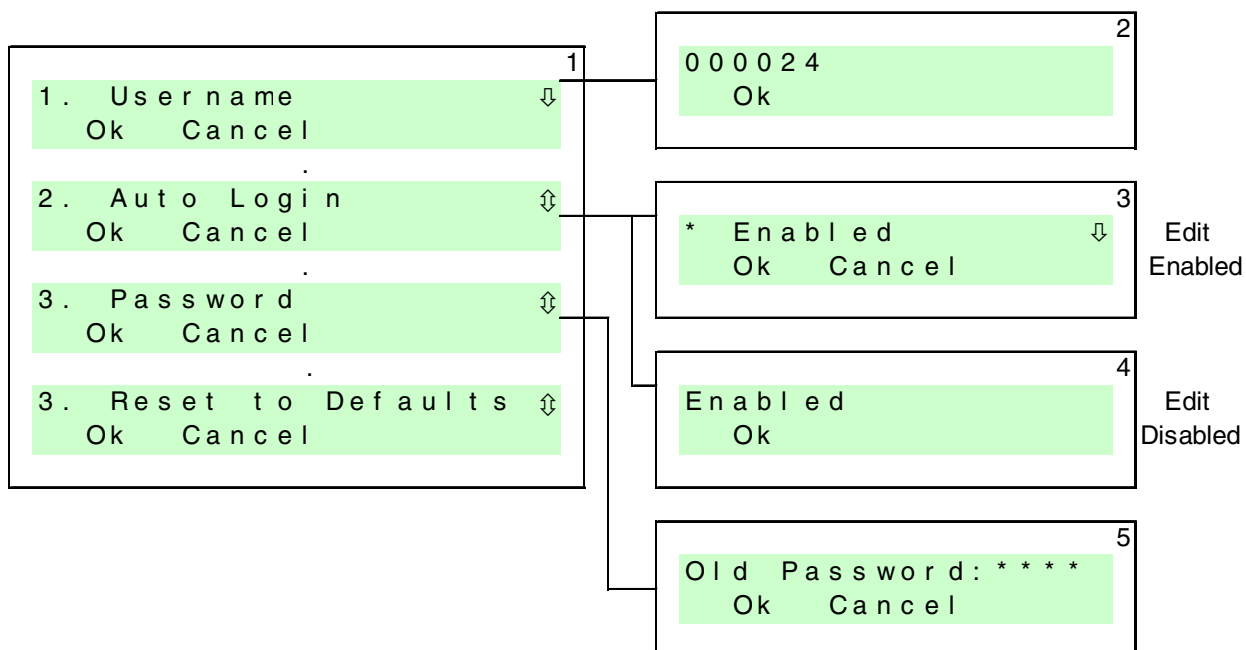
|                  |   |
|------------------|---|
| 2. H i s t o r y | ↑ |
|------------------|---|

## Display Contrast Screen



Contrast 9 Nov 5:49pm  
 < [7 bars] > 53%  
 Ck Cancel

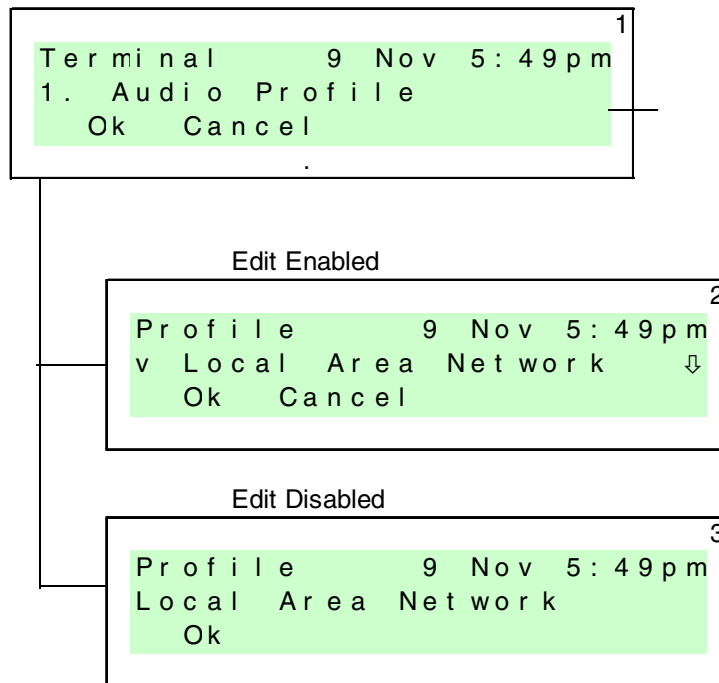
## User Information Screens



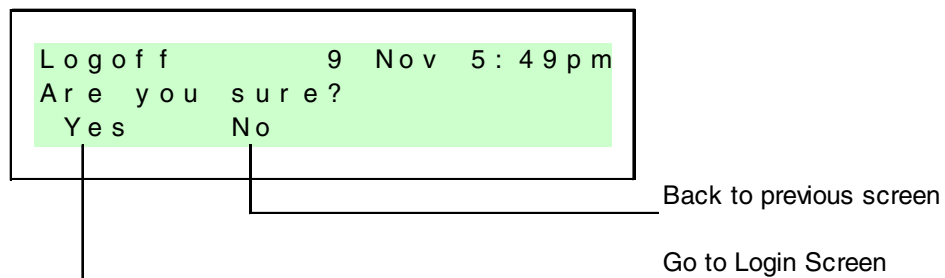
- Screen 3 – The user has permission to edit their Auto Login functionality. The user may enable/disable the feature from this screen.
- Screen 4 – The user has view permission to the Auto Login functionality. The user may only view what their current setting is.

**Note:** NOTE: The permissions are configurable via the element manager in the user/user profile settings.

## Audio Screens

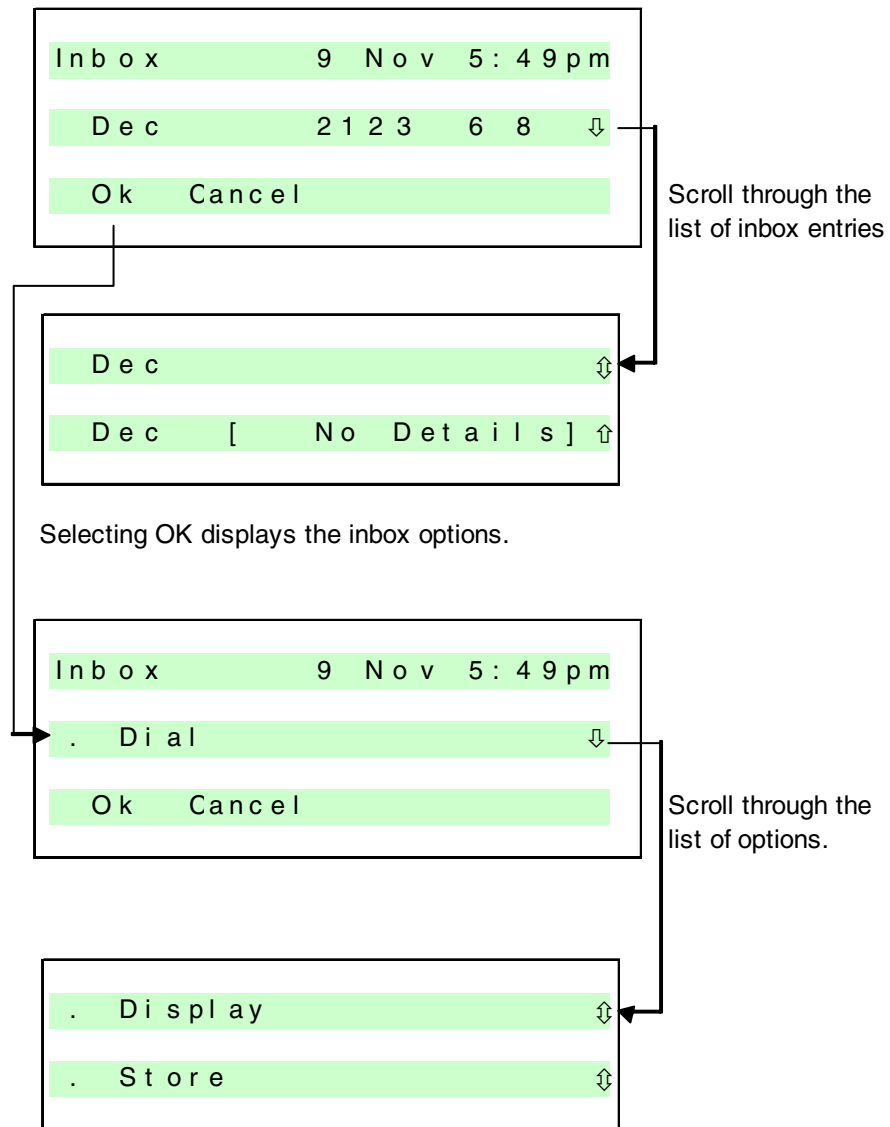


## Generic Confirmation Screen

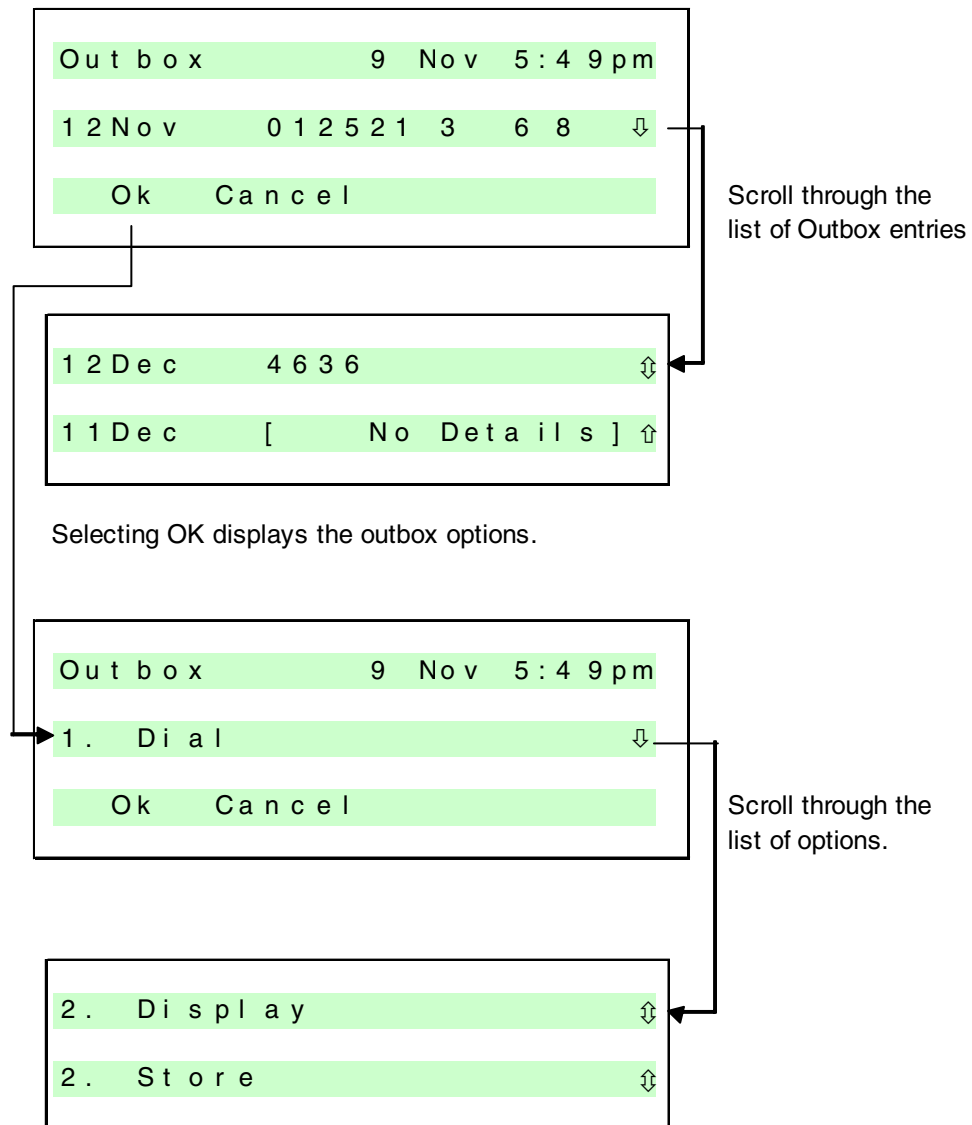




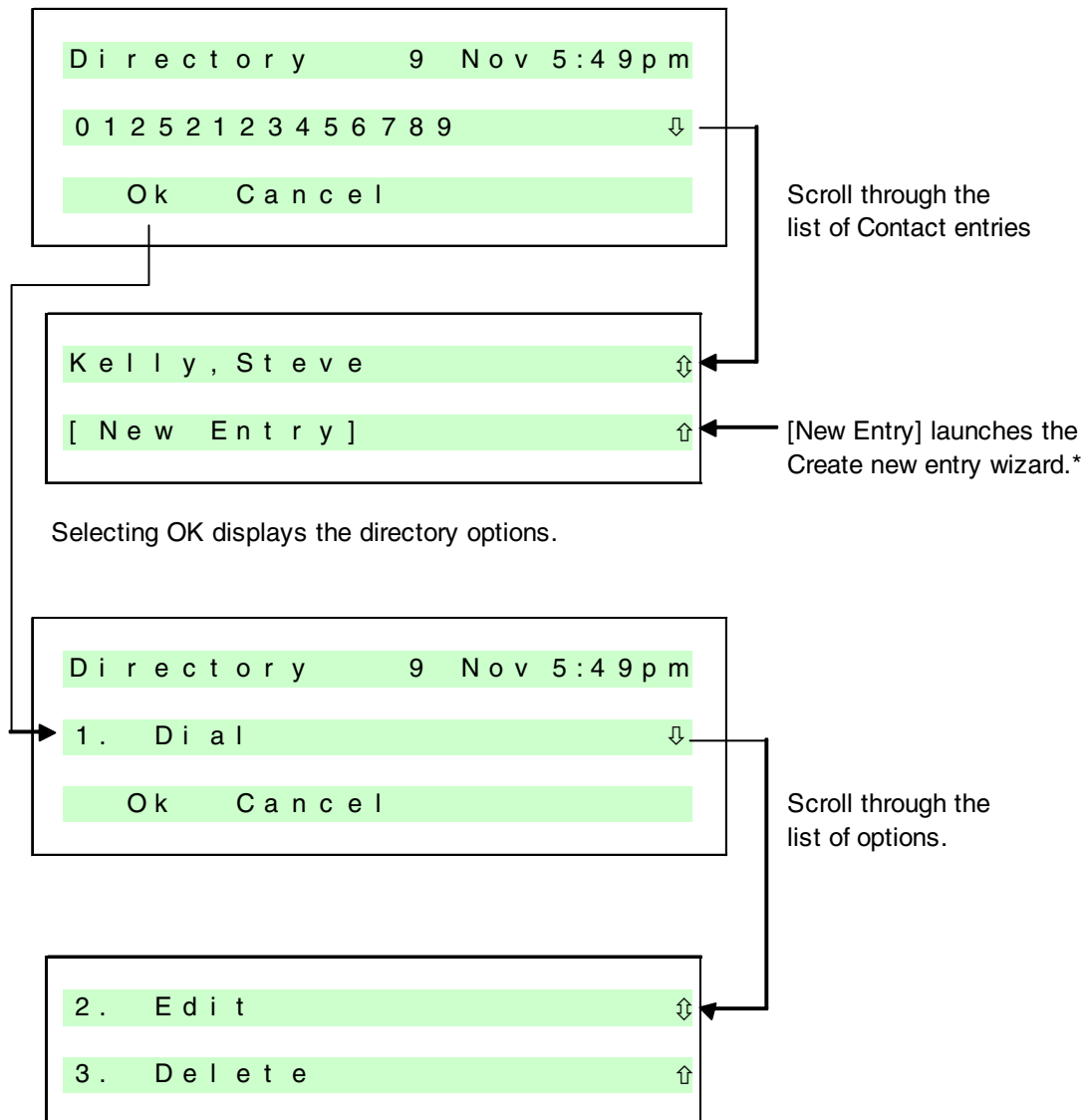
### Inbox and submenu screens



## Outbox and submenu screens

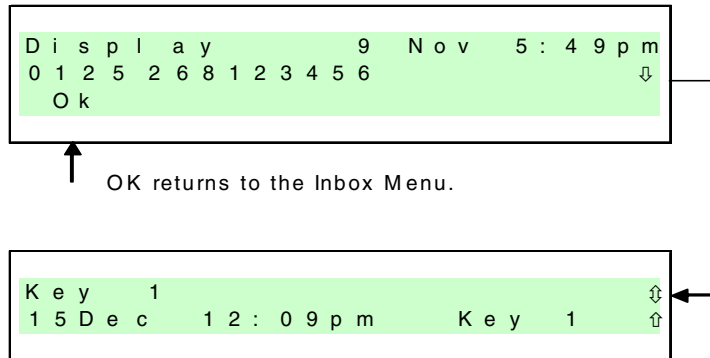


## Directory display screens

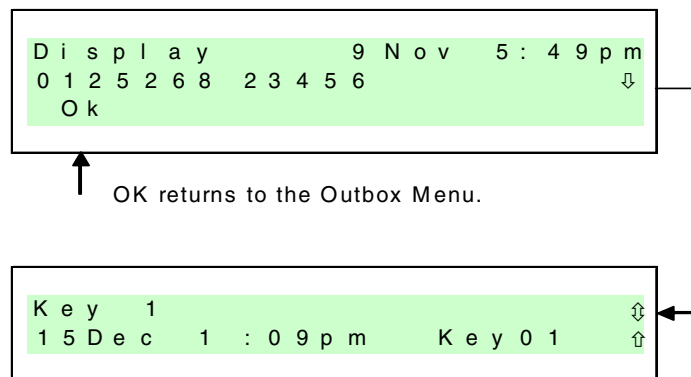


\* The [New Entry] option may be ordered to feature at the top of the directory list, so upon entering the directory you will be presented with the first actual entry and press up to select [New Entry]

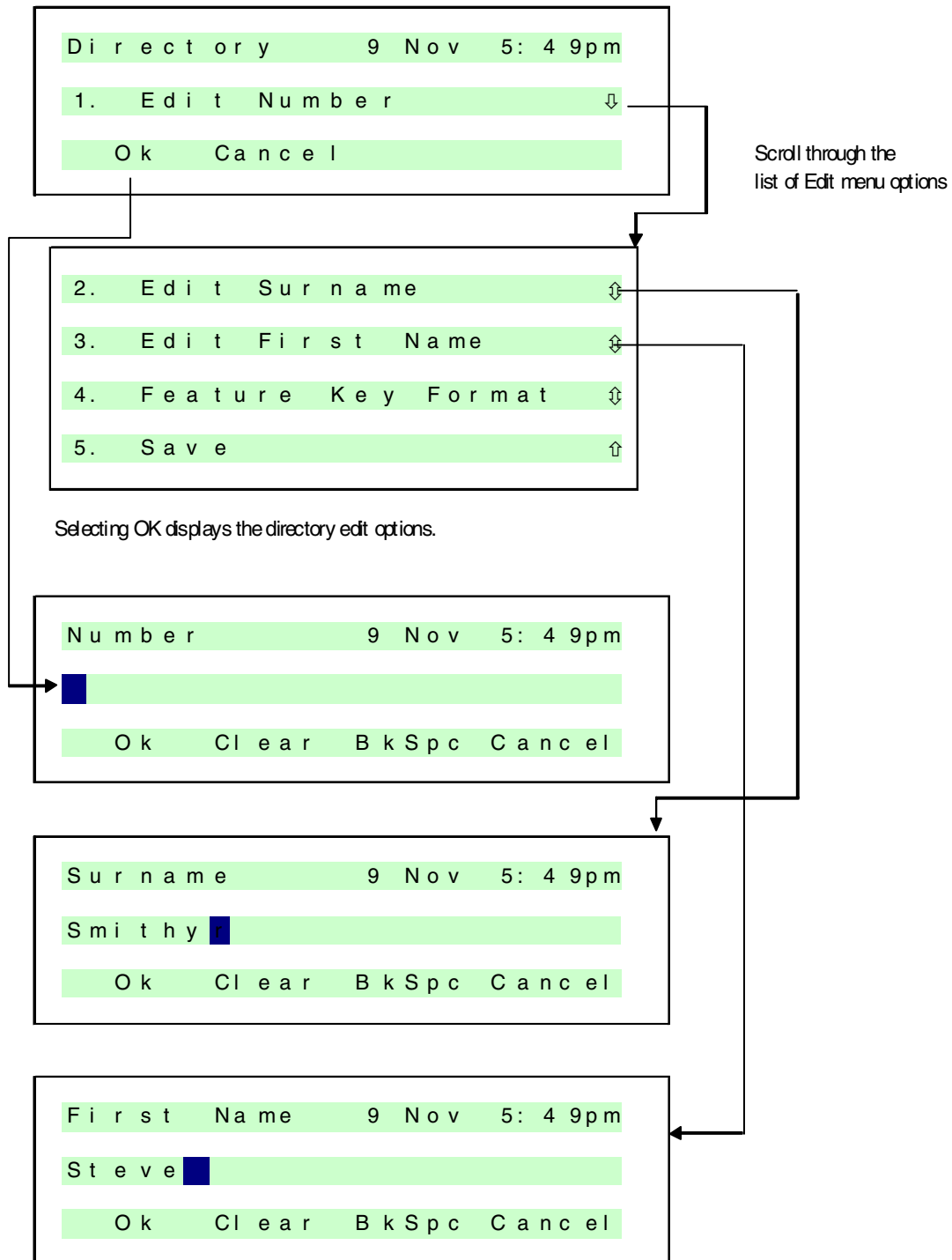
## Inbox Display Screen



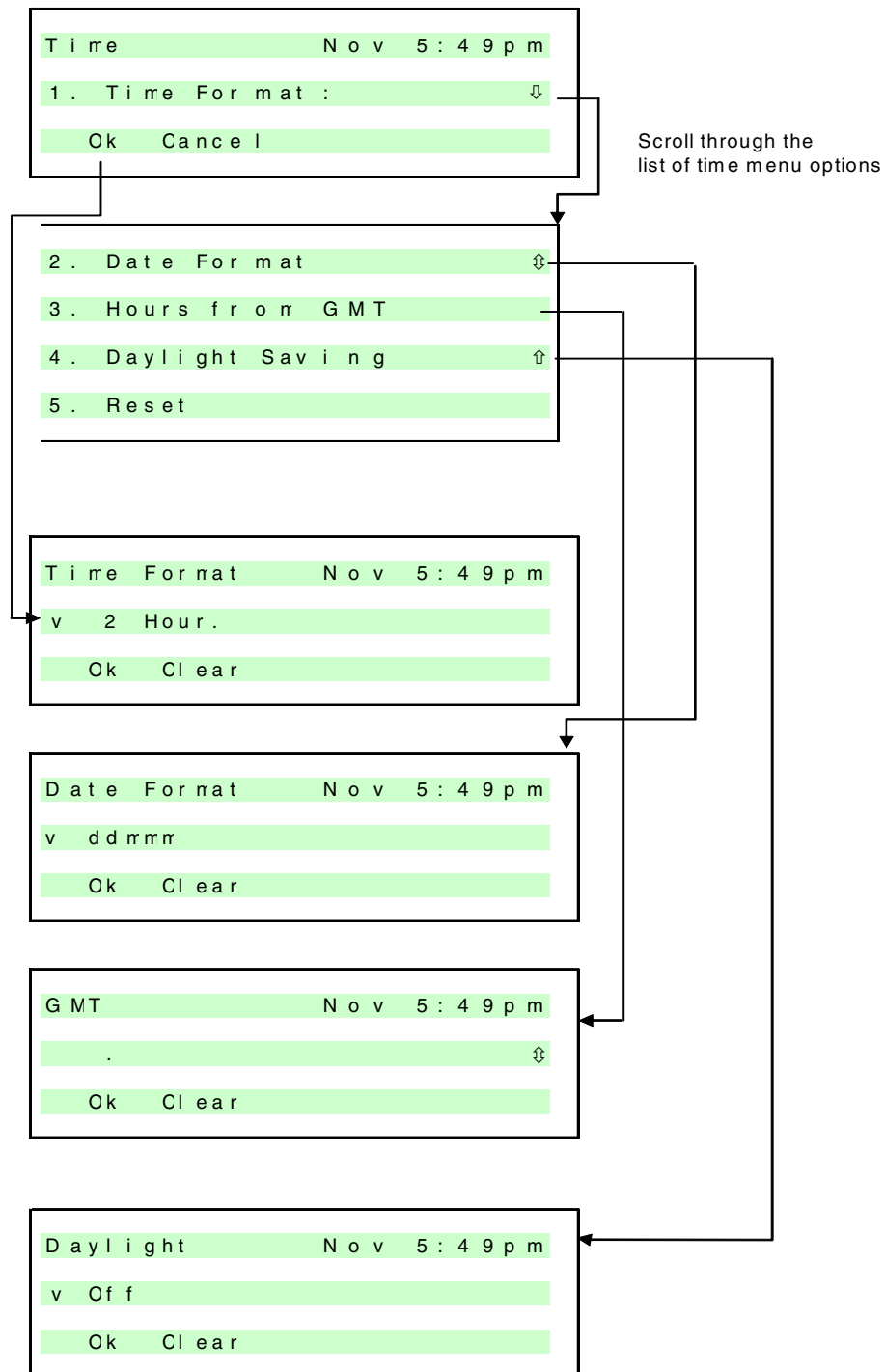
## Outbox Display Screen



## Directory Edit screens



## Time display screens



## Call History screens

|         |                     |             |
|---------|---------------------|-------------|
| C a l l | 9 N o v             | 5 : 4 9 p m |
| 1 .     | R e s e t I n b o x | ↓           |
| O k     | C a n c e l         |             |

|     |                       |   |
|-----|-----------------------|---|
| 2 . | R e s e t O u t b o x | ↑ |
|-----|-----------------------|---|

## Administration - Element Manager

The screenshot shows a web browser window titled "Centrex IP Client Manager - Microsoft Internet Explorer provided by Nortel Networks". The browser's address bar is empty. The page has a blue header with the "Nortel Networks" logo on the right. On the left, there is a vertical navigation menu with yellow buttons for "CICM", "status", "configuration", "terminals", "users", "maintenance", "CICM-EM", "status", "synchronization", "profiles", "audio", "enterprise", "language", "network", "user", "feature", "diagnostics", and "diagnostics". The main content area is titled "i2001 terminal firmware configuration (cxip180)". It contains several sections: "File Transfer Options" with a dropdown for "File Transfer Protocol" set to "TFTP (Please see help file)" and an "Apply changes" button; "Firmware Details For Phase 2 Terminals" with fields for "Recommended firmware load name (and optionally, path) on TFTP server" (c304d22.img), "Recommended supported firmware level" (3.99), and "Min Supported firmware level" (3.05); "TFTP Server Configuration (for TFTP only)" with fields for "IP address of TFTP server" (47.165.168.75) and "TFTP server port number" (radio buttons for "use default (port 69)" and "specify a port:"); and "UFTP Server Configuration (for UFTP only)" with a field for "Binary file import directories (specify semi-colon separated fully qualified UNC paths)" (\\47.165.168.75\\firmware) and a checkbox for "set to defaults". At the bottom left, it says "CICM-EM Version 7.10.118". At the bottom right, there are navigation links: "home", "terminal home", and "terminals on cxip180".

### Screen capture of terminal firmware upgrade page

The administration and configuration of the i2001 terminals will use the same pages which are already provided for the i2004 and i2002 terminals. (See the following figure.)



The screenshot shows the Centrex IP Client Manager web interface in Microsoft Internet Explorer. The browser title is "Centrex IP Client Manager - Microsoft Internet Explorer provided by Nortel Networks". The address bar is empty. The page has a blue header with the "Centrex IP Client Manager" logo and the "NORTEL NETWORKS" logo. A left sidebar contains a navigation menu with categories: CICM (status, configuration, terminals, users, maintenance), CICM-EM (status, synchronization), profiles (audio, enterprise, language, network, user, feature), and diagnostics. The main content area is titled "i2002 terminal firmware configuration (cxip180)". It contains several sections: "File Transfer Options" with a dropdown for "File Transfer Protocol" set to "UFTP" and an "Apply changes" button; "Firmware Details for Phase 1 Terminals" with fields for "Recommended firmware load name (and optionally, path) on TFTP server" (i2002\_rel\_1\_63.BIN), "Recommended supported firmware level" (1.63), and "Min Supported firmware level" (1.10); "Firmware Details For Phase 2 Terminals" with fields for "Recommended firmware load name (and optionally, path) on TFTP server" (Phase2\_rel\_3\_20.BIN), "Recommended supported firmware level" (3.20), and "Min Supported firmware level" (0.05); "TFTP Server Configuration (for TFTP only)" with fields for "IP address of TFTP server" (0.0.0.0) and "TFTP server port number" (radio buttons for "use default (port 69)" and "specify a port:"); and "UFTP Server Configuration (for UFTP only)" with a field for "Binary file import directories (specify semi-colon separated fully qualified UNC paths)" (\\47.165.168.75\\firmware) and a checkbox for "set to defaults". At the bottom of the main content area are links: "home", "terminal home", and "terminals on cxip180". The footer shows "CICM-EM Version 7.10.118" and a status bar with "Done" and "Internet".

Centrex IP Client Manager - Microsoft Internet Explorer provided by Nortel Networks

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Print View Source

Address

Go

Centrex IP Client Manager

NORTEL NETWORKS

CICM

status

configuration

terminals

users

maintenance

CICM-EM

status

synchronization

profiles

audio

enterprise

language

network

user

feature

diagnostics

diagnostics

i2002 terminal firmware configuration (cxip180)

File Transfer Options

File Transfer Protocol: UFTP

Apply changes

Firmware Details for Phase 1 Terminals

Recommended firmware load name (and optionally, path) on TFTP server: i2002\_rel\_1\_63.BIN

Recommended supported firmware level: 1.63

Min Supported firmware level: 1.10

Firmware Details For Phase 2 Terminals

Recommended firmware load name (and optionally, path) on TFTP server: Phase2\_rel\_3\_20.BIN

Recommended supported firmware level: 3.20

Min Supported firmware level: 0.05

TFTP Server Configuration (for TFTP only)

IP address of TFTP server: 0.0.0.0

TFTP server port number: ☒ use default (port 69) ☐ specify a port:

UFTP Server Configuration (for UFTP only)

Binary file import directories (specify semi-colon separated fully qualified UNC paths): \\47.165.168.75\\firmware ☐ set to defaults

home terminal home terminals on cxip180

CICM-EM Version 7.10.118

Done Internet

### Screen capture of phase 2 terminal firmware upgrade page

User permissions will be editable via the user/user profile pages.

## Interactions

### Joint Sessions

The i2001 will only be able to have a joint session with the m6350 Softclient. In this scenario it will always adopt the master position in their master/slave relationship. In this case, the i2001 will function in the same manner as the i2004.

There will be no support for the i2001 to have a joint session with another i200x.

### Software Requirements or Dependencies

Firmware load \*.bin will be used for the development of this feature on the i2001.

### Interactions

This feature will change the existing menu system employed by the i2004 and i2002. Menu options previously displayed on the soft keys will be displayed in the main screen as a scrollable list (using the up and down navigation keys). The Soft keys will only be used for a small sub section of set functions.

The change is beneficial on the i2004 for the support of different languages as longer strings may be used for menu options. Problems had previously been encountered upon translating soft key options which were limited to only 7 characters i.e. a 7 character soft key in English may translate into a 9 character soft key in French which is not easily abbreviated.

### References

## *Product = CS 2000*

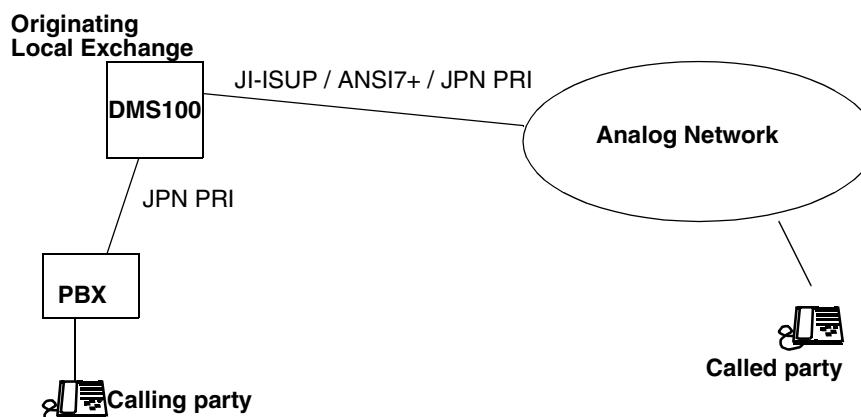
### **A00004205 -- Japan PRI Backward Voice Path Solution (Succession on DMS)**

#### *Functional Description*

Some PBXs, upon receiving a PROGRESS or an ALERT message with PI#2 (Destination address is non-ISDN) on their Japan PRI interfaces do not open backward direction voice paths. As a result of this, although ring-back tone from destination side is available, PBX subscribers can not hear it. Currently, a PROGRESS message with PI#2 is sent back to the PBX when an ACM message with the pattern described in section “Background” on page 936 is received in Japan PRI to Japan Interconnect ISUP(JI-ISUP)/ANSI7+

interworkings. Also currently, an ALERT message with PI#2 is sent back to the PBX when an ALERT message with PI#2 is received in Japan PRI to Japan PRI interworking (see the following figure).

#### Call scenario



The activity “Japan PRI Backward Voice Path Solution (A00004205)” implements in ISN07 the optional addition of a second progress indicator (PI#8: inband info available) to the PROGRESS/ALERT messages sent back to the call originating side like PBX.

Upon receiving the PI#8, the PBXs are expected to open their backward voice paths and resolve the ring-back tone problem described above.

The second PI is only added for the agents given in Table , “Supported Agents and Directions.” in the specified direction and it is added only if the switch-based option, that is introduced with activity, is enabled as described in section “ Activation of the PI#8 addition” on page 937.

#### Supported Agents and Directions

| From: \ To:  | Japan PRIv1 | Japan PRIv2 |
|--------------|-------------|-------------|
| Japan PRIv1  | YES         | YES         |
| Japan PRIv2  | YES         | YES         |
| JI-ISUP      | YES         | YES         |
| ANSI7+(Q764) | YES         | YES         |

Important datafills corresponding to the above interfaces are as follows:

**Japan PRIv1**

Table LTDEF

ISDN 360 B PRA 15 15 8 7 *INSPRI V1* NIL (NOPMD ) \$**Japan PRIv2**

Table LTDEF

ISDN 360 B PRA 15 15 8 7 *INSPRI V2* NIL (NOPMD ) \$**Japan Interconnect ISUP (JI-ISUP)**

Table TRKSGRP

2WJIISPAB 0 DS1SIG C7UP 2W N N UNEQ NONE *Q767* THRL 0DMS\_NODE N N *JPN\_INTERCONN* 100\_WHITE \$ 2WN7 CIC**ANSI7+ ISUP**

Table TRKSGRP

2WJPNANSIAB 0 DS1SIG C7UP 2W N N UNEQ NONE *Q764* THRH 0

DMS (MBG NONE) \$ ANSI2W CIC

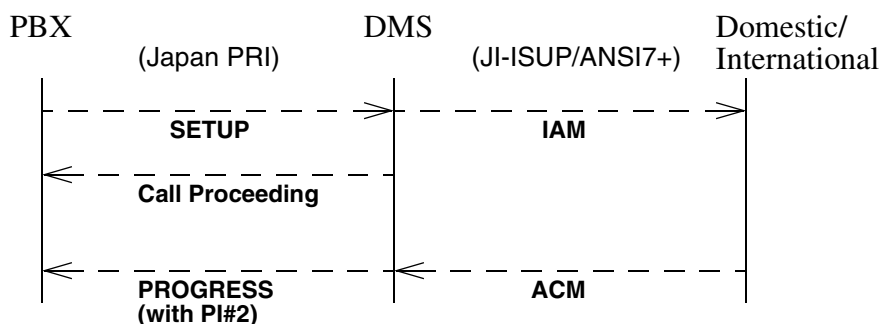
In the rest of this document, Japan PRI will refer to both Japan PRIv1 and Japan PRIv2, unless otherwise specified.

**Background**

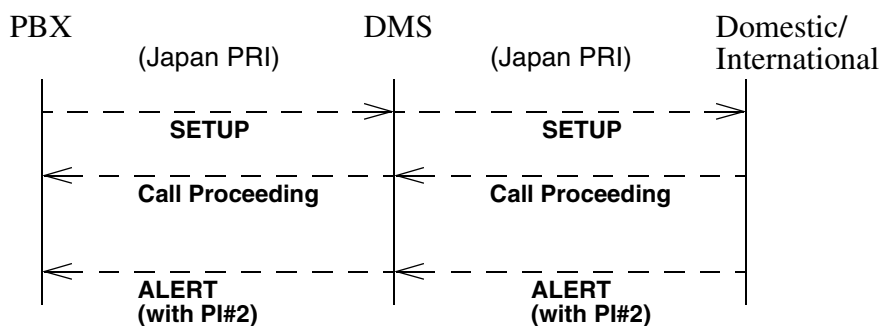
A PROGRESS message with PI#2 is sent back to a JapanPRI trunk upon receiving an ACM message from Japan Interconnect ISUP (JI-ISUP) or ANSI7+ trunk with the following Backward Call Indicators (BCI):

**Current Backward Call Indicator to Progress Indicator mapping**

| <b>JI-ISUP</b>                         | <b>Japan PRI</b>                       |
|----------------------------------------|----------------------------------------|
| Bit I=0 No interworking encountered    | PI#2 (Destination address is non-ISDN) |
| Bit M=0 Terminating access is non-ISDN |                                        |
| Bit DC=00 No indication                |                                        |
| <b>ANSI7+ ISUP</b>                     | <b>Japan PRI</b>                       |
| Bit I=0 No interworking encountered    | PI#2 (Destination address is non-ISDN) |
| Bit M=0 Terminating access is non-ISDN |                                        |
| Bit DC=00 No indication                |                                        |

**Current ACM to PROGRESS mapping**

An ALERT message with PI#2 is sent back to a JapanPRI trunk upon receiving an ALERT message with PI#2 from JapanPRI trunk.

**Current ALERT to ALERT mapping****Activation of the PI#8 addition**

Activation and deactivation of this feature is only available per one DMS100 switch basis.

In order to activate the addition of the PI#8 back to the originating PBXs, ISERVOPT table should be datafilled as follows:

**ISERVOPT datafill example for JapanPRI option**

| SOPTSKEY | SOPTSVAR   |
|----------|------------|
| JAPANPRI | JAPANPRI Y |

The following table displays how datafilling the JapanPRI option will actually take place:

**Datafilling JapanPRI option in ISERVOPT table**

```

>table iservopt
>add
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>japanpri
OPTION:
>japanpri
ALLOW_BACKWARD_VOICE_PATH:
>y
TUPLE TO BE ADDED:
JAPANPRI JAPANPRI Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

**Scenarios when PI#8 is not added**

When JAPANPRI option in ISERVOPT table is not datafilled or when it is datafilled but ALLOW\_BACKWARD\_VOICE\_PATH is set to 'N', the PI#8 will not be added to the PROGRESS/ALERT messages. Therefore in these conditions, ACM to PROGRESS mapping in Japan PRI to JI-ISUP/ANSI7+ interworkings and ALERT to ALERT mapping in Japan PRI to Japan PRI interworkings will be as described in section “ Background” on page 936.

This will be the default behavior of this feature, in order to prevent changing the existing behavior after upgrades.

**Scenarios when PI#8 is added**

If the JAPANPRI option in ISERVOPT table is datafilled and ALLOW\_BACKWARD\_VOICE\_PATH option is set to 'Y', then a PROGRESS message with a second PI#8 will be sent back to a JapanPRI trunk upon receiving an ACM message from JI-ISUP or ANSI7+ trunk with the following Backward Call Indicators (BCI):

**Desired Backward Call Indicator to Progress Indicator mapping****JI-ISUP****Japan PRI**

Bit I=0 No interworking encountered  
 Bit M=0 Terminating access is non-ISDN  
 Bit DC=00 No indication

PI#2 (Destination address is non-ISDN)  
 PI#8 (Inband Info Available)

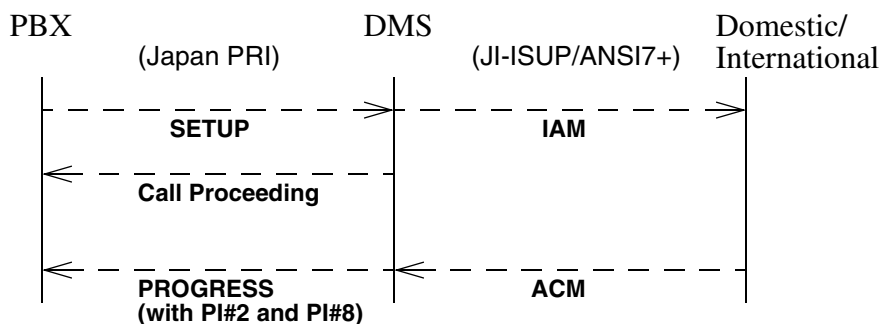
**ANSI7+ ISUP****Japan PRI**

**Desired Backward Call Indicator to Progress Indicator mapping****JI-ISUP**

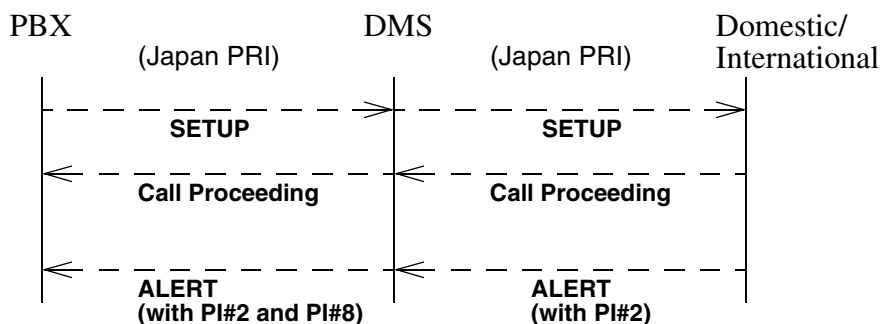
Bit I=0 No interworking encountered  
 Bit M=0 Terminating access is non-ISDN  
 Bit DC=00 No indication

**Japan PRI**

PI#2 (Destination address is non-ISDN)  
 PI#8 (Inband Info Available)

**Desired ACM to PROGRESS mapping**

If the JAPANPRI option in ISERVOPT table is datafilled and ALLOW\_BACKWARD\_VOICE\_PATH option is set to 'Y' then an ALERT message with a second PI#8 will be sent back to a JapanPRI trunk upon receiving an ALERT message from JapanPRI trunk.

**Desired ALERT to ALERT mapping****Hardware Requirements or Dependencies**

Not Applicable.

**Software Requirements or Dependencies**

Not Applicable.

**Limitations and restrictions**

Not Applicable.

**Interactions**

Not Applicable.

**Applicable customer facing sections****Fault Management**

Logs N/A

Alarms N/A

**Configuration**

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

**Glossary**

| Term    | Description                               |
|---------|-------------------------------------------|
| ACM     | Address Complete message in ISUP protocol |
| BCI     | Backward Call Indicator in ACM message    |
| ISDN    | Integrated Switched Data Network          |
| ISUP    | ISDN User Part                            |
| JI-ISUP | Japan Interconnect ISUP                   |
| PI      | Progress indicator                        |
| PRI     | Primary Rate Interface                    |



## Recommended Reading/References

- a. Cable&Wireless - ISN07 to ISN04 Feature Bridge Back Version, JPN PRI B Voice Path Requirement Specification For Opening the Backward Voice Path (Japan PRI)
- b. NIS A220-1 - Japan Primary Rate Interface, Nortel Interface Specification, Standard 09.01, September 1998.
- c. NIS A220-2 - Japan PRI, Interworking Description, Standard 02.03, September 1998.
- d. ITU-T Recommendation Q-931, ISDN User-Network Interface Layer3 Specification for Basic Call Control

## Configuration for A00004205

### Hardware and Software Requirements

All the necessary hardware and datafills should be available to make calls over the following interworkings:

#### Supported Interworkings

| \ To:       | Japan PRlv1 | Japan PRlv2 | JI-ISUP | ANSI7+(Q764) |
|-------------|-------------|-------------|---------|--------------|
| From: \     |             |             |         |              |
| Japan PRlv1 | YES         | YES         | YES     | YES          |
| Japan PRlv2 | YES         | YES         | YES     | YES          |

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

### Upgrade Impact

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

**Name:** ISERVOPT

#### Functional description

The new tuple JAPANPRI will be introduced by this activity in table ISERVOPT. This tuple holds entries for every Japan PRI related enhancement which is intended to be switched on and off by datafill. At the moment table ISERVOPT will allow an entry for opening backward voice path on the Japan PRI PBXs by sending a second PI#8 in the PROGRESS/ALERT messages.

Value Yes 'Y' implies that this service should be supported, value No 'N' or absence of JAPANPRI tuple in the ISERVOPT table means the service is not supported.

#### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

#### Size

Unchanged.

#### Fields/OIDs

The following table lists fields/OIDs for ISERVOPT.

#### Table field descriptions

| Field    | New or Changed | Subfield or refinement    | Entry    | Explanation and action                                                     |
|----------|----------------|---------------------------|----------|----------------------------------------------------------------------------|
| SOPTSKEY | Changed        | -                         | JAPANPRI | New entry JAPANPRI defined.                                                |
| SOPTSVAR | Changed        | option                    | JAPANPRI | New entry JAPANPRI defined.                                                |
| SOPTSVAR | New            | allow_backward_voice_path | {Y, N}   | Whether second PI#8 should be added or not to the PROGRESS/ALERT messages. |

**Datafill example**

The following examples shows sample datafill for table ISERVOPT.

- Addition of the second PI#8 should be turned on:  
*JAPANPRI JAPANPRI Y*
- Addition of the second PI#8 should be turned off:  
*JAPANPRI JAPANPRI N*

**Table release history update**

The following information was added:

New entry JAPANPRI added to fields SOPTSKEY and SOPTSVAR.

New option ALLOW\_BACKWARD\_VOICE\_PATH added to the JAPANPRI.

**Supplementary information**

None.

**Translation verification other tools**

ISERVOPT does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = CS2000***

## A00004931 -- Indian ISUP (Int'l PT-IP)

### *Functional Description*

This activity addresses the ability to support Indian ISUP. Indian ISUP is on the CS2K IP solution. It is available on the International Succession Product.

The Indian ISUP is based on following international standards:

- ETSI standard ETS 300 356-1 to -12 and -14 to -19 (February 1995): ISDN User Part (ISUP) Version 2 for the international interface
- ETSI standard ES 201 296, V1.1.2 (1998-09) (ISUP Signalling aspects of charging)

The primary difference between Indian ISUP and ETSI ISUP V2 baseline is the modification of some of the existing additional parameters within the supported message set of ETSI ISUP base and additional parameters with Indian ISUP specific format.

Following interworkings will be covered by this activity:

to ETSI ISUP V2

to ANSI ISUP

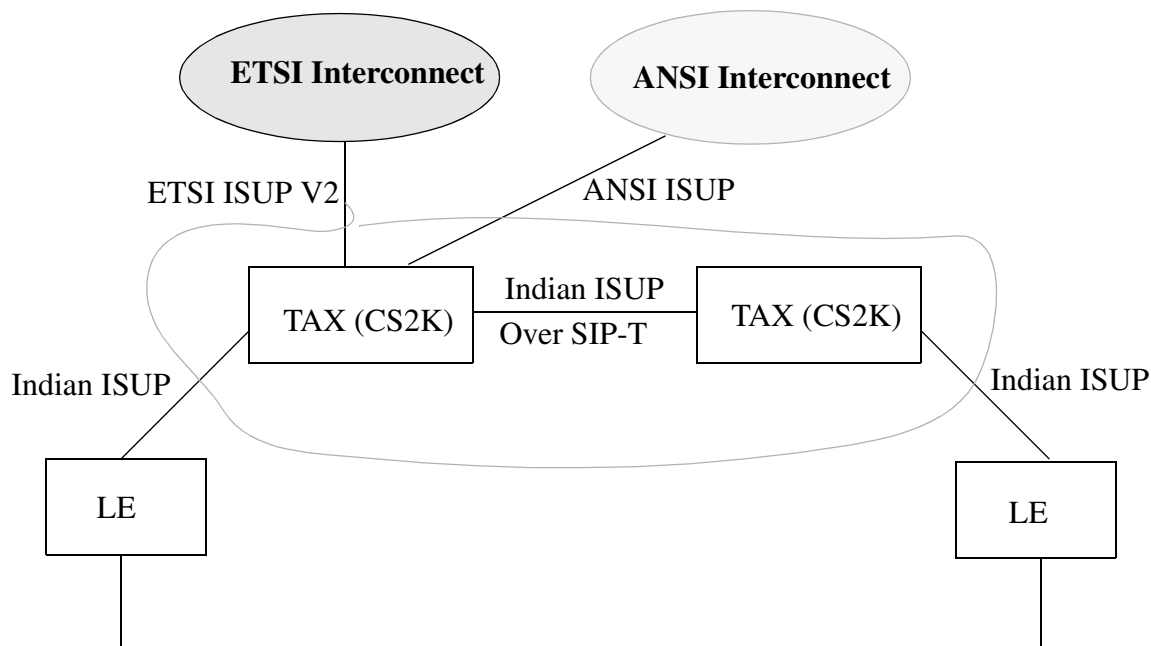
to Indian ISUP

The following table indicates which protocols will be tested using SIP-T:

#### **SIP-T Usage**

| <b>Protocol</b> | <b>SIP-T</b> | <b>non-SIP-T</b> |
|-----------------|--------------|------------------|
| ISUP V2         | X            | X                |
| Indian ISUP     | X            | X                |

The following figure illustrates the planned CS2K configuration for Indian ISUP.

**CS2K Configuration for Indian ISUP**

The following additional timers shall be provided as detailed by the specification for Indian ISUP, rest of timers shall be used as defined for ETSI ISUP V2.

**UI SUS Control timer** - Initiated when controlling exchange receives SUS (user) message and terminated upon receipt of resume message. At expiry the release procedure is initiated.

**Congestion handling short** - Initiated when congestion indication is received. At expiry the new congestion indication will be taken into account.

**Congestion handling long** - Initiated when congestion indication is received. At expiry the traffic is restored by one step.

**Response to Call Reference release** - Initiated when response to request of end to end connection establishment is sent and terminated at the receipt of the first end to end message from remote end. At expiry end to end message is allowed to be sent.

## Indian ISUP datafill

This activity provides the ability to datafill Indian ISUP variant in table TRKSGRP. An example of this datafill in TABLE TRKSGRP is as shown below:

Table TRKSGRP

```
99ATMC42IT2 0 DS1SIG C7UP 2W N N EXTERNAL NONE Q767 THRH
0 DMSETSI N Y INDIA 100_WHITE $ ETSI2W CIC
```

‘100\_WHITE’ indicates that the variant is based on ETSI ISUP V2. ‘INDIA’ marks the specific variant based on 100\_WHITE.

## Indian ISUP signalling

### General

This section describes the supported messages and parameters. The description within this section is based on ETSI ISUP V2 specification and Indian ISUP specification.

### Messages

The following set of tables describes the messages and the parameters that these messages will/will not supported in Indian ISUP.

#### ISUP Address Complete Message

| Message | Parameter                           | Supported on Indian ISUP | Optional/Mandatory |
|---------|-------------------------------------|--------------------------|--------------------|
| ACM     | Message type                        | Y                        | Mandatory          |
|         | Backward call indicators            | Y                        | Mandatory          |
|         | Optional backward call Indicators   | Y                        | Optional           |
|         | Cause indicators                    | Y                        | Optional           |
|         | User-to-user indicators             | Y                        | Optional           |
|         | User-to-user information            | Y                        | Optional           |
|         | Generic notification indicator      | N                        | -                  |
|         | Transmission medium used            | N                        | -                  |
|         | Access transport                    | Y                        | Optional           |
|         | Access delivery information         | Y                        | Optional           |
|         | Redirection number                  | Y                        | Optional           |
|         | Parameter compatibility information | Y                        | Optional           |

**ISUP Address Complete Message**

| Message | Parameter                                | Supported on Indian ISUP | Optional/Mandatory |
|---------|------------------------------------------|--------------------------|--------------------|
|         | Call diversion information               | Y                        | Optional           |
|         | Service Activation                       | N                        | -                  |
|         | Redirection number restriction indicator | Y                        | Optional           |
|         | Echo control information                 | Y                        | Optional           |
|         | End of optional parameters               | Y                        | Optional           |

**ISUP Answer Message**

| Message | Parameter                           | Supported on Indian ISUP | Optional/Mandatory |
|---------|-------------------------------------|--------------------------|--------------------|
| ANM     | Message type                        | Y                        | Mandatory          |
|         | Backward call indicators            | Y                        | Optional           |
|         | Optional backward call indicators   | Y                        | Optional           |
|         | User-to-user indicators             | Y                        | Optional           |
|         | User-to-user information            | Y                        | Optional           |
|         | Connected number                    | Y                        | Optional           |
|         | Access transport                    | Y                        | Optional           |
|         | Access delivery information         | Y                        | Optional           |
|         | Generic notification indicator      | N                        | -                  |
|         | Parameter compatibility information | Y                        | Optional           |
|         | Backward GVNS                       | N                        | -                  |
|         | Call history information            | N                        | -                  |
|         | Generic number                      | N                        | -                  |
|         | Remote operations                   | N                        | -                  |
|         | Transmission medium used            | N                        | -                  |
|         | Redirection number                  | Y                        | Optional           |
|         | Service activation                  | N                        | -                  |
|         | Echo control information            | Y                        | Optional           |

**ISUP Answer Message**

| Message | Parameter                                | Supported on Indian ISUP | Optional/Mandatory |
|---------|------------------------------------------|--------------------------|--------------------|
|         | Display information                      | N                        | -                  |
|         | Redirection Number Restriction Indicator | Y                        | Optional           |
|         | End of optional parameters               | Y                        | Optional           |

**Blocking/Unblocking message**

| Message    | Parameter    | Supported on Indian ISUP | Optional/Mandatory |
|------------|--------------|--------------------------|--------------------|
| BLO<br>UBL | Message type | Y                        | Mandatory          |

**Blocking/Unblocking acknowledgment message**

| Message    | Parameter    | Supported on Indian ISUP | Optional/Mandatory |
|------------|--------------|--------------------------|--------------------|
| BLA<br>UBA | Message type | Y                        | Mandatory          |

**Call progress message**

| Message | Parameter                   | Support on Indian ISUP | Optional/Mandatory |
|---------|-----------------------------|------------------------|--------------------|
| CPG     | Message type                | Y                      | Mandatory          |
|         | Cause indicators            | Y                      | Optional           |
|         | Call reference              | N                      | -                  |
|         | Backward call indicators    | Y                      | Optional           |
|         | Optional backward call Ind. | Y                      | Optional           |
|         | Access transport            | Y                      | Optional           |
|         | User-to-user indicators     | Y                      | Optional           |



**Call progress message**

| Message | Parameter                                | Support on Indian ISUP | Optional/ Mandatory |
|---------|------------------------------------------|------------------------|---------------------|
|         | Redirection number                       | Y                      | Optional            |
|         | User-to-user information                 | Y                      | Optional            |
|         | Generic notification indicator           | N                      | -                   |
|         | Transmission medium used                 | N                      | -                   |
|         | Access delivery information              | Y                      | Optional            |
|         | Parameter compatibility information      | Y                      | Optional            |
|         | Call diversion information               | Y                      | Optional            |
|         | Service activation                       | N                      | -                   |
|         | Call transfer number                     | N                      | -                   |
|         | Echo control information                 | Y                      | Optional            |
|         | Connected number                         | Y                      | Optional            |
|         | Backward GVNS                            | N                      | -                   |
|         | Generic Number                           | N                      | -                   |
|         | Call history information                 | N                      | -                   |
|         | Redirection number restriction indicator | Y                      | Optional            |
|         | End of optional parameters               | Y                      | Optional            |

**Charge Information Message**

| Message | Parameters                        | Supported in Indian ISUP | Optional/ Mandatory |
|---------|-----------------------------------|--------------------------|---------------------|
| CRG     | Message type                      | Y                        | Mandatory           |
|         | Charge Band                       | Y                        | Mandatory           |
|         | Message compatibility information | Y                        | Mandatory           |
|         | End of optional parameters        | Y                        | Mandatory           |

**Circuit Group Blocking Message**

| Message | Parameters                                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|---------------------------------------------------|--------------------------|--------------------|
| CGB     | Message type                                      | Y                        | Mandatory          |
|         | Circuit group supervision message type indicators | Y                        | Mandatory          |
|         | Range and status                                  | Y                        | Mandatory          |

**Circuit Group Blocking Acknowledgement Message**

| Message | Parameters                                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|---------------------------------------------------|--------------------------|--------------------|
| CGBA    | Message type                                      | Y                        | Mandatory          |
|         | Circuit group supervision message type indicators | Y                        | Mandatory          |
|         | Range and status                                  | Y                        | Mandatory          |

**Circuit Group Reset Message**

| Message | Parameters       | Supported in Indian ISUP | Optional/Mandatory |
|---------|------------------|--------------------------|--------------------|
| GRS     | Message type     | Y                        | Mandatory          |
|         | Range and status | Y                        | Mandatory          |

**Circuit Group Reset Acknowledgement Message(status subfield not present)**

| Message | Parameters       | Supported in Indian ISUP | Optional/Mandatory |
|---------|------------------|--------------------------|--------------------|
| GRA     | Message type     | Y                        | Mandatory          |
|         | Range and Status | Y                        | Mandatory          |

**Circuit Group Unblocking Message**

| Message | Parameters                                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|---------------------------------------------------|--------------------------|--------------------|
| CGU     | Message type                                      | Y                        | Mandatory          |
|         | Circuit group supervision message type indicators | Y                        | Mandatory          |
|         | Range and status                                  | Y                        | Mandatory          |

**Circuit Group Unblocking Acknowledgement Message**

| Message | Parameters                                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|---------------------------------------------------|--------------------------|--------------------|
| CGUA    | Message type                                      | Y                        | Mandatory          |
|         | Circuit group supervision message type indicators | Y                        | Mandatory          |
|         | Range and status                                  | Y                        | Mandatory          |

**Confusion Message**

| Message | Parameters                | Supported in Indian ISUP | Optional/Mandatory |
|---------|---------------------------|--------------------------|--------------------|
| CFN     | Message type              | Y                        | Mandatory          |
|         | Cause Indicator           | Y                        | Mandatory          |
|         | End of optional parameter | Y                        | Optional           |

**Connect Message**

| Message | Parameters                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|-----------------------------------|--------------------------|--------------------|
| CON     | Message type                      | Y                        | Mandatory          |
|         | Backward call indicators          | Y                        | Mandatory          |
|         | Optional backward call indicators | Y                        | Optional           |
|         | Backward GVNS                     | N                        | -                  |
|         | Connected number                  | Y                        | Optional           |

|  |                                     |   |          |
|--|-------------------------------------|---|----------|
|  | User-to-user indicators             | Y | Optional |
|  | User-to-user information            | Y | Optional |
|  | Access transport                    | Y | Optional |
|  | Network specific facility           | N | -        |
|  | Generic notification Indication.    | N | -        |
|  | Remote Operation                    | N | -        |
|  | Transmission medium used            | N | -        |
|  | Echo control information            | Y | Optional |
|  | Access delivery information         | Y | Optional |
|  | Call history information            | N | -        |
|  | Parameter compatibility information | Y | Optional |
|  | Redirection number                  | Y | Optional |
|  | Service activation                  | N | -        |
|  | Generic number                      | N | -        |
|  | Redirection number restriction      | N | -        |
|  | End of optional parameters          | Y | Optional |

**Continuity Message**

| Message | Parameters            | Supported in Indian ISUP | Optional/ Mandatory |
|---------|-----------------------|--------------------------|---------------------|
| COT     | Message type          | Y                        | Mandatory           |
|         | Continuity indicators | Y                        | Mandatory           |

**Continuity Check Message**

| Message | Parameters   | Supported in Indian ISUP | Optional/ Mandatory |
|---------|--------------|--------------------------|---------------------|
| CCR     | Message type | Y                        | Mandatory           |

**Identification Request Message**

| Message | Parameters                          | Supported in Indian ISUP | Optional/Mandatory |
|---------|-------------------------------------|--------------------------|--------------------|
| IDR     | Message type                        | Y                        | Mandatory          |
|         | MCID request indicators             | Y                        | Optional           |
|         | Message compatibility information   | Y                        | Optional           |
|         | Parameter compatibility information | Y                        | Optional           |
|         | End of optional parameters          | Y                        | Optional           |

**Identification Response Message**

| Message | Parameters                          | Supported in Indian ISUP | Optional/Mandatory |
|---------|-------------------------------------|--------------------------|--------------------|
| IRS     | Message type                        | Y                        | Mandatory          |
|         | MCID response indicator             | Y                        | Optional           |
|         | Message compatibility information   | Y                        | Optional           |
|         | Parameter compatibility information | Y                        | Optional           |
|         | Calling party number                | Y                        | Optional           |
|         | Access transport                    | Y                        | Optional           |
|         | Generic number                      | N                        | -                  |
|         | Charge Party ID                     | N                        | -                  |
|         | End of optional parameter           | Y                        | Optional           |

**Information Message**

| Message | Parameters               | Supported in Indian ISUP | Optional/Mandatory |
|---------|--------------------------|--------------------------|--------------------|
| INF     | Message type             | Y                        | Mandatory          |
|         | Information indicators   | Y                        | Mandatory          |
|         | Calling party's category | Y                        | Optional           |
|         | Calling party number     | Y                        | Optional           |
|         | Call reference           | N                        | -                  |

|  |                                     |   |          |
|--|-------------------------------------|---|----------|
|  | Connection request                  | N | -        |
|  | Parameter compatibility information | N | -        |
|  | Network specific facility           | N | -        |
|  | End of optional parameters          | Y | Optional |

**Information Request Message**

| <b>Message</b> | <b>Parameters</b>                   | <b>Supported in Indian ISUP</b> | <b>Optional/ Mandatory</b> |
|----------------|-------------------------------------|---------------------------------|----------------------------|
| INR            | Message type                        | Y                               | Mandatory                  |
|                | Information request indicators      | Y                               | Mandatory                  |
|                | Call reference                      | N                               | -                          |
|                | Network specific facility           | N                               | -                          |
|                | Parameter compatibility information | N                               | -                          |
|                | End of optional parameters          | Y                               | Optional                   |

**ISUP Initial Address Message**

| <b>Message</b> | <b>Parameters</b>                | <b>Supported in Indian ISUP</b> | <b>Optional/ Mandatory</b> |
|----------------|----------------------------------|---------------------------------|----------------------------|
| IAM            | Message type                     | Y                               | Mandatory                  |
|                | Nature of connection Ind.        | Y                               | Mandatory                  |
|                | Forward call indicators          | Y                               | Mandatory                  |
|                | Calling party's category         | Y                               | Mandatory                  |
|                | Transmission medium requirement  | Y                               | Mandatory                  |
|                | Call reference                   | Y                               |                            |
|                | Called party number              | Y                               | Mandatory                  |
|                | Transit Network Selection        | Y                               | Optional                   |
|                | Calling party number             | Y                               | Optional                   |
|                | Optional forward call indicators | Y                               | Optional                   |
|                | Closed User Group interlock code | Y                               | Optional                   |
|                | Connection Request               | Y                               | Optional                   |

|  |                                       |   |          |
|--|---------------------------------------|---|----------|
|  | Original called number                | Y | Optional |
|  | User-to-user information              | Y | Optional |
|  | Access transport                      | Y | Optional |
|  | User service information              | Y | Optional |
|  | User-to-user indicators               | Y | Optional |
|  | Generic number                        | N | -        |
|  | User service information prime        | N | -        |
|  | Network specific facility             | N | -        |
|  | Generic Digits                        | N | -        |
|  | Originating ISC point code            | Y | Optional |
|  | Remote operation                      | N | -        |
|  | User teleservice information          | Y | Optional |
|  | Parameter compatibility information   | Y | Optional |
|  | Generic notification                  | N | -        |
|  | Service activation                    | N | -        |
|  | MLPP precedence                       | Y | Optional |
|  | Transmission medium requirement prime | N | -        |
|  | Location number                       | N | -        |
|  | Forward GVNS                          | N | -        |
|  | CCSS                                  | N | -        |
|  | Network management controls           | Y | Optional |
|  | Circuit assignment map                | N | -        |
|  | Correlation ID                        | Y | Optional |
|  | SCF ID                                | Y | Optional |
|  | Hop counter                           | Y | Optional |
|  | Call diversion treatment indicators   | Y | Optional |
|  | Call offering treatment indicators    | Y | Optional |
|  | Called IN number                      | Y | Optional |
|  | Collect call request                  | Y | Optional |
|  | End of optional parameters            | Y | Optional |

**Release Message**

| Message | Parameters                          | Supported in Indian ISUP | Optional/Mandatory |
|---------|-------------------------------------|--------------------------|--------------------|
| REL     | Message type                        | Y                        | Mandatory          |
|         | Cause indicators                    | Y                        | Mandatory          |
|         | Redirection number                  | Y                        | Optional           |
|         | Redirection Indicator               | Y                        | Optional           |
|         | Access transport                    | Y                        | Optional           |
|         | Signaling Point Code                | Y                        | Optional           |
|         | User-to-user information            | Y                        | Optional           |
|         | Automatic congestion level          | Y                        | Optional           |
|         | Network specific facility           | N                        | -                  |
|         | Access delivery information         | Y                        | Optional           |
|         | Parameter compatibility information | Y                        | Optional           |
|         | User-to-user indicators             | N                        | -                  |
|         | Display information                 | N                        | -                  |
|         | Remote operations                   | N                        | -                  |
|         | End of optional parameters          | Y                        | Optional           |

**Release Complete Message**

| Message | Parameters                 | Supported in Indian ISUP | Optional/Mandatory |
|---------|----------------------------|--------------------------|--------------------|
| RLC     | Message type               | Y                        | Mandatory          |
|         | Cause Indicators           | Y                        | Optional           |
|         | End of optional parameters | Y                        | Mandatory          |

**Reset Circuit Message**

| Message | Parameters   | Supported in Indian ISUP | Optional/Mandatory |
|---------|--------------|--------------------------|--------------------|
| RSC     | Message type | Y                        | Mandatory          |



**Resume Message**

| Message | Parameters                 | Supported in Indian ISUP | Optional/Mandatory |
|---------|----------------------------|--------------------------|--------------------|
| RES     | Message type               | Y                        | Mandatory          |
|         | Suspend/Resume Indication  | Y                        | Mandatory          |
|         | Call reference             | N                        | -                  |
|         | End of optional parameters | Y                        | Optional           |

**Suspend Message**

| Message | Parameters                 | Supported in Indian ISUP | Optional/Mandatory |
|---------|----------------------------|--------------------------|--------------------|
| SUS     | Message type               | Y                        | Mandatory          |
|         | Suspend/Resume Indication  | Y                        | Mandatory          |
|         | Call reference             | N                        | -                  |
|         | End of optional parameters | Y                        | Optional           |

**Segmentation Message**

| Message | Parameters                        | Supported in Indian ISUP | Optional/Mandatory |
|---------|-----------------------------------|--------------------------|--------------------|
| SGM     | Message type                      | Y                        | Mandatory          |
|         | Access transport                  | Y                        | Optional           |
|         | User-to-user information          | Y                        | Optional           |
|         | Message compatibility information | Y                        | Optional           |
|         | Generic Digits                    | N                        | -                  |
|         | Generic notification              | N                        | -                  |
|         | Generic number                    | N                        | -                  |
|         | End of optional parameter         | Y                        | Optional           |

**Subsequent Address Message**

| Message | Parameters                 | Supported in Indian ISUP | Optional/ Mandatory |
|---------|----------------------------|--------------------------|---------------------|
| SAM     | Message type               | Y                        | Mandatory           |
|         | Subsequent number          | Y                        | Mandatory           |
|         | End of optional parameters | Y                        | Optional            |

**Unblocking Message**

| Message | Parameters   | Supported in Indian ISUP | Optional/ Mandatory |
|---------|--------------|--------------------------|---------------------|
| UBL     | Message type | Y                        | Mandatory           |

**Unblocking Acknowledgement Message**

| Message | Parameters   | Supported in Indian ISUP | Optional/ Mandatory |
|---------|--------------|--------------------------|---------------------|
| UBA     | Message type | Y                        | Mandatory           |

**Parameters for INDIAN ISUP**

The following sections describes the existing ETSI ISUP message parameters that will be enhanced/restricted or if the parameter is new in the existing message.

**IAM parameters****CPC (Calling Party Category):**

The format of Calling Party Category is as shown below:

|                          |   |   |   |   |   |   |   |
|--------------------------|---|---|---|---|---|---|---|
| 8                        | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Calling Party's Category |   |   |   |   |   |   |   |

In addition to all the Calling Party Categories defined in ITU-T recommendation Q.763 the following categories will be supported over Indian ISUP:

00001001 - National Operator with Trunk offer

11100001 - Operator with trunk offer

11100000 - CCB Subscriber

11100010 - Interception Operator

11100011 - Subscriber with Home meter

11100100 - PABX

11100101 - PABX with priority

11100110 - Line test desk

### **TMR (Transmission Medium Required):**

The format of Transmission Medium Required is as shown below:

|                              |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|
| 8                            | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Transmission Medium Required |   |   |   |   |   |   |   |

In the TMR parameter defined in ITU-T Q.763, The following values will not be used for Indian ISUP:

00000100 to 00000101

00000111 to 00001010

00010000 to 00101010

### **USI (User Service Information):**

The format of User Service Information is as shown below:

|    |                 |                 |   |                                      |   |   |   |   |
|----|-----------------|-----------------|---|--------------------------------------|---|---|---|---|
|    | 8               | 7               | 6 | 5                                    | 4 | 3 | 2 | 1 |
| 1  | ext.            | Coding standard |   | Information transfer capability      |   |   |   |   |
| 2  | ext.            | Transfer mode   |   | Information transfer rate            |   |   |   |   |
| 2a | Rate multiplier |                 |   |                                      |   |   |   |   |
| 3  | ext.            | Layer ident.    |   | User information<br>layer 1 protocol |   |   |   |   |
| 4  | ext.            | Layer ident.    |   | User information<br>layer 2 protocol |   |   |   |   |

|   |      |              |                                      |
|---|------|--------------|--------------------------------------|
| 5 | ext. | Layer ident. | User information<br>layer 3 protocol |
|---|------|--------------|--------------------------------------|

NOTE 1 – Octet 2a is required if octet 2 indicates multi-rate (64 kbit/s base rate); otherwise, it shall not be present.

NOTE 2 – Octets 3, 4, 5 or any combination of these octets may be omitted. Octet 3 may be extended as described in Recommendation Q.931.

The codes listed below are reserved and are not provided:

01 to 11 - Coding Standard

10001 and 11000 - Information Transfer Capability

10001 to 10111 and 11000 - Information Transfer Rate

00010, 00100, 00101, 00110 and 00111 - User information Layer-1 protocol identification

### ACM, ANM, CPG parameters

#### BCI (Backward Call Indicators):

The format of Backward Call Indicator is as shown below:

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 1 | H | G | F | E | D | C | B | A |
| 2 | P | O | N | M | L | K | J | I |

The parameter 'Backward Call Indicator' is defined in ITU-T Recommendation Q.763, The following bit fields are reserved and will not be used:

Bit DC - 10 (Binary Value)

### INF parameters

#### Information Indicators:

The format of Information Indicators is as shown below:

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 1 | H | G | F | E | D | C | B | A |
| 2 | P | O | N | M | L | K | J | I |

The parameter 'Information Indicators' is defined in ITU-T recommendation Q.763, The following bit value is fixed:

Bit H - Always set to 0

### **REL, CPG, ACM parameter**

#### **Cause Indicator:**

The format of Cause Indicator is as shown below:

|   | 8                                                               | 7               | 6 | 5     | 4        | 3 | 2 | 1 |
|---|-----------------------------------------------------------------|-----------------|---|-------|----------|---|---|---|
| 1 | ext.                                                            | Coding Standard |   | Spare | Location |   |   |   |
| 2 | ext.                                                            | C ause value    |   |       |          |   |   |   |
| 3 |                                                                 |                 |   |       |          |   |   |   |
| . |                                                                 |                 |   |       |          |   |   |   |
| . | Diagnostics (if any)                                            |                 |   |       |          |   |   |   |
| . |                                                                 |                 |   |       |          |   |   |   |
| n |                                                                 |                 |   |       |          |   |   |   |
|   | Note: Octet 3 to 3n may be omitted or repeated, e.g. 3' to 3'n. |                 |   |       |          |   |   |   |

The parameter 'Cause Indicator' is defined in ITU-T recommendation Q.76.

The following bit value is fixed:

Coding Standard - 01 to 11

Location - 0001, 0101 and 0111

### **CRG parameter**

#### **Charge Band:**

Please refer FN for Act A00004933.

### **Supplementary services supported by Indian ISUP**

The ETSI V2 supplementary services will be directly inherited by Indian ISUP. The following will be the list of supplementary services that will be supported over Indian ISUP.

Direct Dialing-In (DDI)

Multiple Subscriber Number (MSN)

Calling Line Identification Presentation (CLIP)

Calling Line Identification Restriction (CLIR)

Connected Line Identification Presentation (COLP)

Connected Line Identification Restriction (COLR)

Malicious Call Identification (MCID)

Call Forwarding Busy (CFB)

Call Forwarding No Reply (CFNR)

Call Forwarding Un-conditional (CFU)

Call Waiting (CW)

Call Hold (HOLD)

Three Party Service (3PTY).

### Interworking

The interworking of Indian ISUP with ETSI ISUP V2 and ANSI ISUP has been supported. The section below describes the message mapping and parameter mapping between Indian ISUP and ETSI ISUP, and Indian ISUP and ANSI ISUP respectively.

### Message mapping

#### Indian ISUP to ETSI ISUP interworking

All messages except national specific messages of Indian ISUP will be supported by ETSI ISUP.

#### Indian ISUP to ANSI ISUP interworking

| Received ANSI7+ Message  | Indian ISUP (Gen/Rx) | Generated ANSI7+ Message |
|--------------------------|----------------------|--------------------------|
| Forward Set-Up Messages  |                      |                          |
| IAM                      | IAM                  | IAM                      |
|                          | SAM                  |                          |
| Backward Set-Up Messages |                      |                          |
| ACM                      | ACM                  | ACM                      |
| CPG                      | CPG                  | CPG                      |
| ANM                      | CON                  | ANM                      |

| Call Supervision Messages |     |     |
|---------------------------|-----|-----|
| ANM                       | ANM | ANM |
| REL                       | REL | REL |

### Parameter mapping

All the parameter mapping from Indian ISUP to ETSI ISUP, and Indian ISUP to ANSI ISUP follows the same framework as ETSI ISUP to ETSI ISUP interworking except the ones listed below

#### Indian ISUP to ETSI ISUP (V2) Interworking

| S. No. | Indian ISUP                                      | ETSI ISUP V2                              |
|--------|--------------------------------------------------|-------------------------------------------|
| 1      | Cause Indicator                                  | Cause Indicator                           |
| 2      | Backward Call Indicator                          | Backward Call Indicator                   |
| 3      | Information Indicator                            | -                                         |
| 4      | Calling Party Category                           | Calling Party Category                    |
| 5      | Transmission Media Request                       | Transmission Media Request                |
| 6      | USI                                              | USI                                       |
| 7      | Circuit Group Supervision Message type           | -                                         |
| 8      | Redirection Information in REL Message           | -                                         |
| 9      | Automatic Congestion Level in REL Message        | Automatic Congestion Level in REL Message |
| 10     | Redirection Number in REL Message                | -                                         |
| 11     | Call Reference (Only in IAM)                     | Call Reference (Only in IAM)              |
| 12     | Display Information                              | -                                         |
| 13     | Connected number in CPG message                  | -                                         |
| 14     | Correlation ID in IAM Message                    | -                                         |
| 15     | Call Diversion Treatment Indicator               | -                                         |
| 16     | Charge Band                                      | -                                         |
| 17     | Message Compatibility Information in CRG Message | -                                         |
| 18     | Transit Network in IAM Message                   | -                                         |

**Indian ISUP to ANSI ISUP Interworking**

| <b>S. No.</b> | <b>Indian ISUP</b>                               | <b>ANSI ISUP</b>                       |
|---------------|--------------------------------------------------|----------------------------------------|
| 1             | Cause Indicator                                  | Cause Indicator                        |
| 2             | Backward Call Indicator                          | Backward Call Indicator                |
| 3             | Information Indicator                            | Information Indicator                  |
| 4             | Calling Party Category                           | Calling Party Category                 |
| 5             | Transmission Media Required                      | USI                                    |
| 6             | USI                                              | USI                                    |
| 7             | Circuit Group Supervision Message Type           | Circuit Group Supervision Message Type |
| 8             | Redirection Information in REL Message           | Redirection Information in REL Message |
| 9             | Automatic Congestion Level in REL Message        | -                                      |
| 10            | Redirection Number in REL Message                | Redirection Number in REL Message      |
| 11            | Call Reference (only in IAM)                     | Call Reference (only in IAM)           |
| 12            | Display Information                              | -                                      |
| 13            | Connected Number in CPG Message                  | -                                      |
| 14            | Correlation ID in IAM Message                    | -                                      |
| 15            | Call Diversion Treatment Indicator               | -                                      |
| 16            | Charge Band                                      | -                                      |
| 17            | Message Compatibility Information in CRG Message | -                                      |
| 18            | Transit Network in IAM Message                   | -                                      |

**Hardware Requirements or Dependencies**

Not Applicable

**Software Requirements or Dependencies**

Not Applicable

**Limitations and restrictions**

- Only Indian ISUP to Indian ISUP/ETSI V2/ANSI trunk interworkings will be supported.
- With respect to Lines, only Indian ISUP to IBN line interworking will be supported.



- Transit Network Selection parameter is supported only for transit call scenarios.
- Diagnostics of Cause Indicator parameter in REL message will be removed only when there are no optional parameters in the REL message
- Call Reference Parameter shall only be supported for IAM
- Display Information Parameter will not be supported

## Interactions

Since Indian ISUP is based on ETSI ISUP V2 this feature interacts with the base implementation of ETSI ISUP V2.

## Applicable customer facing sections

### Fault Management

Logs \_\_N/A\_\_

Alarms \_\_N/A\_\_

### Configuration

Data Schema \_\_Y\_\_

User Interface \_\_N/A\_\_

Element Management \_\_N/A\_\_

Security \_\_N/A\_\_

Service Order \_\_N/A\_\_

Office Parameters \_\_N/A\_\_

Accounting (includes AMA billing) \_\_N/A\_\_

Performance (includes operational measurements) \_\_N/A\_\_

## Glossary

| Term | Description                  |
|------|------------------------------|
| ACM  | Address Complete Message     |
| ACC  | Automatic Congestion Control |
| ACL  | Automatic Congestion Level   |
| ANM  | Answer Message               |
| BCI  | Backward Call Indicators     |

| Term | Description                                     |
|------|-------------------------------------------------|
| CGBA | Circuit Group Blocking Acknowledgement message  |
| CFB  | Call Forwarding Busy                            |
| CFN  | Call Forward Number                             |
| CFNR | Call Forwarding No Reply                        |
| CFU  | Call Forwarding Un-conditional                  |
| CLIR | Calling Line Identification Restriction         |
| CLIP | Calling Line Identification Presentation        |
| COLP | Connected Line Identification Presentation      |
| COLR | Connected Line Identification Restriction       |
| CPC  | Calling Party Category                          |
| CPG  | Call Progress message                           |
| CW   | Call Waiting                                    |
| DDI  | Direct Dialing-In                               |
| ETSI | European Telecommunications Standards Institute |
| HOLD | Call Hold                                       |
| IAM  | Initial Address Message                         |
| ISUP | ISDN User Part                                  |
| MSN  | Multiple Subscriber Number                      |
| MCID | Malicious Call Identification                   |
| MMI  | Man Machine Interface                           |
| RLC  | Release Complete message                        |
| REL  | Release message                                 |
| TMR  | Transmission Medium Requirement                 |
| USI  | User Service Information                        |
| 3PTY | Three Party Service                             |

## References

- [1] BSNL Specification No. S/CCS-02/03. JAN 2000

- [2] ITU-T Q.763 Formats and Codes of the ISDN User Part of Signalling System No. 7.
- [3] ITU-T Q.764 Signalling System No. 7 - ISDN User Part Signalling Procedures
- [4] Indian ISUP requirement document A00004931

## ***Product = CS2000***

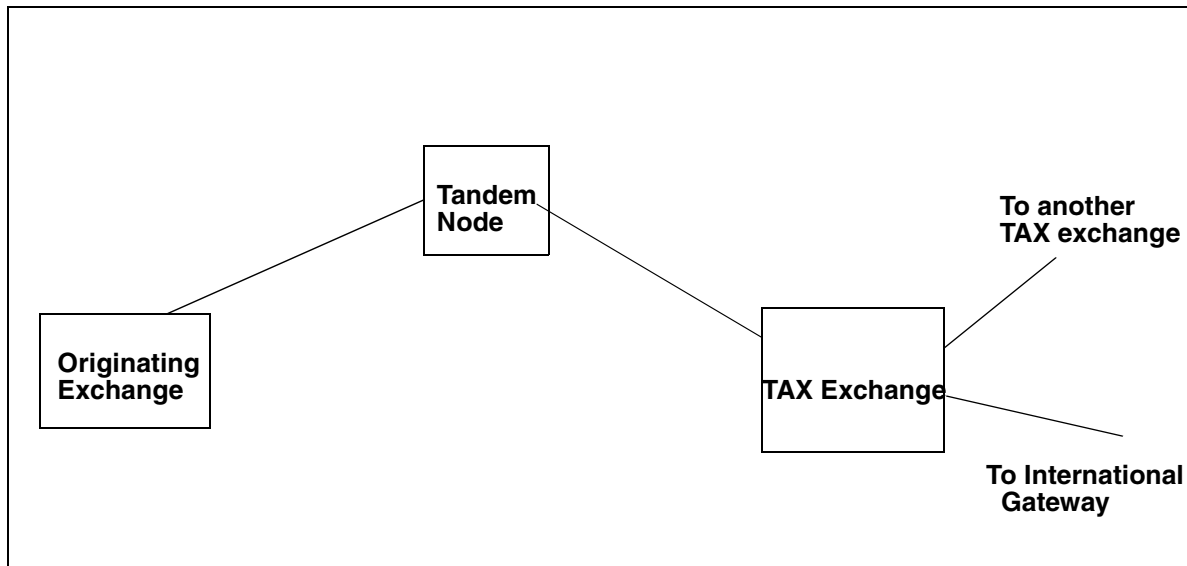
### **A00004933 - Indian ISUP Charging (Int'l PT-IP)**

#### ***Functional Description***

##### **Overview:**

In this feature we are dealing with following points:

- Charge Band Table.
- CDP node functionality.
- CGP node functionality.
- Exception condition on receipt of Charging message.
- Tandem/interworking node functionality.
- Generation of AMA record.

**Network Diagram in Indian scenario****Charge Band Table:**

Charge Band Tables are used to calculate the pulses for charging in the Indian Market. These tables hold the relationship between the CBN and pulse duration. For the Indian Market, CDP is the TAX exchange and CGP is the Local exchange.

**Charge Band Parameter:**

CBN parameter is the national parameter for Indian ISUP, which has following structure:

| Parameter                         | Type | Length (octets) | Code (hex) |
|-----------------------------------|------|-----------------|------------|
| Message Type                      | F    | 1               | 31         |
| charge band                       | O    | 3               |            |
| parameter code                    |      |                 | FF         |
| parameter length                  |      |                 | 01         |
| Charge band number                |      |                 |            |
| message compatibility information | O    | 3               | 38         |
| end of optional parameter         | O    | 1               | 00         |

Message compatibility information needs to be supported in the CRG message. The format of the message compatibility information parameter field is shown in table below:

|                              |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|
| 8                            | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <b>Instruction Indicator</b> |   |   |   |   |   |   |   |

The instruction indicator has following subfields:

bit

**A Transit at intermediate exchange indicator**

According to the Indian ISUP Charging specification it should have the value 0 for transit interpretation.

**B Release call indicator.**

According to the BSNL specification it should have value 1 which means release call, 0 value is used for do not release call.

**C Send notification indicator.**

Should have the value 0 which means do not send notification according to the specification.

**D Discard message indicator.**

According to the BSNL specification it should have value 0 which means do not discard the message (pass on).

**E Pass on not possible indicator.**

It has value 0 which means release call. Value 1 means discard information.

**F/G Broadband/narrowband interworking indicator.**

00 value to be used, meaning spare. The extension indicator defines if information continues through the next octet or not. It has a value 1 which means Last octet.

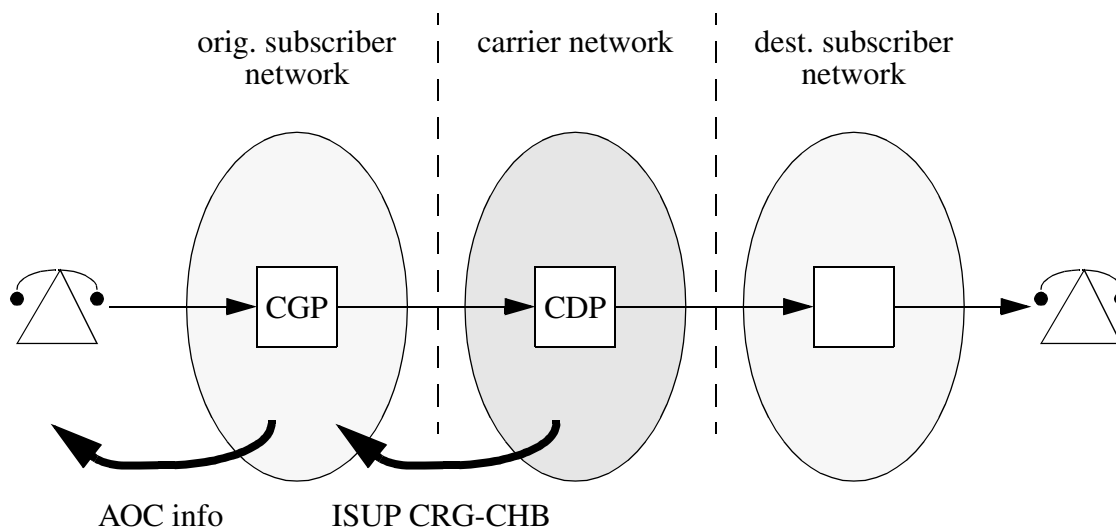
**Charge Determination point functionality:**

This feature provides the capabilities for the determination of charging related information between a charge determination point (CDP) and a charge generation point (CGP) which all may be located in multiple networks or on the same network.

Main function of CDP is to determine charge Band number and generation of CRG message. The charge generation point is an exchange where the charging information received from the network is converted into a format that is delivered to the actual subscriber.

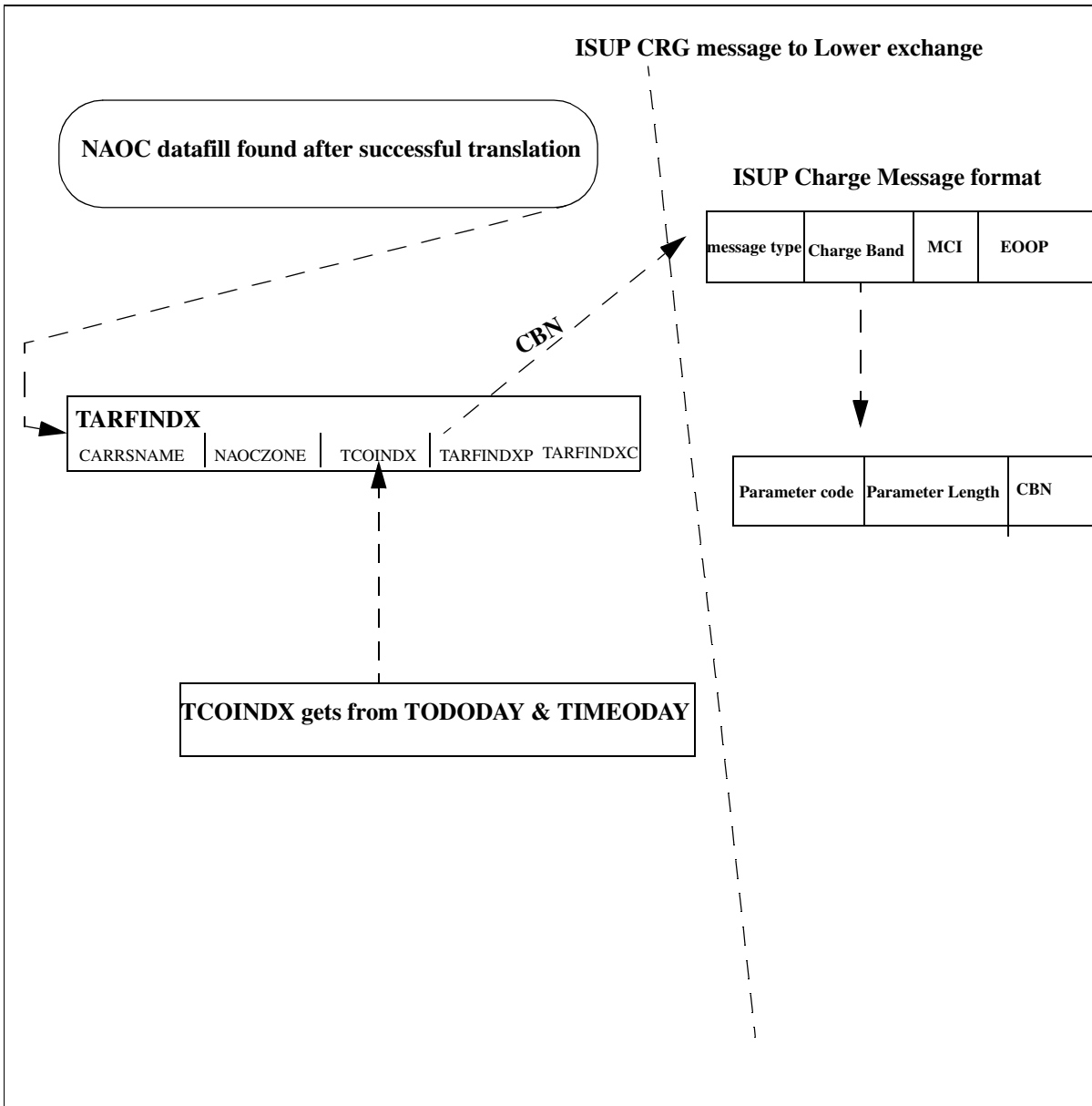
The following diagram shows a simple scenario where this functionality is needed and the location where the CDP (exchange to determine the tariff, send it over ETSI ISUP trunks) and CGP (receiving and processing OLE) reside during the call.

#### Network AOC support for Indian ISUP Charging



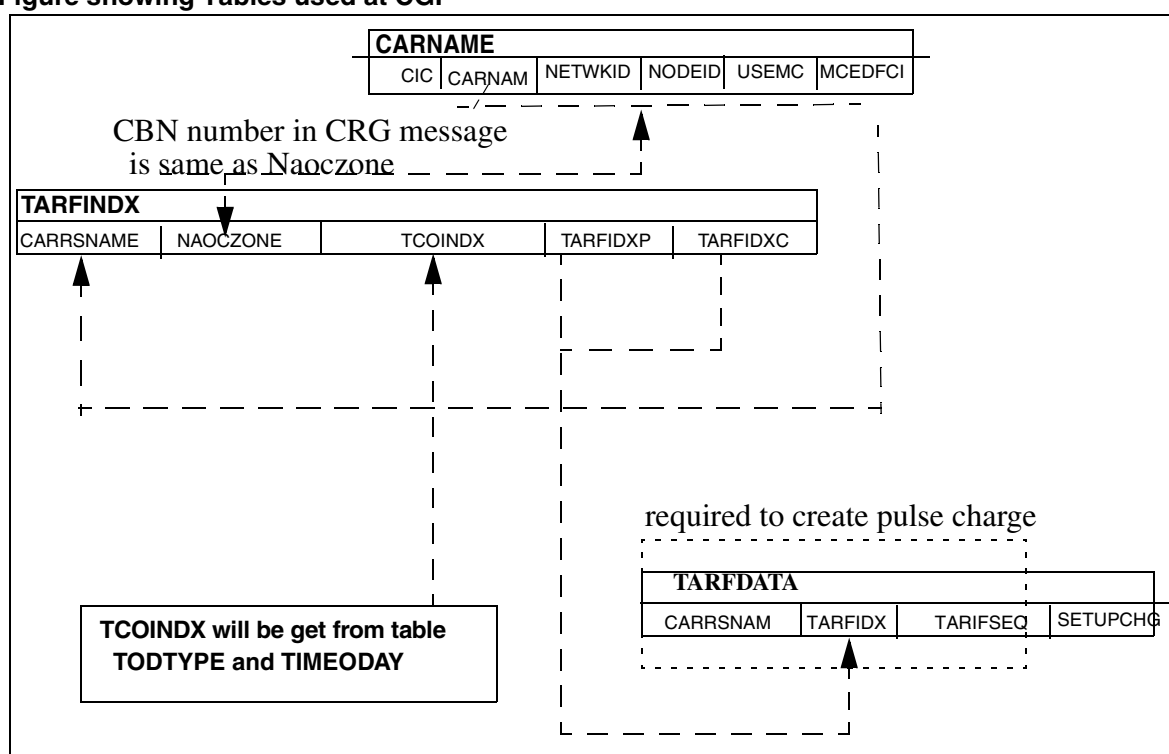
For this NAOC call, the charge determination point (CDP) is located in the carrier network and the charge generation point (CGP) is located in the originating subscriber network. At CDP the charge band number is calculated and send in ISUP CRG message to CGP which uses this information to get the tariff information with the existing charge band table. ISUP charge message is generated for all calls pre ACM at the TAX node. CRG message contains the national specific Charge Band Parameter. Charge Band Parameter contains CBN. The calculation of CBN at the TAX node is done according to the Time of the Day, Type of the call and day of the week. At the outgoing trunk, if NAOC datafill is found after successful translation, then the TARFINDXP indices in the table TARFINDX is taken and is treated as CBN. This CBN number is put in the filled of CRG message along with message compatibility and sent to the CGP. More details are provided later in the datafill section.

Figure showing table used in CDP and ISUP CRG-CHB format



**Charge generation point functionality:**

On CGP, Charge Band Number received in the CRG message will be used to determine tariff. Table SERVZONE has two keys SERVDN and NAOCZONE. SERVDN can be interpreted by the originating DN whereas the NAOCZONE is same as the CBN received in CRG message. The output of the table will be the CARRSNAM. In the table TARFINDX the keys are CARRSNAM, NAOCZONE, and TCOINDEX. TCOINDEX is interpreted from TIMEODAY and TODHEAD. The output of the table will be TARFIDXP (for preselect call) or TARFIDXC (for per call). TARFINDX output (tarfindxp and tarfindxc) is used in table TARFDATA to get the charge rate. Table CARRSNAME should be datafilled with charges of one pulse.

**Figure showing Tables used at CGP****Exception condition on receipt of CRG message:**

CS2K will release the call if any of the following cases will occur. These are the exception cases and only in certain scenario when it will occur the call will be released with proper cause value.

**The charge band number received is not in the charge band table:**

The IAM message will be sent from the LE to the TAX. The tandem (or intermediate) exchange will pass the IAM message to the TAX exchange. ISUP CRG message will be sent to the LE. If the LE find the CBN number in the charge message as corrupted or not in the datafill the call will be released



with the cause value 111. Figure , on page 974 gives the diagrammatic view of the scenario.

**CRG is not received before ANM/ CON:**

IAM message for a call is sent to the TAX. If there is any intermediate exchange in between which will pass the IAM message to TAX. If for any reason or for any error condition the CRG message is not sent before the ANM or CON message to LE, the LE will release the call with cause value 111. The diagrammatic view of the scenario is shown below.

**When the originating or interworking exchange receives an incorrect CRG message:**

Figure showing CRG-CHB received is corrupted

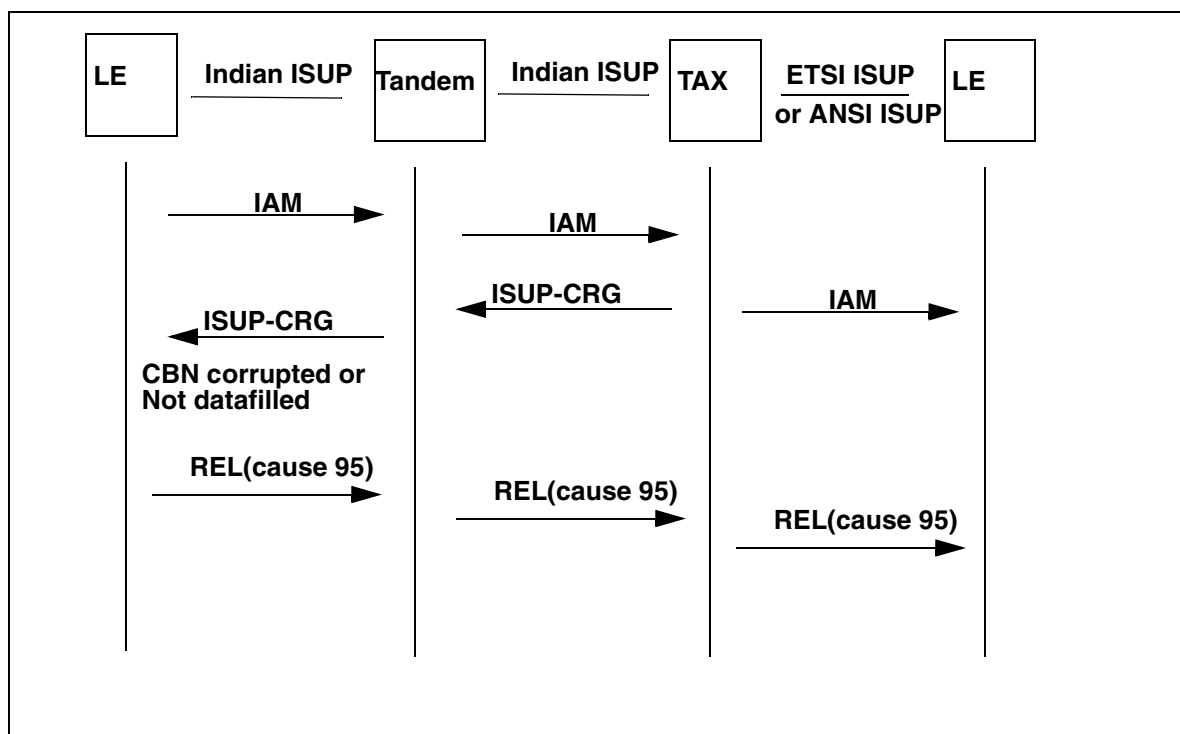


Figure showing no CRG-CHB received

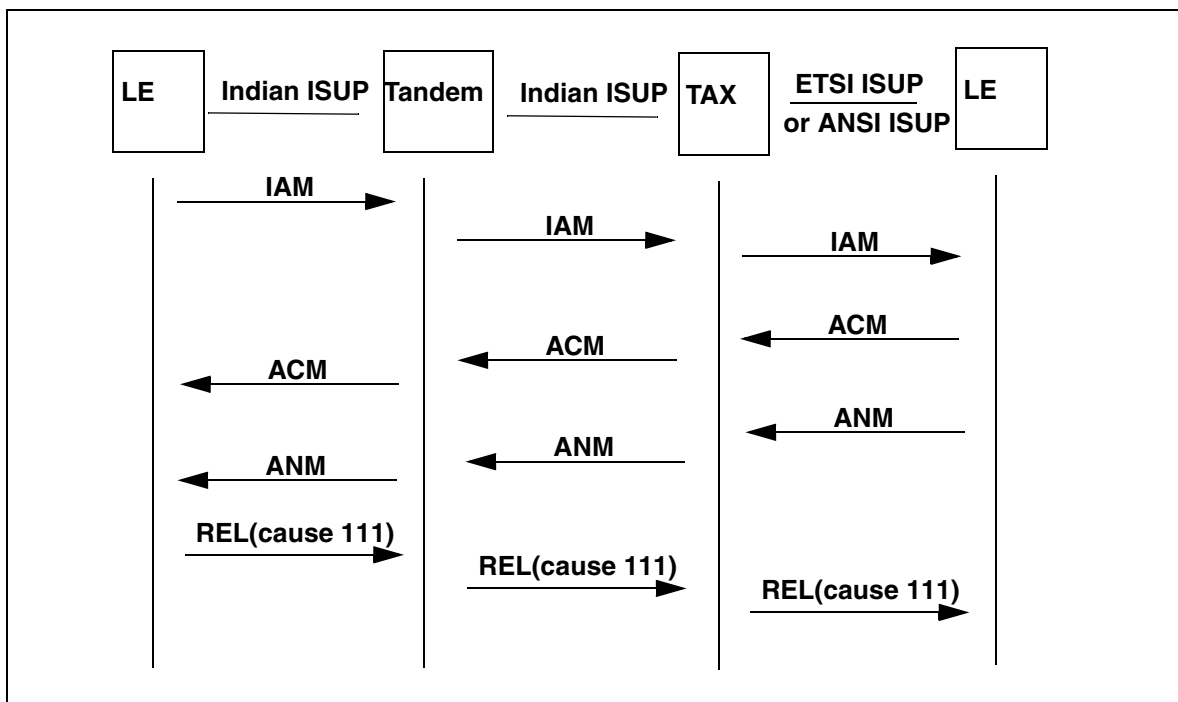
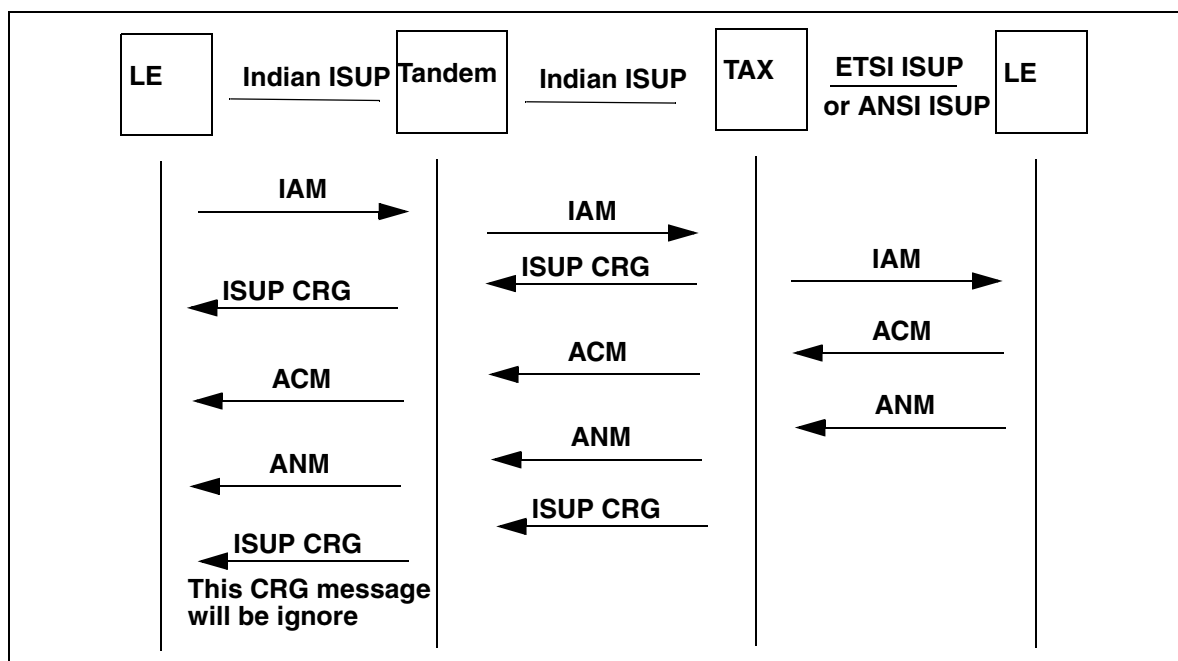


Figure showing CRG-CHB received after call established

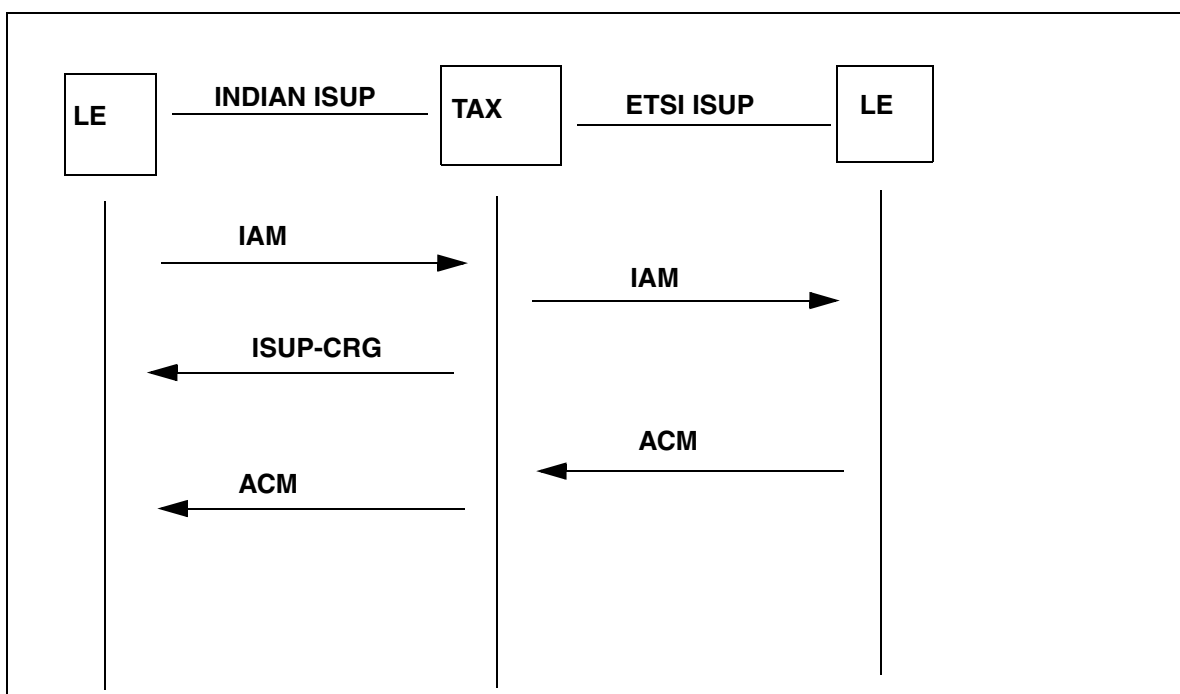


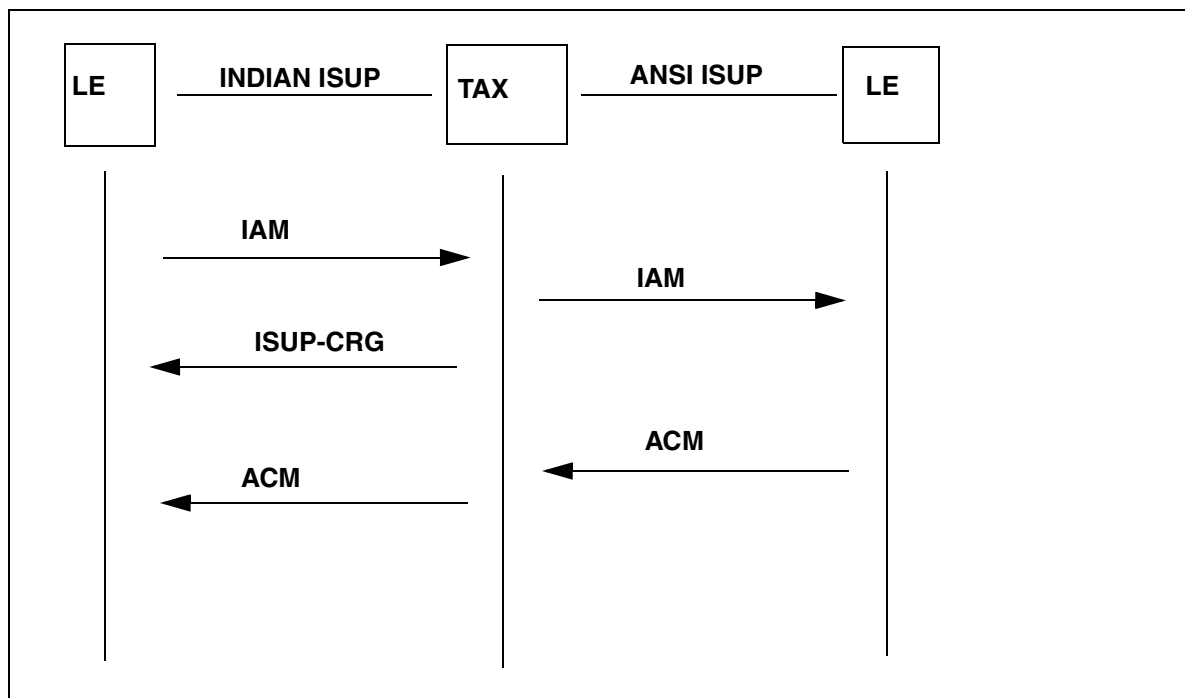
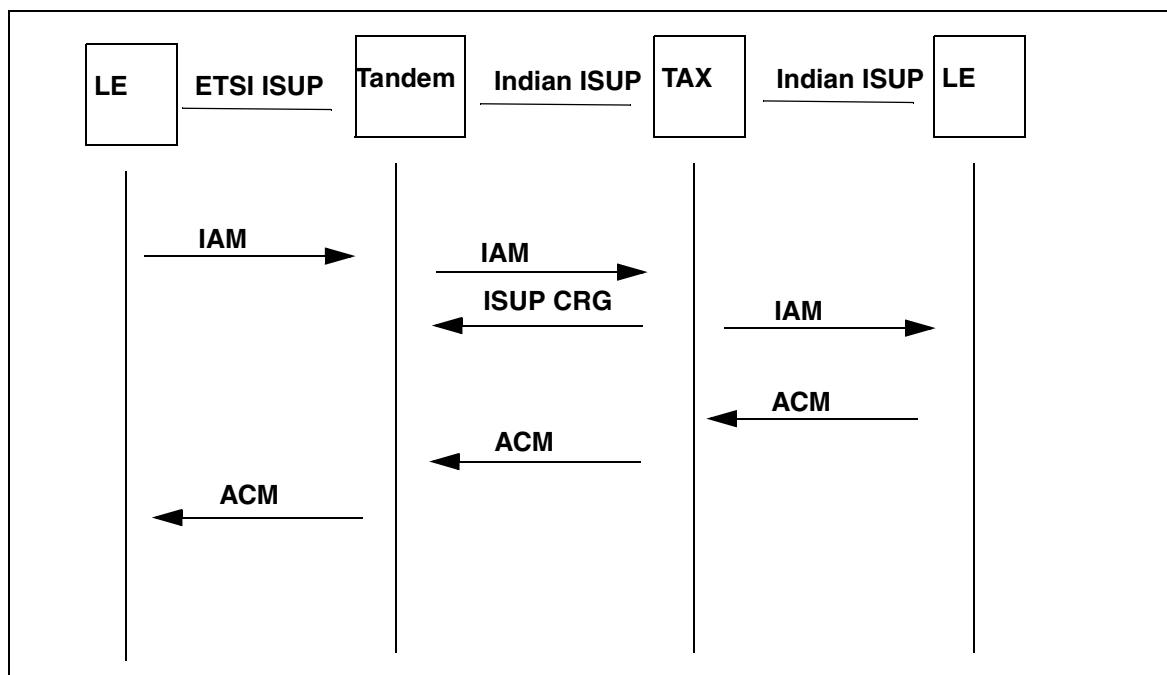
**Internetworking node functionality:**

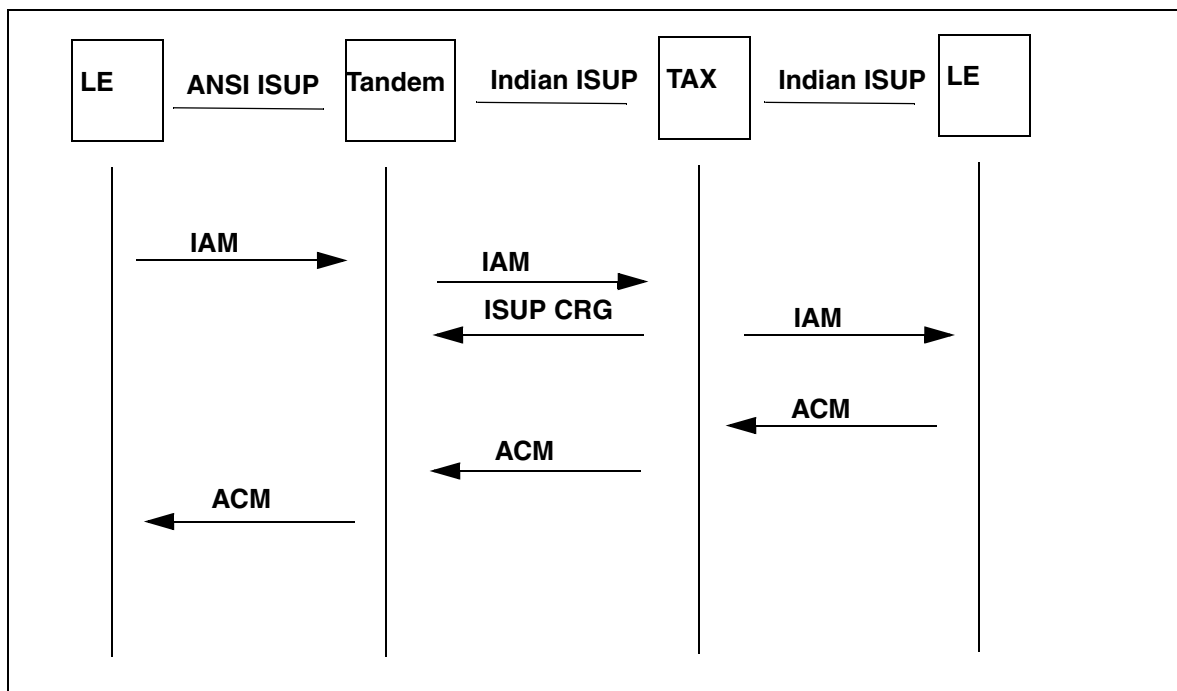
In case when Indian ISUP CRG message has to pass to Indian ISUP internetworking, the TAX exchange will generate the CBN and send the CRG message.

In case when Indian ISUP to ETSI ISUP the tax will send the CRG message to the originating exchange.

In case of ETSI ISUP to Indian ISUP the internetworking node need not send any CRG message. Same applies for ANSI ISUP and Indian ISUP internetworking.

**Indian ISUP <-> ETSIISUP**

**Indian ISUP <-> ANSI ISUP****ETSI ISUP <-> Indian ISUP**

**ANSI ISUP <-> Indian ISUP****Generation of AMA record:**

Indian ISUP has requirement to generate the AMA record for the call. AMA record is generated according to the Time of day, Day of week and Holiday.

In the Local exchange (i.e. CGP) a new option **Capt\_Charge\_Band\_Number** should be selected and AMASEL should be made ON to generate AMA record.

```

>table amaopts
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: AMAOPTS
>format pack; lis all;.
TOP
OPTION                                SCHEDULE
-----
Capt_Charge_Band_Number              ON
  
```

For the CDP the option Capt\_Charge\_Band\_Number is set to OFF condition.

## Background

### NAOC

Network Advice Of Charge (NAOC) implements the tariffing of calls between different exchanges. It can operate

- in a single carrier environment, where tariffs are sent between different nodes within the same carrier's network. This is the case addressed by the current activity.

For more information Refer to act id A00002637 page 36, 37.

### Datafill

Datafill is done by entering the keyword NAOC following by one of the zoning classes **NATL**, **SERV** in the **PXHEAD/PXCODE** tables as listed below. This activity provides changes to the way how NAOC has to be provisioned.

### The Translation Option:

After an ISUP IAM message is received and all the parameters inside it are decoded (Calling Party Number and Called Party Number) the translation tables are traversed.

This option has many possible sub-options: **natl**, **serv** are two of them. Each of the two sub-options are discussed separately.

**The naoc translation option should only be datafilled if you want to configure the exchange as CDP.** Datafilling this option on the wrong node may result in more than one CDP for the call, which can cause undesirable results at the CGP. At the CGP the NAOC option is not to be filled.

#### a) NAOC sub-option: NATL

If this translation selector/sub-option is encountered during the translation of the call, the call is assumed to be a National call. This means the call does not cross any international boundaries, and is a regular subscriber to subscriber call. In order to define which calls are National calls, they must be datafilled in the translation tables with the **naoc** selector, with the **natl** sub-option. The zone class is then set to **national**, and the NAOC Indian ISUP process begin to access the zoning/tariff database.

```

table natlzone;
>format pack; lis all;
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
ONDC NATLRNGE
TOP
-----
2 (0 1) $

```

#### b) Indian ISUP NAOC sub-option: SERV

If this translation selector/sub-option is encountered during the translation of the call, the call is assumed to be an International call. This means the destination number is outside the originators international boundary, and it is a regular subscriber to subscriber call. In order to define which calls are international calls, they must be datafilled in the translation tables with the **naoc** selector, with the **serv** sub-option.

```

table servzone;
>format pack; lis all;
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
SERVDN NAOCZONE CARRSNAME DISCINDX FREECALL
-----
222          23      RES63      $      405          N

```

#### Table PXHEAD:

PXHead table in CDP is to be filled with NATL, INTL or SER but at CGP PXHEAD is not to be datafilled.

```

TABLE PXHEAD
TYPEPX DFLT CONT ( CLASS NATL) ( AMAXLA MANTEST) ( XLT PX
K4PSTN) ( NAOC NATL)

```

#### Table PXCODE

```

TABLE PXCODE
TYPEPX 43 43 CONT (NAOC NATL) $

```

**Table TRKOPTS:**

```
TABLE TRKOPTS
add etsiv2og ISUP SVC ISUP SVC mykey
add etsiv2ic ISUP SVC ISUP SVC mykey
add etsiv2og OFFNET_CARRID OFFNET_CARRID 1041
add etsiv2ic OFFNET_CARRID OFFNET_CARRID 1041
```

**Table PCIXLA:**

```
TABLE PCIXLA
add 1041 PRESELECT 4 $ $ XLARTE PX TYPEPX PRESEL RTE 8 $
```

**Table OFCENG**

```
TABLE OFCENG
PRESELECT_DEFAULT_CARRIER 1041
ENABLE_METERING Y
```

**Table CARNAME**

```
>table carname;format pack;lis all;
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: CARNAME
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
CIC CARNAM NETWKID NODEID USEMCE MCEFLT MCEOVR
-----
1041 NAO 0 0 N CALL_BY_CALL USE_CALL_BY_CALL
```

**Table NATLZONE**

```
ONDC NATLRNGE
-----
add 211 (0 1) (195 2) (205 3) (220 2) (230 1) $
```



**Table RESNAME**

```

>table resname;format pack;list all;
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: RESNAME
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
TOP
RESNAM CIC MCEOVR
-----
RES63 1041 USE_CALL_BY_CALL
BOTTOM
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
RESNAM:
>res63
CIC:

MCEOVR:
>USE_CALL_BY_CALL

```

**Table DNSCRN**

```

TABLE DNSCRN
add 8206001 (CARRSNAM RES63)

```

**Table TARFINDX**

```

TABLE: TARFINDX
CARRSNAM NAOCZONE TCOINDX TARFIDXP TARFIDXC
-----
TOP
CARRSNAM NAOCZONE TCOINDX TARFIDXP TARFIDXC
-----
RES63      1      1      72      73
RES63      1      2      72      73
RES63      1      3      72      73
RES63      1      4      72      73
RES63      1      5      72      73
RES63      1      6      72      73
RES63      1      7      72      73
RES63      1      8       1       1

```

**Table TARFDATA**

add RES63 73 (300 -2 0 N) \$ 1 0 0 N  
add RES62 73 ( 3-2 0 N) \$ 1 0 0 N

**Table TODHEAD**

TODNAME TODTYPE DAYTYPES  
-----

add RES63 NAOC 3 (weekday) (weekend) \$

**Table DAYOWEEK**

TODNAME WEEKDAY DAYTYPE  
-----

add RES63 MON WEEKDAY  
add RES63 TUE WEEKDAY  
add RES63 WED WEEKDAY  
add RES63 THU WEEKDAY  
add RES63 FRI WEEKDAY  
add RES63 SAT WEEKEND  
add RES63 SUN WEEKEND

**Table TIMEODAY**

TODNAME DAYTYPE TIME DATA  
-----

add RES63 weekday 0 0 NAOC 1  
add RES63 weekday 2 0 NAOC 6  
add RES63 weekday 3 0 NAOC 7  
add RES63 weekday 8 0 NAOC 2  
add RES63 weekday 12 0 NAOC 3  
add RES63 weekday 18 0 NAOC 4  
add RES63 weekday 0 0 NAOC 5

**Hardware Requirements or Dependencies**

This feature does not add any additional hardware requirements and dependencies on top of those one used for NAOC and PCA or for the features that NAOC/PCA interact with.

## Software Requirements or Dependencies

This feature requires the following features to be activated by SOC:

- **NETK0019** Network AOC
- **NETK0024** Network AOC Tariff
- **NETK0028** CGP Network AOC

|                          |                         |
|--------------------------|-------------------------|
| SOC option name:         | NETK NETWORK AOC Tariff |
| SOC option title:        | NETK NETWORK AOC Tariff |
| SOC option control type: | code/state              |
| New SOC option?          | Yes                     |
| SOC option order code    | NETK0024                |
| Option defined in DRU:   | WT                      |
| Affected products:       | -                       |

**NAOC** tariff information is required, since this activity reuses the **NAOC** functionality. NAO datafill including the NAO tables and translation options have to be set up in a appropriate way.

## Limitations and restrictions

### Interactions

None

### Applicable customer facing sections

While metering as a whole does affect some of the areas listed below, this feature is not changing any of these areas.

#### Fault Management

|        |       |
|--------|-------|
| Logs   | _____ |
| Alarms | _____ |

#### Configuration

|                    |       |
|--------------------|-------|
| Data Schema        | _____ |
| User Interface     | _____ |
| Element Management | _____ |
| Security           | _____ |

|                                                 |       |
|-------------------------------------------------|-------|
| Service Order                                   | _____ |
| Office Parameters                               | _____ |
| Accounting (includes AMA billing)               | _____ |
| Performance (includes operational measurements) | _____ |

## ***Product = CS 2000***

### **A00004981 -- GWC-EM Internet Transparency VCAC provisioning support for CentrexIP gateways (Int'l IAW, Int'l IAC)**

#### **Description**

Activity A00002512 introduces VCAC in the SN07 timeframe. VCAC introduces Limited Bandwidth Links (LBLs) to the SESM (network panel) AND a topological hierarchy that links LBLs and NATs to form a tree of 'internet transparency middleboxes'. These devices are sent to the small lines GWCs via the

GWC-MIDDLE-BOX-MIB and  
GWC-MIDDLEBOX-RSRCUSAGE-MIB (the resource usage of the LBL)

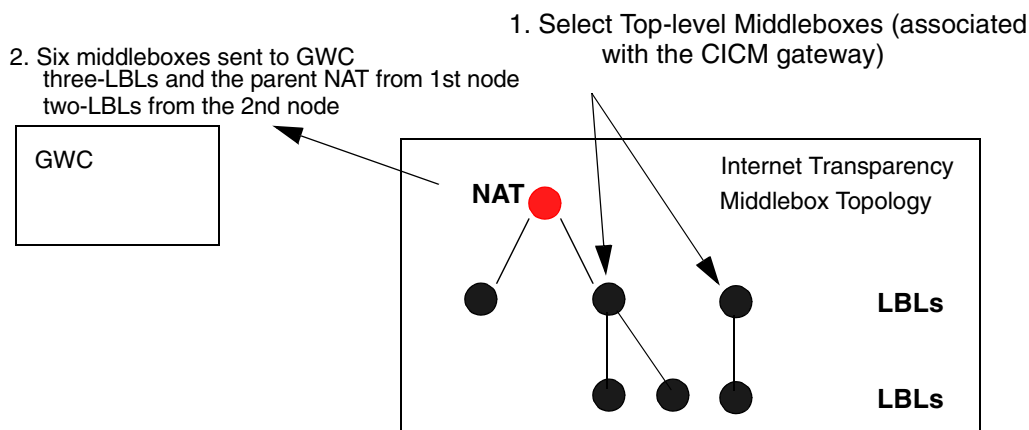
The model for this download of data has been designed for the "fixed-lines" IAD deployment, and occurs when the gateway is associated to an adjacent-middlebox.

This solution is to allow VCAC to function correctly for CICM gateways because unlike the small-lines IAD solution the CICM gateways resides in the TSP (succession) domain. The CICM **gateway** does not "fit" the concept of an "adjacent middlebox". The Adjacent middlebox will always be = 0 ( <none> ).

CICM users login to the CICM terminals, this sends a message to the GWC. In SN07 this message will contain the "discovered" adjacent middlebox of the terminal/endpoint. The CallP ITA function will then "look-up" this middlebox in the GWC static tables. For a more comprehensive problem definition please refer to the DID for this activity.

This solution allows the user to provision a set of root (top-level) middleboxes, allowing the GWCEM to send all the underlying middleboxes to the GWC. Ensuring that when a CICM user logs in, the middlebox will be available on the GWC, see the following figure.

### CICM gateway : Multiple root middlebox provisioning



This feature provides the following functionality (from the OSS and GWCEM - GUI):

- Provision a set of root middleboxes (a maximum of 5) per CICM gateway.
- Change the current provisioning of root middleboxes against provisioned CICM gateways.
- Display/Query the root middleboxes that are provisioned against a CICM gateway.

### Hardware Requirements or Dependencies

No new hardware is required or introduced by this feature. The application components provided by this feature execute as part of the SESM.

### Software Requirements or Dependencies

Dependencies:

- A00002512 VCAC provisioning for the GWCEM
- A00003568 E911 support will allow the CICM endpoints adjacent middlebox to be sent to the GWC when the user logs into the gateway.
- A00002739 GWC Call-P for the VCAC functionality.

### Limitations and restrictions

- The GWC has a limit of 2000 middleboxes.
- Internal counting limits the provisioning of gateways onto the same GWC as the associated chain of LBLs (they must be provisioned onto one GWC). This needs to be made clear in the engineering guidelines, and will be blocked by code to stop the user from completing such provisioning steps.

- A limit of 5 Root Middleboxes can be provisioned against a gateway.
- The CentrexIP users cannot roam outside of their provisioned “enterprise” area, and expect VCAC to function.

## Interactions

The following existing GUIs have been modified:

- Associate Media Gateway Dialog (see [“Associate gateway dialogue” on page 988](#)).
- Change Gateway Dialog (see [“Change gateway RootMiddleboxes dialogue” on page 989](#)).
- Gateway Provisioning Panel (see [“The GWC-EM Gateways Panel” on page 987](#))

The following existing XML commands have been modified:

- AssocMG (see [“XML command AssocMG” on page 990](#))
- ChangeRootMiddleBoxes (see [“XML command for ChangeRootmiddleboxes” on page 992](#)).
- QueryMG (see Figure and [“XML response for queryMG” on page 991](#)).

The on-line help facility will be updated with information on the use, syntax and valid values for all the above modifications/additions.

## Applicable customer facing sections

### Fault Management

Logs \_N/A\_

Alarms \_N/A\_

### Configuration

Data Schema \_X\_

User Interface \_X\_

Element Management \_N/A\_

Security \_N/A\_

Service Order \_N/A\_

Office Parameters \_N/A\_

Accounting (includes AMA billing) \_N/A\_

Performance (includes operational measurements) \_N/A\_

## GWC-EM GWC Provisioning

The GWC-EM has been modified to display the rootMiddleboxes that are provisioned against the CICM gateways.

### GUI Client : The Gateways panel

#### The GWC-EM Gateways Panel

Maintenance Provisioning

Controller Gateways Lines Carriers Media Proxies QoS Collectors

Retrieval criteria:  Retrieve

Limit results: 25 ☐ Replace List ☐ Append to List Retrieve All

Gateway List

| Name | IP Address | Profile | Max Terms | Res Terms | Protocol | Prot Vers | Prot Port | PEP Server | Adj IT |
|------|------------|---------|-----------|-----------|----------|-----------|-----------|------------|--------|
|------|------------|---------|-----------|-----------|----------|-----------|-----------|------------|--------|

Number of results: 0 Associate... Disassociate Change... Details...

## Gateway Provisioning changes

The association of a CICM gateway (or other future Roaming user style gateways) to a GWC has been modified to allow the user to provision a set of root middleboxes (0..5 only). Already provisioned gateways can also be changed to have a different set of (or none) root middleboxes.

## GUI Client

### Associate gateway GUI

The Associate gateway dialogue has been modified to display a new internet transparency panel, this occurs when a CICM gateway has been selected. The user may optionally select up to 5 root middleboxes to associate with the CICM gateway, these are selected to define the roaming area where VCAC will function for the CICM users/endpoints. The root middlebox selection process is controlled from within the Root middlebox selection area, this is the same for either the Associate gateway or the Change gateway commands.

**Associate gateway dialogue**

**Associate Media Gateway**

Gateway name:

Gateway IP address:

Gateway controller name: GWC-115

Gateway profile name: CICM

Reserved terminations:

Gateway site name: LG

**Root Middlebox Selection**

Middlebox Name:

Middleboxes: 

- lbl2
- lbl22
- lbl222
- lbl22b
- lbl4
- lbl5
- mflLBL.1
- nat1**

Root Middleboxes: 

- lbl1

Add >> << Rem

**Signal Protocol**

Protocol type: MEGACO (4)

Protocol port: 2944

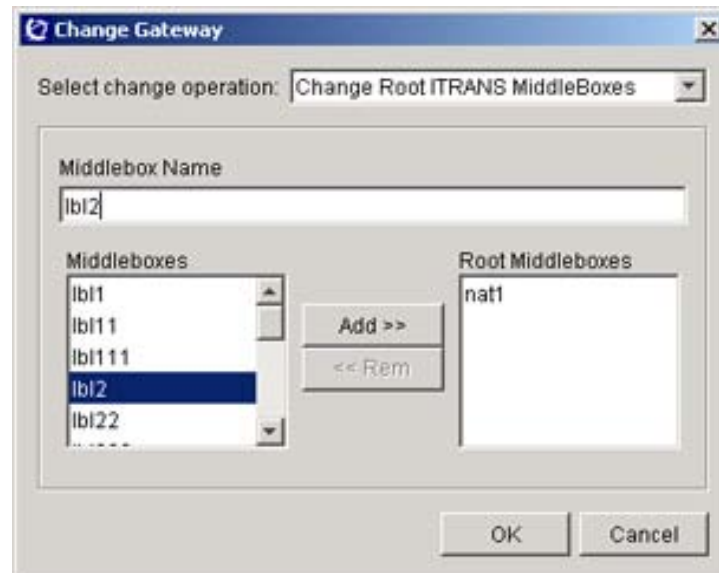
Protocol version: 1.0

OK Cancel

### Change Gateway GUI

The change gateway Root Middleboxes dialogue has been created to allow the user to modify (or remove) the Root Middleboxes associated with an already provisioned CICM gateway.



**Change gateway RootMiddleboxes dialogue****Root Middleboxes Details**

Root Middlebox details can be displayed by selecting the details button.

**XML Interface**

The AssocMG and QueryMG interface has been modified to allow/display (0..5) root middleboxes. A new interface ChangeRootMiddleboxes has been added to the ItransIf code. If any request is unsuccessful, an error message is returned as described in Appendix B.

## AssocMG command

### XML command AssocMG

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>cs2kCfgMgrIf</Interface>
    <Methods>
      <assocMG usn="1" version="1.0">
        <Parameters>
          <mgUIName>MGBOBXML.5</mgUIName>
          <mgProfileName>CICM</mgProfileName>
          <mgIpAddr>22.33.44.56</mgIpAddr>
          <mgProtocolType>4</mgProtocolType>
          <mgProtocolVersion>1.0</mgProtocolVersion>
          <mgProtocolPort>2944</mgProtocolPort>
          <gwcUIName>GWC-113</gwcUIName>
          <reservedTerminations>5</reservedTerminations>
          <rootMiddleboxName1>NAT1</rootMiddleboxName1>
          <rootMiddleboxName2>NAT2</rootMiddleboxName2>
          <rootMiddleboxName3>NAT3</rootMiddleboxName3>
          <rootMiddleboxName4>NAT4</rootMiddleboxName4>
          <rootMiddleboxName5>NAT5</rootMiddleboxName5>
        </Parameters>
      </assocMG>
    </Methods>
  </Command>
</CommandList>
```

## QueryMG command

### XML command for queryMG (No change)

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>cs2kCfgMgrIf</Interface>
    <Methods>
      <queryMG usn="1" version="1.0">
        <Parameters>
          <mgUIName>MGBOBXML.5</mgUIName>
        </Parameters>
      </queryMG>
    </Methods>
  </Command>
</CommandList>
```

**XML response for queryMG**

```
<?xml version="1.0" encoding="UTF-8"?>
<CommandList>
<Response>
<Interface>cs2kCfgMgrIf</Interface>
<Methods><queryMG usn="1" version="1.0">
<ReturnData>
<Row>
    <mgUIList>bobcicm.1</mgUIList>
    <mgIpList>43.43.22.11</mgIpList>
    <callServerId>CS2K1_MAID</callServerId>
    <gwcUIName>GWC-113</gwcUIName>
    <svcTypeList>0</svcTypeList>
    <nodeName>LG    033</nodeName>
    <engrEndPoints>123</engrEndPoints>
    <protType>megaco</protType>
    <protVersion>1.0</protVersion>
    <protPort>2944</protPort>
    <profileName>CICM</profileName>
    <rootMiddleboxName1>NAT1</rootMiddleboxName1>
    <rootMiddleboxName2>NAT2</rootMiddleboxName2>
    <rootMiddleboxName3>NAT3</rootMiddleboxName3>
    <rootMiddleboxName4>NAT4</rootMiddleboxName4>
    <rootMiddleboxName5>NAT5</rootMiddleboxName5>
  </Row><RC>0</RC><MsgTxt>Query of a Single MG
was successful</MsgTxt>
</ReturnData>
</queryMG>
</Methods>
</Response>
</CommandList>
```

## ChangeRootMiddleboxes command

### XML command for ChangeRootmiddleboxes

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
  <Command>
    <Interface>ITransIf</Interface>
    <Methods>
      <changeRootMiddleboxes usn="1" version="1.0">
        <Parameters>
          <MGName>bobcicm.1</MGName>
          <rootMiddleboxName1>NAT1</rootMiddleboxName1>
          <rootMiddleboxName2>NAT2</rootMiddleboxName2>
        </Parameters>
      </changeRootMiddleboxes>
    </Methods>
  </Command>
</CommandList>
```

## Authorization for Commands

The security for the GUI Client and OSSgate interface includes support for permission or 'Authorization' levels for commands. Each command is associated with one or more user groups. In order to execute a command, a user must belong to at least one of the associated user groups. The user groups associated with the new commands associated with this feature are specified in the table below.

### NEW Internet Transparency Commands Authorization

| Command                                | User Group |       |        |          |       |
|----------------------------------------|------------|-------|--------|----------|-------|
|                                        | mgcadm     | mgcrw | mgcmte | mgcsprov | mgcro |
| ChangeRootMiddleboxes                  | X          | X     |        |          |       |
| Display Gateway Root Middlebox details | X          | X     | X      | X        | X     |

## Upgrade

When upgrading the GWCEM to SN07 when CICM gateways are present in the Network:

It is necessary to (i) set the Call Agent ID and then (ii) update the IDs for all enterprises (NATs) on a CICM to new IDs **prior** to upgrading the CICM Gateway.

Hence the recommended order for upgrade is as described below:

### Upgrade Procedure

1. Upgrade GWCEM to SN07.
2. Set Call Agent ID in GWCEM. This causes all existing middlebox ids to be upgraded to the SN07 format.
3. Upgrade the GWC to SN07 (this may also be done after step 5).
4. Upgrade CICM EM to SN07
5. On the CICM EM, using the provided interface, retrieve the middlebox IDs for all NATs from GWCEM. This will update the NAT information stored in the CICM EM with the new SN07 format middlebox ids.
6. Upgrade CICMs to SN07. CICM upgrade from SN06.2 to SN07 will be done by adding SN07 CICM to GWC and migrating users across to new CICM. The SN07 CICM will have the new format middlebox IDs. All terminals will re-login as part of this upgrade, hence all get new format IDs associated with them in the CICM.

## Glossary

| Term  | Description                           |
|-------|---------------------------------------|
| GUI   | Graphical User Interface              |
| GWC   | Gateway Controller                    |
| GWCEM | Gateway Controller Element Manager    |
| NAT   | Network Address Translation           |
| LBL   | Limited Bandwidth Link                |
| VCAC  | Virtual Connections Admission Control |

## Appendix A for A00004981: XML validation schemas

```

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    version="1.0"
    xml:lang="en" >

                                                                    <!--
*****
***** -->
    <!-- * Define AssocMG Method Parameters -->
                                                                    <!--
*****
***** -->
    <xsd:complexType name="assocMGMethodType">
        <xsd:all>
            <xsd:element name="Parameters" type="assocMGParamsType" />
        </xsd:all>
        <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
    </xsd:complexType>
    <xsd:complexType name="assocMGParamsType">
        <xsd:sequence>
            <xsd:element name="mgUIName" type="NoSpaceNameType" />
            <xsd:element name="mgProfileName" type="NoSpaceNameType" />
            <xsd:element name="mgIpAddr" type="IPAddressType" />
            <xsd:element name="mgProtocolType" type="MGProtocolType" />
            <xsd:element name="mgProtocolVersion" type="xsd:decimal" />
            <xsd:element name="mgProtocolPort" type="xsd:unsignedShort" />
            <xsd:element name="mgSiteName" type="MGSiteNameType" minOccurs="0" />
            <xsd:element name="gwcUIName" type="GWCNameType" minOccurs="0" />
            <xsd:element name="reservedTerminations" type="ReservedTerminationsType"
minOccurs="0" />
            <xsd:choice minOccurs="0">
                <xsd:element name="pepServerName" type="xsd:token" />
                <xsd:element name="itransMiddleboxName" type="xsd:token" />
                <xsd:element name="rootMiddleboxName1" type="NoSpaceNameType" />
            </xsd:choice>
            <xsd:element name="rootMiddleboxName2" type="NoSpaceNameType" minOccurs="0" />
            <xsd:element name="rootMiddleboxName3" type="NoSpaceNameType" minOccurs="0" />
            <xsd:element name="rootMiddleboxName4" type="NoSpaceNameType" minOccurs="0" />
            <xsd:element name="rootMiddleboxName5" type="NoSpaceNameType" minOccurs="0" />
        </xsd:sequence>
    </xsd:complexType>

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    version="1.0"

```

```

xml:lang="en" >

                                                                 <!--
*****
***** -->
<!-- * Define changeRootMiddleboxes Method Parameters -->
                                                                 <!--
*****
***** -->
<xsd:complexType name="changeRootMiddleboxesmethodType">
  <xsd:all>
    <xsd:element name="Parameters" type="changeRootMiddleboxesparamsType" />
  </xsd:all>
  <xsd:attributeGroup ref="Usn_VersionAttrbGroup" />
</xsd:complexType>
<xsd:complexType name="changeRootMiddleboxesparamsType">
  <xsd:sequence>
    <xsd:element name="MGname" type="NoSpaceNameType" />
    <xsd:element name="rootMiddleboxName1" type="NoSpaceNameType" />
    <xsd:element name="rootMiddleboxName2" type="NoSpaceNameType" minOccurs="0" />
    <xsd:element name="rootMiddleboxName3" type="NoSpaceNameType" minOccurs="0" />
    <xsd:element name="rootMiddleboxName4" type="NoSpaceNameType" minOccurs="0" />
    <xsd:element name="rootMiddleboxName5" type="NoSpaceNameType" minOccurs="0" />
  </xsd:sequence>
</xsd:complexType>

```

## Appendix B for A00004981: Error codes and messages

### Return codes when command is unsuccessful

| Cause of error                                                        | Return code | Example return messages                                                                                                                      |
|-----------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| The Media Gateway hasn't got a ITransRoam service type in its profile | 16          | The use of Root Middle Box name(s) is invalid. The Gateway does not support this internet transparency service.                              |
| The GWCEM has failed the provisioning method.                         | 21          | GWCEM failed to associate the MG with the GWC, Reason the number of distinct Middleboxes used gwc [gwc id] exceeds the limit of 2000 per GWC |
| Incorrect command version in query                                    | 301         | Unsupported version                                                                                                                          |

| Cause of error                                                                                                       | Return code | Example return messages                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Platform applications internal error:<br>OSS Interface applications cannot<br>connect to required server application | 302         | Interfacing error                                                                                                                                                        |
| Unable to change<br>RootmiddleboxNames because of a<br>database error occurred                                       | 303         | Database error occurred during setting of<br>Root MiddleboxNames                                                                                                         |
| Unable to add/change<br>RootmiddleboxNames because of<br>invalid input data                                          | 304         | Cannot set RootMiddleboxName because<br>VCAC internal counting constraint hit.<br>LBLs must be on one GWC.                                                               |
| User is not a member of any of the<br>user groups allowed to perform this<br>action                                  | 501         | Insufficient permissions to perform this<br>operation                                                                                                                    |
| General SAX parser exceptions                                                                                        | None        | caught ParserEx,Reason: Caught<br>SAXException trying to parse xml-<br>Details:org.xml.sax.SAXParseException:<br>Element type "rootMiddleboxName6"<br>must be declared.> |

### Example Return Messages

#### Error message example:

```
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList>
<Command>
<Interface>cs2kCfgMgrIf</Interface>
<Methods>
<assocMG usn="1" version="1.0">
<Parameters>
<mgUIName>MGBOBXML.5</mgUIName>
<mgProfileName>CICM</mgProfileName>
<mgIpAddr>22.33.44.56</mgIpAddr>
<mgProtocolType>4</mgProtocolType>
<mgProtocolVersion>1.0</mgProtocolVersion>
<mgProtocolPort>2944</mgProtocolPort>
<gwcUIName>GWC-113</gwcUIName>
<reservedTerminations>5</reservedTerminations>
<rootMiddleboxName1>NAT1</rootMiddleboxName1>
<rootMiddleboxName2>NAT2</rootMiddleboxName2>
<rootMiddleboxName3>NAT3</rootMiddleboxName3>
<rootMiddleboxName4>NAT4</rootMiddleboxName4>
<rootMiddleboxName5>NAT5</rootMiddleboxName5>
</Parameters>
</assocMG>
</Methods>
</Command>
</CommandList>
<?xml version="1.0" encoding="UTF-8" ?>
<CommandList><Response><Interface>cs2kCfgMgrIf</Interface><Methods><assocMG
usn="1"
version="1.0"><RC>21</RC><MsgTxt>GWCEM failed to associate the MG with the GWC, Reason is The Root Middlebox :
NAT1 does not exist </MsgTxt></assocMG></Methods></Response></CommandList>
```



**Success message example:**

```

<?xml version="1.0" encoding="UTF-8" ?>
<CommandList><Response>
<Interface>cs2kCfgMgrIf</Interface>
<Methods>
<assocMG usn="1" version="1.0">
<ReturnData><Row>
<gwcUIName>GWC-113</gwcUIName>
<gwcIpAddr>47.165.172.76</gwcIpAddr>
<mgNodeName>LG 00 1</mgNodeName>
</Row><RC>0</RC>
<MsgTxt>The MG was successfully associated with a GWC</MsgTxt>
</ReturnData>
</assocMG>
</Methods>
</Response></CommandList>

```

## Appendix C for A00004981: XML Commands: description of method parameters

### Parameter definitions

- **encoding??**
- **version** - The version refers to the version of the method or operation - e.g., the changeRootMiddleboxNames operation may have version 1.0 and 2.0, where version 1.0 takes parameters X and Y and version 2.0 takes parms X, Y, and Z. TYPE *decimal*.
- **usn** - Unique Sequence Number. This parameter is introduced to facilitate sending multiple XML commands in one file. This parameter value will be used to match the responses with the requests. TYPE *integer*.
- **ReturnCode value**- A numeric value indicating the result of the attempted operation (see Table 3, for range and definitions of each possible value). TYPE *string*.
- **Return code text**- Appropriate text that describes the result of the operation. TYPE *string*.
- **rootMiddleboxName1(1..5)** - The Middlebox name(s) of the root node middlebox(es) that encompasses the enterprise network that the CICM gateway operates with.. TYPE *NoSpaceNameType* .(32 character token without spaces, see xsd definitions in Appendix A, section )

### Method Parameters

Method parameters are defined below. Input data is mandatory except where indicated otherwise.

1. **AssocMG** - Method to associate a gateway to the CS2K. This method has the following NEW parameters: (only NEW ones described, see standard documentation for the other definitions).
  - Input data:
    - usn
    - version
    - rootMiddleboxName1 (Optional, Cannot be included as well as itransMiddleboxName or pepServerName) - defines the 1st RootMiddlebox for this gateway.
    - rootMiddleboxName2 (Optional, Cannot be included as well as itransMiddleboxName or pepServerName) - defines the 2nd RootMiddlebox for this gateway.
    - rootMiddleboxName3 (Optional, Cannot be included as well as itransMiddleboxName or pepServerName) - defines the 3rd RootMiddlebox for this gateway.
    - rootMiddleboxName4 (Optional, Cannot be included as well as itransMiddleboxName or pepServerName) - defines the 4th RootMiddlebox for this gateway.
    - rootMiddleboxName5 (Optional, Cannot be included as well as itransMiddleboxName or pepServerName) - defines the 5th RootMiddlebox for this gateway.
  - Output data:
    - usn ( value should be the same as the input )
    - version ( value should be the same as the input )
    - ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.
2. **QueryMG** - Method that gets the gateway information from a CS2K. This method has the following NEW Output parameters: (only NEW ones described, see standard documentation for the other definitions) :
  - Output data:
    - rootMiddleboxName1 - defines the 1st RootMiddlebox for this gateway.
    - rootMiddleboxName2 - defines the 2nd RootMiddlebox for this gateway.

- rootMiddleboxName3 - defines the 3rd RootMiddlebox for this gateway.
  - rootMiddleboxName4 - defines the 4th RootMiddlebox for this gateway.
  - rootMiddleboxName5 - defines the 5th RootMiddlebox for this gateway.
- 3. **changeRootMiddleboxes** - Method that changes the rootMiddleboxes for a given gateway. This method has the following parameters:
  - Input data:
    - usn
    - version
    - MGname indicates the gateway that this change command is for.
    - rootMiddleboxName1 - defines the 1st RootMiddlebox.
    - rootMiddleboxName2 - (Optional) defines the 2nd Root Middlebox.
    - rootMiddleboxName3 - (Optional) defines the 3rd Root Middlebox.
    - rootMiddleboxName4 - (Optional) defines the 4th Root Middlebox.
    - rootMiddleboxName5 - (Optional) defines the 5th Root Middlebox.
  - Output data:
    - usn ( value should be the same as the input )
    - version ( value should be the same as the input )
    - ReturnCode - indicates via an integer value if the command has been successful or, if not, the error type and includes a brief textual message with further information.





# iSN07 Feature Deltas

## *Product = World Trade*

### **A00001914 -- CEPT International Line Restriction Enhancements (Succession on DMS)**

#### ***Functional Description***

International Line Restriction feature gives the administrator the capability to restrict outgoing calls for the subscriber according to the predefined restriction classes. The administrator can assign, de-assign, activate or deactivate this feature on a line via Service Order or assign and de-assign the feature by using the default option functionality. Subscribers are able to activate, deactivate or interrogate ILR feature by dialing access codes.

The following enhancements are provided by this activity over existing CEPT International Line Restriction Feature:

- Two new restriction classes are defined.
- Temporary opening of barred lines are provided.
- Special tone is given to subscriber who has ILR feature active.

These enhancements are developed according to the requirements of the Bangladesh Market.

The existing International Line Restrictions feature became more flexible by a new activity A00002641 CEPT PSTN: Analogue Outgoing Call Barring. A new table ILRCLASS is defined for datafilling barring classes. For detailed information about this new table, please refer to that feature's FN document.

The ILRCLASS table stores the definition of the barring programs for the ILR service. The International Line Restriction line option references this table.

Table ILRCLASS can hold up to maximum of 100 tuples and the same should be the number of R-Codes, that is R-code range varies from 00 to 99. The R-Codes values are unique in table ILRCLASS, except 'NN'.

During ONP the ILRCLASS table is populated with the previously hard coded barring programs and the R-codes of the ILRCLS tuple in table ISERVOPT. The R-codes are not stored in the ILRCLS tuple in ISERVOPT any more.

During ONPs to this activity, the default tuples are restored.

The existing behavior about activating, deactivating or interrogating ILR feature sequence has not been changed.

The details of the enhancements developed according to the requirements of the Bangladesh Market are below:

### New Restriction Classes

Two new restriction classes are defined. These are Deny only National calls (DNATL) and Deny only LoCaL calls (DLCL).

- **DNATL (Deny only NATional):** In this restriction class, deny only national class calls but allow other calls.
- **DLCL (Deny only LoCaL):** In this restriction class, deny only local class calls but allow other calls.

These restriction classes are added to the default restriction classes. They will be restored at ONPs similar to existing ones.

### Example of table ISERVOPT datafill

```
>table iservopt
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISERVOPT
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>ilrcls
OPTION:
>ilrcls
ILR_PROG:
>y
SDT:
>y
CR_PSWD:
>n
TUPLE TO BE ADDED:
ILRCLS
ILRCLS Y Y N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Example of table ILRCLASS datafil**

```

>table ilrclass
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ILRCLASS
>pos dnatl
          DNATL      NN
                      ( NATL) $
                      $
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
RCODE: NN
>02
IXLAOPT: NATL
>
IXLAOPT:
>$
DNOPT:
>$
TUPLE TO BE CHANGED:
          DNATL      02
                      ( NATL) $
                      $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
JOURNAL FILE INACTIVE

```

**Temporary Opening Of Barred Lines**

A new functionality is defined for ILR feature. This functionality provides the subscriber to deactivate the feature per call basis. The line will be barred again automatically after subscriber going on hook.

This functionality can be used either for a single party call or at the second leg of a complex call such as enquiry, I3WC or I6WC.

If a subscriber wants to make a call through a direction which has been restricted by his ILR feature already, can use this temporary opening functionality to make the call instead of deactivating the feature totally.

For the single party call, temporary deactivation is done by the subscriber in this way:

(idle) LH SDT # SC \* PW # (Special Dial Tone) DIGITS

For complex calls, temporary deactivation is done after flashing:

(flash) SDT # SC \* PW # (Special Dial Tone) DIGITS

The Service Code for temporary deactivation is datafilled at table ACCODE. Example datafill at table ACCODE is as follows:

**Example datafill of table ACCODE.**

```
>table accode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ACCODE
>pos STARCEPT 34 34
STARCEPT 34 34 FEAT (FTR ILR) (PF 2) (MM 2 15) (FUNC TEMPDEACT) $
```

### Special Dial Tone Given To Subscriber when ILR is Active

The subscriber will be warned with a special tone by the system on off hook if he has ILR option active. If the ILR feature is inactive, then the subscriber will hear the ordinary dial tone.

Giving special tone will be optional and determined according to a datafill at table ISERVOPT. A new field is added to the existing ILRCLS tuple named SDT. It can be datafilled as either YES indicating that the special tone will be given or NO for giving ordinary dial tone. The default value for SDT field is N. Example datafill can be seen at Figure 1 for SDT field in ISERVOPT table for ILRCLS tuple.

At MMP19 to MMP20 ONP this field will have the default value N.

### Feature Metering

In table MTRFEAT, the feature metering counts are provisioned for ILR operations.

ILR index is used on MTRFEAT table to get the corresponding charge unit counts for assignment, de-assignment, administrator activation, administrator deactivation, subscriber activation, subscriber deactivation and subscriber interrogation.

ILR usage metering option will be used for Temporary Deactivation functionality.

For other details about metering please refer to the A59019295-CEPT International Line Restriction FN document.

### OMs (Operational Measurements)

The ILR OMs are adopted to support the flexible definition of the barring programs in table ILRCLASS. The ILR OM provides per OM group the number of activations, deactivations, usages and unsuccessful deactivations.



There are two OM groups for ILR. ILR OM group includes ILRCERR, ILRUINT, ILRINTG and newly defined TEMPDAC and TEMPUDAC OM registers.

TEMPDAC, TEMPUDAC OMs are defined for successful temporary deactivation and unsuccessful temporary deactivation counts.

ILRCLASS OM group includes activation, deactivation, usage and unsuccessful deactivation OM registers for barring classes defined at table ILRCLASS.

Refer to PF Section for the details about these registers.

## **Hardware Requirements or Dependencies**

No hardware dependency.

## **Software Requirements or Dependencies**

None.

## **Limitations and restrictions**

Please refer to the activity A59019295-CEPT International Line Restriction FN document for limitations and restrictions about the basic ILR functionalities.

In order to use ILR temporary deactivation functionality when subscriber also has WML feature active, the parameter WML\_OCT\_IS\_LINE\_OPT\_PARM at table OFCENG should be set to Y and FTCODE field for the WML line option should be Y.

NACK treatment will be applied to the subscriber if he tries to use temporary deactivation when ILR is inactive.

If subscriber interrogates the ILR feature after successful temporary deactivation, CONF tone will be applied as the feature is not fully deactivated but only temporary deactivation has occurred. After establishing a conference call, it is not able to use temporary deactivation functionality.

Table ILRCLASS does not apply to BRI line option.

The barring programs apply to the whole office. Different barring programs for different customer groups are not possible.

## **Interactions**

Please refer to the interactions part of the activity A59019295-CEPT International Line Restriction about ILR functionalities.

## Applicable customer facing sections

### Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

### Configuration

Data Schema \_\_\_\_\_X\_\_\_\_\_

User Interface \_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_X\_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_X\_\_\_\_\_

## Glossary

| Term | Description                            |
|------|----------------------------------------|
| ILR  | International Line Restriction Feature |
| SC   | Service Code                           |
| PW   | Password                               |
| SDT  | Special Dial Tone                      |
| LH   | Lift Handset                           |

## Configuration for A00001914

### Hardware and Software Requirements

N/A

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

### Upgrade Impact

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

ISERVOPT, XXCODE AND XXHEAD tables are modified.

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                          |
| ACCODE         | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

#### Name: ISERVOPT

This table is used to configure switch wide information for service related feature.

#### Functional description

This activity extends the ILRCLS tuple of the table ISERVOPT. A new subfield is added named SDT.

The extended part at ILRCLS tuple:

SDT: This field determines if special dial tone will be given to subscriber on offhook when he has ILR feature active. It can be datafilled as Y or N. Y indicates that SDT will be given and N indicates that ordinary dial tone will be given to subscriber on offhook. The default value for the field is N.

#### Example Datafill for ILRCLS tuple of ISERVOPT table

```
>table iservopt
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISERVOPT
>pos ilrcls
ILRCLS ILRCLS Y Y N $
```

#### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order for ILR tuples.

#### Size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| ISERVOPT               | 0              | 1              |                       |

**Fields/OIDs**

The following table lists fields/OIDs for ISERVOPT.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry | Explanation and action                                                                                               |
|-------|----------------|------------------------|-------|----------------------------------------------------------------------------------------------------------------------|
| SDT   | NEW            |                        | Y, N  | Determines whether Special Dial Tone should be applied to customer on offhook when he has ILR feature active or not. |

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Example of table ISERVOPT datafill**

```
>table iservopt
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISERVOPT
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>ilrcls
OPTION:
>ilrcls
ILR_PROG:
>n
SDT:
>y
CR_PSWD:
>n
TUPLE TO BE ADDED:
ILRCLS
                    ILRCLS Y Y N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Table release history update**

None

**Supplementary information**

None

**Translation verification other tools**

None

**Name: XXCODE and XXHEAD**

These translation tables.

**Functional description**

With this activity, a new translation feature function is defined as **TEMPDEACT**. It is used for temporary deactivation of a service.

This feature can be datafilled at all XXCODE and XXHEAD tables.

*Note:* Table ACCODE is used for CEPT feature service code datafills.

**Example Datafill of ACCODE table for TEMPDEACT function.**

```
>table accode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ACCODE
>pos octcept 34 34
OCTCEPT 34 34 FEAT (FTR ILR) (PF 2) (MM 2 15) (FUNC TEMPDEACT) $
```

**Fields/OIDs**

The following example shows sample datafill for table ACCODE.

| Field | New or Changed | Subfield or refinement | Entry     | Explanation and action |
|-------|----------------|------------------------|-----------|------------------------|
| FEAT  | Changed        | FUNC                   | TEMPDEACT | Temporary deactivation |

**Datafill Example**

**Example of table ACCODE datafill**

```

>table accode
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ACCODE
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
XLANAME:
>octcept
FROMD:
>34
TOD:
>34
XLASEL:
>feat
OSEL:
>pf
PFDIGS:
>2
OSEL:
>mm
MIN:
>2
MAX:
>15
OSEL:
>ftr
FTR:
>ilr
OSEL:
>func
FUNC:
>tempdeact
OSEL:
>$
TUPLE TO BE ADDED:
OCTCEPT      34      34
FEAT (PF 2) (MM 2 15) (FTR ILR) (FUNC TEMPDEACT) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

**Name: ILRCLASS**

International Line Restriction Class

**Functional description**

This is the new table defined by activity A00002641. It contains the barring programs for the ILR line option.

**Usage sequence and implications (CM Only)**

There is no requirement to datafill tables in a specific order.

## Size

### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory          |
|------------------------|----------------|----------------|--------------------------------|
| ILRCLASS               | 0              | 100            | Memory is statically allocated |

## Fields

The following table lists fields for ILRCLASS.

### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Data dictionary type | Entry                                         | Explanation and action                                                                          |
|---------|----------------|------------------------|----------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| KEY     | New            | NIL                    | ILRCLASS_KEY         | VECTOR OF UP TO 16 CHAR'S                     | ILR_CLASS is the name of the barring program. It is used by the ILR line option                 |
| RCODE   | NEW            | NIL                    | TWO_DIGIT_CODE       | VECTOR OF UP TO 2 DIGITS                      | The RCODE identifies the barring program to the subscriber. It is unique in the table or empty. |
| IXLAOPT | NEW            | NIL                    | ILRCLASS_IXLA_VECTOR | VECTOR OF UP TO 32 IXLA_CLASSES               | Contains a list of international translation classes to be barred by this program               |
| DNOPT   | NEW            | NIL                    | ILRCLASS_DN_VECTOR   | VECTOR OF UP TO 10 VECTORS OF UP TO 15 DIGITS | Contains a list of DNs which are barred additionally to the international translation classes   |

## Datafill example

The following example shows sample datafill for table ILRCLASS.

### Example entry in table ILRCLASS

```
TABLE ILRCLASS
DIDD 02 (CNTL) (ICNTL) (INTL) $(09000) (09001)$
```

## Table release history update

ISN07: Table was created

**Supplementary information**

Barring classes in this table can only be deleted if there is no line with ILR in the office referencing this tuple.

If during an ONP from a release before this activity there are no R-codes assigned in the ILRCLS tuple in table ISERVOPT the R-Code in table ILRCLASS is left empty.

**Translation verification other tools**

ILRCLASS does not use translation verification tools.

**Service Orders (SO) (CM & SESM)****New commands****How service order commands are presented**

N/A

**How service order options are presented****Description**

ILR line option has been defined with activity A59019295 CEPT International Line Restriction. This ILR line option enables a subscriber to control the origination line by identifying one of the restriction classes that restrict certain dialled numbers.

For detailed information about ILR line option, please refer to the activity A59019295 CEPT International Line Restriction.

Two new restriction classes are added with this activity. These are:

- **DNATL (Deny only NATional):** In this restriction class, only outgoing national calls will be restricted while other call classes are not.
- **DLCL (Deny only LoCaL):** In this restriction class, only outgoing local calls will be restricted while other call classes are not.



## Example

### Example of the ILR option in prompt mode

```

SO:
>ado
SONUMBER:      NOW   3   4  11 AM
>
DN_OR_LEN:
>7835482
OPTION:
>ilr
ILRCLASS:
>a
A
***  ERROR  ***
|
TYPE OF ILRCLASS IS ILR_CLASS
PLEASE ENTER:
ILRCLASS:
>a
A
***  ERROR  ***
|
TYPE OF ILRCLASS IS ILR_CLASS
TYPE      IS ILR_CLASS {NIL,DABE,DNI,DAI,DIDD,DNID,DSSV,DABLE,DANID,
                        DNIC,DAIC, DANI,DAT,DOC,DNATL, DLCL}
PLEASE ENTER:
ILRCLASS:
>dlcl
ILRPW:
>nnnn
ILRACTIVE:
>n
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 4 11 AM 7835482 ( ILR DLCL NNNN N ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

```

### Example of the ILR option in no-prompt mode

```

>ado $ 7835482 ilr dnatl  nnnn n $ yy
COMMAND AS ENTERED:
ADO NOW 3 4 11 PM 7835482 ( ILR DNATL NNNN N ) $
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED

```

## Option prompts

Two new restriction classes have been added. Other parameters are not changed.

**System prompts for the ILR option**

| Prompt    | Valid input                                                                                       | Description                    | Areas affected by prompts |
|-----------|---------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|
| OPTION    | ILR                                                                                               | ILR Line Option                | OPTION                    |
| ILRCLASS  | NIL, DIDD, DAI, DNI, DNID, DABE, DSSV, DANID, DABLE, DNIC, DAIC, DANI, <b>DNATL</b> , <b>DLCL</b> | Line Restriction Classes       | OPTION                    |
| ILRPW     | NNNN                                                                                              | Pass Code (including 4 digits) | OPTION                    |
| ILRACTIVE | Y, N                                                                                              | Status Flag of ILR Line Option | OPTION                    |

**Line class code compatibility****ILR compatibility to LCC**

| Line class code | Compatible? |
|-----------------|-------------|
| IBN             | YES         |

**Assignability**

The following functionalities apply to this option:

- set functionality: <yes or no>
- subset functionality: <yes or no>
- DN functionality: <yes or no>
- key functionality: <yes or no>

**Option prerequisites**

ILR has the following prerequisites:

CEPT line option must be assigned to IBN line before the assignment of ILR line option to this line.

**Notes**

None.

**Feature identification**

Functionality: ISRV

Feature number: 59019295

**SERVORD+ Exceptions**

None.

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Performance for A00001914*****Performance management strategy**

N/A

**Performance management tools and utilities**

N/A

**Performance Measurements (PM), Operational Measurements (OM), and stats**

The ILR OM are adopted to support the flexible definition of the barring programs in table ILRCLASS. The ILR OM provides per OM group the number of activations, deactivations, usages and unsuccessful deactivations:

**Flexible ILR OM group**

```
TAClass:    ACTIVE
START:2003/05/10 18: 30:00 SAT; STOP: 2003/05/10 18:47:12 SAT;
SLOWSAMPLES:      11 ; FASTSAMPLES:      103 ;
      KEY (RCODE)
      INFO (OMILRINFO)
      ACT   DACT   USGE   UDACT

02 DIDD
    10 1 25 5
```

The ILR1 OM group is deleted, because all information is stored in the flexible ILR OM group.

The example above shows an OMSHOW output for the new ILR OM group. It shows for the OM group with R-Code 2 called DIDD 10 activations, 1 deactivation, 25 times a call was barred due to this program and 5 times the deactivation failed. These are stored under ILRCLASS OM group.

Two new OM registers are defined for successful deactivation and unsuccessful temporary deactivation under ILR OM group which includes ILRCERR, ILRUINT, ILRINTG OM registers. These are:

- TEMPDAC
- TEMPUDAC

**OMSHOW output for ILR OM group**

```
>omshow ilr active
ILR
CLASS:    ACTIVE
START:2003/09/09 16:30:00 TUE; STOP: 2003/09/09 16:40:37 TUE;
SLOWSAMPLES:    7 ; FASTSAMPLES:    64 ;
      ILRCERR    ILRUINT    ILRINTG    TEMPDAC
      TEMPUDAC
      0          0          0          0          0
      0
```

**OMSHOW output for ILRCLASS OM group**

```

>omshow ilrclass active
ILRCLASS
CLASS:    ACTIVE
START:2003/09/09 16:30:00 TUE; STOP: 2003/09/09 16:59:53 TUE;
SLOWSAMPLES:    18 ; FASTSAMPLES:    179 ;
      KEY (ILR_CLASS)
            ACT      DEACT      USAGE      UNDACT

0  NIL
            0         0         0         0

1  DABE
            0         0         0         0

2  DNI
            0         0         0         0

3  DAI
            0         0         0         0

4  DIDD
            0         0         0         0

5  DNID
            0         0         0         0

6  DSSV
            0         0         0         0

7  DABLE
            0         0         0         0

8  DANID
            0         0         0         0

9  DNIC
            0         0         0         0

10 DAIC
            0         0         0         0

```

**PM, OM, and stats format****OM Group template (applies only to DMS)****OM description**

OM group ILRCLASS provides information about the usage and performance of the International Line Restriction feature (ILR). This OM group stores the counts of usage, activation, successful and unsuccessful attempts of deactivation of ILR feature for related restriction classes.

OM group ILR provides information about successful and unsuccessful temporary deactivation, interrogation of ILR feature and also customer error.

**Release history update**

OM group ILRCLASS has a flexible body and includes registers according to the ILRCLASSES datafile in table ILRCLASS.

OM group ILR includes registers of the successful and unsuccessful temporary deactivation, interrogation of ILR feature and also customer error.

TEMPDAC: Number of successful attempts for temporary deactivations of ILR feature.

TEMPUDAC: Number of unsuccessful attempts for temporary deactivations of ILR feature.

**Registers**

OM group registers display on the MAP terminal as follows:

**OM Group ILR Display**

```
>omformat ilr
ILR
          ILRCERR      ILRUINT      ILRINTG      TEMPDAC
          TEMPUDAC
```

**OM Group ILRCLASS Display**

```
>omformat ilrclass
ILRCLASS
      KEY (ILR_CLASS)
          ACT      DEACT      USAGE      UNDACT
```

**Group structure**

OM groups ILR and ILRCLASS provide ONE tuple per office.

Key field: None

Info field: None

**Associated OM groups**

None

**Associated functional groups**

None

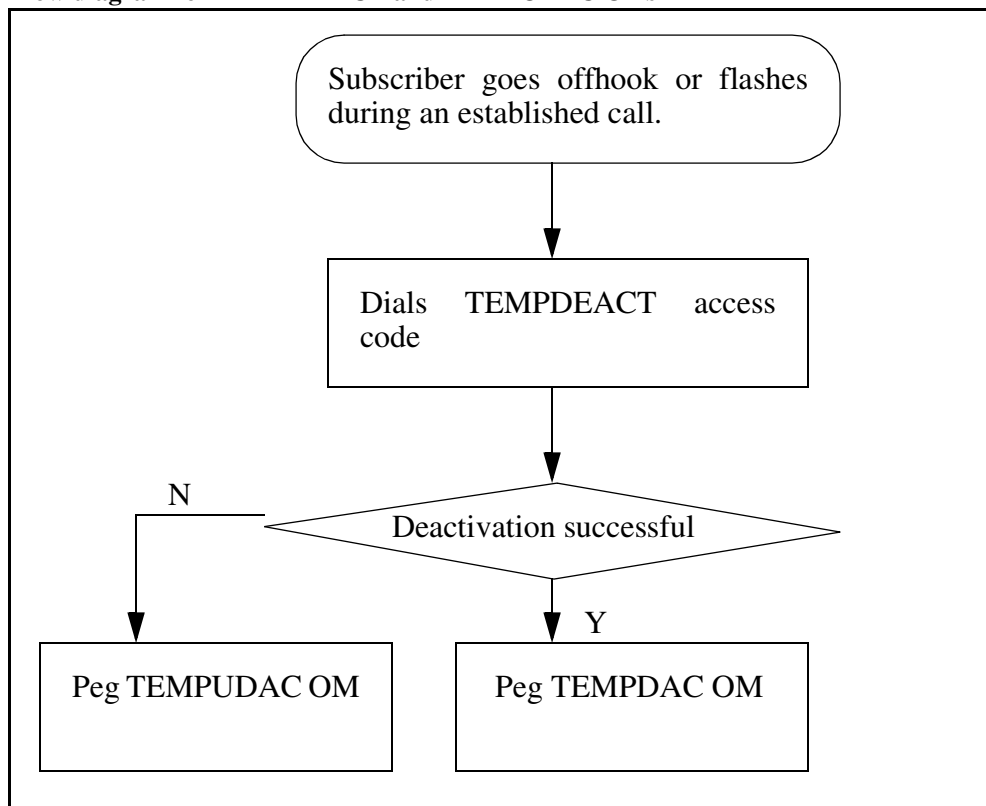
## Associated functionality codes

### Functionality codes associated with OM group

| Functionality                  | Code     |
|--------------------------------|----------|
| International Line Restriction | ISRV0008 |

## OM group registers logic flow chart

### Flow diagram for TEMPDEACT and TEMPUDAC Oms



## Register (applies only to DMS)

### Register description

Register **TEMPDAC**

Temporary Deactivation of ILR feature.

TEMPDAC is a peg register. It counts the number of Temporary deactivations of ILR feature.

## Register **TEMPUDAC**

Unsuccessful Attempts for Temporary Deactivation of ILR feature

TEMPUDAC is a peg register. It counts the number of unsuccessful attempts for temporary deactivations of ILR feature.

### **Register release history update**

#### **Associated Registers**

Existing ILR OMs became more flexible in this activity.

ILR and ILRCLASS OM groups are defined. For detailed information, please refer to the above sections.

#### **Associated registers**

None

#### **Associated logs**

None

## ***Product = World Trade***

### **A00001918 -- CEPT Feature Warning with Announcement for Bangladesh (Succession on DMs)**

#### ***Functional Description***

This feature provides special announcements as warning message for the existing CEPT features, the system will give an announcement (which tells the feature is active) to the subscriber when he goes off hook and then will give dial tone to the subscriber.

This feature provides optional special announcements for the following features:

- CEPT Do Not Disturb (CDND)
- CEPT Call Diversion Flavours;
  - a. Call Forward Universal (CFU)
  - b. Call Forward Fixed (CFF)
  - c. Call Forward Busy (CFB - Programmable and Fixed)



- d. Call Forward Don't Answer (CFD - Programmable and Fixed)
  - e. Call Diversion To Announcement (CDTA - Absentee service)
  - f. Call Diversion To Operator (CDTO)
- CEPT Wakeup Call (IWUC)

This feature also enhances the special dial tone for the line which has active call forward feature. If announcement does not take place, providing special dial tone when the user goes off hook will be optional. The telco will have the optionality to give special dial tone or only dial tone to the subscribers.

### General Considerations

This activity is being developed for lines which satisfy the following conditions.

- Line must have IBN as Line Class Code.
- Customer group must have CEPT customer group option.
- Line must have CEPT line option.
- Line must have at least one of the CDND, CFU, CFF, CFB, CFD, CDTA, CDTO, IWUC options and its state must be active;

### Provisioning the Special Dial Tone

Special dial tone will be optional. If any warning announcement does not take place and any call forward feature is active, the system will give special dial tone or only dial tone to the subscriber when he goes off hook according to the new implemented field **SPECIAL\_DIAL\_TONE** of the existing tuple **CEPT\_CFX** in **ISERVOPT** table. Existing **CFD\_CFB\_INDICATION** field will appear for datafilling only if **SPECIAL\_DIAL\_TONE** field is datafilled as Y.

### Providing the Special Dial Tone in ISERVOPT table

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_cfx
OPTION:
>cept_cfx
OPTIONAL_HASH:
>y
FROM_RANGE:
>1
TO_RANGE:
>18
PRG_OVERRIDE:
>y
ACTIVATE_WITHOUT_PRG:
>y
ISUP_RESTRICTION:
>n
CDND_BSY_TRTMT_SUPP:
>n
MULTIPLE_CFX_ACTIVE:
>n
CFRA_ANNC:
>n
SPECIAL_DIAL_TONE:
>y
CFD_CFB_INDICATION:
>y
TUPLE TO BE ADDED:
CEPT_CFX CEPT_CFX Y 1 18 Y Y N N N N Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

### Provisioning the Announcements

This feature makes the warning announcements optional. The Telco operator have the optionality to choose the announcements as warning message.

For taking control of the new announcements, new **CEPT\_ANN** tuple is implemented in the existing **ISERVOPT** table.

New **CEPT\_ANN** tuple has two main fields as following;

- ANN\_STATE
- CEPTANNS
  - CFU
  - CFB
  - CFD

- CDND
- CDTA
- CDTO
- IWUC

**ANN\_STATE** field can be datafilled with one of the **DIAL\_TONE**, **SPECIAL\_DIAL\_TONE** or **IMMEDIATELY** options.

Due to more than one subscriber can connect to the same announcement CLI at the same time, some special conditions may happen as following; if a subscriber goes off hook while another subscriber is already listening to the announcement, then the following subscriber hears **DIAL\_TONE**, **SPECIAL\_DIAL\_TONE** or the announcement **IMMEDIATELY** according to the **ANN\_STATE** field until the announcement returns to the beginning.

If **ANN\_STATE** field is set to;

- **DIAL\_TONE**: the following subscriber hears dial tone until the announcement returns to the beginning, then he listens to the warning announcement and then hears the dial tone.
- **SPECIAL\_DIAL\_TONE**: the following subscriber hears special dial tone until the announcement returns to the beginning, then he listens to the warning announcement and then hears the dial tone.
- **IMMEDIATELY**: the following subscriber hears the announcement immediately regardless of which part of the announcement is currently being played, after this part ends, it returns to the beginning and the subscriber listens to the warning announcement from beginning to the end and then hears the dial tone.

The **ANN\_STATE** field covers all the announcement types and is valid for all of them.

**CEPTANNS** field can be datafilled with the feature options which have warning announcements. At least one option must be datafilled for this field and also more than one feature options can be datafilled as well.

If no option was provided for **CEPT\_ANN** tuple then an error is given as following and addition or changing the tuple is rejected.

**Error message for no option**

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_ann
OPTION:
>cept_ann
ANN_STATE:
>IMMEDIATELY
CEPTANNS:
>$
AT LEAST ONE ANNOUNCEMENT OPTION MUST BE DATAFILED FOR CEPT_ANN
TUPLE
TUPLE TO BE ADDED:
CEPT_ANN CEPT_ANN IMMEDIATELY $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

If any of the feature options are provided more than once then an error is given as following and addition or changing the tuple is rejected.

**Error message for multiple options**

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_ann
OPTION:
>cept_ann
ANN_STATE:
>IMMEDIATELY
CEPTANNS:
>cfu
CEPTANNS:
>cfb
CEPTANNS:
>cfb
CEPTANNS:
>$
MULTIPLE ANNOUNCEMENT OPTIONS ARE NOT ALLOWED FOR CEPT_ANN TUPLE
TUPLE TO BE ADDED:
CEPT_ANN CEPT_ANN IMMEDIATELY (CFU) (CFB) (CFB) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

If the related feature option is datafilled for the **CEPTANNS** field then, when the subscriber goes off hook he hears warning announcement for this feature. If the related feature option is not datafilled for the **CEPTANNS** field or **CEPT\_ANN** tuple does not exist in **ISERVOPT** table, then the subscriber hears the special dial tone or only dial tone as existing states of the features (as described in the following table).

CFF Functionality is included in CFU, because they have same functionality excluding subscriber programming. If one of CFU or CFF feature is active and **CFU** option is datafilled for the **CEPTANNS** field then subscriber hears announcement as warning message.

In case of one or more features are active together on the same line, each feature will have priority over the other ones. CFU has highest priority in this case. According to these priorities, it is decided which announcement will be given. The following table lists the possible conditions of the announcements in case more than one feature active together (CFU, CFB and CFD can be active together only in case of **MULTIPLE\_CFX\_ACTIVE** field of **CEPT\_CFX** tuple in **ISERVOPT** table is set to Y).

**Announcement to be given in case of more than one options are active together**

| <b>Features which are active together</b> | <b>Announcement to be given</b> |
|-------------------------------------------|---------------------------------|
| CFU or CFF, CFB, CFD, IWUC                | CFU                             |
| CFU or CFF, CFB, IWUC                     | CFU                             |
| CFU or CFF, CFD, IWUC                     | CFU                             |
| CFB, CFD, IWUC                            | CFB                             |
| CFB, IWUC                                 | CFB                             |
| CFD, IWUC                                 | CFD                             |
| CDND, IWUC                                | CDND                            |
| CDTA, IWUC                                | CDTA                            |
| CDTO, IWUC                                | CDTO                            |
| Only IWUC                                 | IWUC                            |

If a wakeup request is active for the line and the same line has other announcement options then IWUC announcement has the lowest priority than the other feature announcements.

If the user dials a digit before the announcement hasn't finished then announcement is stopped and it's reverted to normal call processing.

The following table gives brief information about what the subscriber hears when he goes off hook if the announcements take place and the features' old states without the announcements.

**What the subscriber hears when he goes off hook**

| <b>Features</b> | <b>Old States:<br/>SPECIAL_DIAL_TONE:<br/>N</b> | <b>Old States:<br/>SPECIAL_DIAL_TONE:<br/>Y</b> | <b>New states with the announcements</b>                |
|-----------------|-------------------------------------------------|-------------------------------------------------|---------------------------------------------------------|
| CFU or CFF      | Dial Tone                                       | Special Dial Tone                               | "Your Call Forward Universal feature is active"         |
| CFB             | Dial Tone                                       | Special Dial Tone                               | "Your Call Forward Busy feature is active"              |
| CFD             | Dial Tone                                       | Special Dial Tone                               | "Your Call Forward Don't Answer feature is active"      |
| CDND            | Dial Tone                                       | Special Dial Tone                               | "Your Do Not Disturb feature is active"                 |
| CDTA            | Dial Tone                                       | Special Dial Tone                               | "Your Call Diversion To Announcement feature is active" |
| CDTO            | Dial Tone                                       | Special Dial Tone                               | "Your Call Diversion To Operator feature is active"     |
| IWUC            | Dial Tone                                       | Dial Tone                                       | "Your Wakeup Call feature is active"                    |

Example **CEPT\_ANN** tuple provisioning is as follows:

### Provisioning of **CEPT\_ANN** tuple

```
>table iservopt
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISERVOPT
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_ann
OPTION:
>cept_ann
ANN_STATE:
>IMMEDIATELY
CEPTANNS:
>CFU
CEPTANNS:
>CFB
CEPTANNS:
>CFD
CEPTANNS:
>CDND
CEPTANNS:
>CDTA
CEPTANNS:
>CDTO
CEPTANNS:
>IWUC
TUPLE TO BE ADDED:
CEPT_ANN CEPT_ANN IMMEDIATELY (CFU) (CFB) (CFD) (CDND) (CDTA) (CDTO) (IWUC) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

### Listing of **CEPT\_ANN** tuple

```
>lis
SOPTSKEY SOPTSVAR
-----
CEPT_ANN CEPT_ANN IMMEDIATELY (CFU) (CFB) (CFD) (CDND) (CDTA) (CDTO) (IWUC) $
```

Example announcement datafills are as follows:

**Table CLLI**

```
CLLI ADNUM TRKGRSIZ ADMININF
-----
CEPTCFU 92 30 CEPT_ANNOUNCEMENT
CEPTCFB 93 30 CEPT_ANNOUNCEMENT
CEPTCFD 94 30 CEPT_ANNOUNCEMENT
CEPTCDND 90 30 CEPT_ANNOUNCEMENT
CEPTCDTA 96 30 CEPT_ANNOUNCEMENT
CEPTCDTO 91 30 CEPT_ANNOUNCEMENT
CEPTIWUC 95 30 CEPT_ANNOUNCEMENT
```

**Table ANNS**

```
CLLI ANNARCH TRAFSNO CYTIME MAXCYC DATA
-----
CEPTCFU ALL 1 3 1 STND N 255 1
CEPTCFB ALL 1 3 1 STND N 255 1
CEPTCFD ALL 1 3 1 STND N 255 1
CEPTCDND ALL 1 3 1 STND N 255 1
CEPTCDTA ALL 1 3 1 STND N 255 1
CEPTCDTO ALL 1 3 1 STND N 255 1
CEPTIWUC ALL 1 3 1 STND N 255 1
```

**Table ANNMEMS**

```
ANNMEM HDWTYPE CARD MEMINFO
-----
CEPTCFU 0 DRAM DRA (0 DTM 0 5) $
CEPTCFB 0 DRAM DRA (0 DTM 0 6) $
CEPTCFD 0 DRAM DRA (0 DTM 0 7) $
CEPTCDND 0 DRAM DRA (0 DTM 0 8) $
CEPTCDTA 0 DRAM DRA (0 DTM 0 9) $
CEPTCDTO 0 DRAM DRA (0 DTM 0 10) $
CEPTIWUC 0 DRAM DRA (0 DTM 0 11) $
```

**TABLE ANNPHLST**

```
ANNPHKEY PHSLIST
-----
CEPTCFU 0 (CEPTCFU) $
CEPTCFB 0 (CEPTCFB) $
CEPTCFD 0 (CEPTCFD) $
CEPTCDND 0 (CEPTCDND) $
CEPTCDTA 0 (CEPTCDTA) $
CEPTCDTO 0 (CEPTCDTO) $
CEPTIWUC 0 (CEPTIWUC) $
```



**Phrase recording using dramrec level in CI prompt**

```

>dramrec
DRAM:
>connect 0 hset 2
CONNECTION MADE
>position CEPTCFU 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTCFB 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTCFD 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTCDND 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTCDTA 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTCDTO 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTIWUC 3 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>disconnect
TRUNK DISCONNECTED

```

The CLLI names of the CEPT announcements are hardcoded and will be added to the CLLI table by the code itself when the CEPT\_ANN tuple is added to ISERVOPT table.

Table ANNPHLST can be datafilled after the phrases are recorded in **dramrec** level. The announcement CLLIs use the phrases according to the datafills in table ANNPHLST. In order to be in service, each announcement CLLI must be taken in service by “**bsy;rts**” using the “**mapci;mtc;trks;ttp**” level.

Since the standard announcement type is used for implementing this feature, many subscribers may connect to the same announcement CLLI at the same time, and this max connections number is datafilled at the MAXCONN field of the announcement tuple in table ANNS. This field can be set up to 255.

**Hardware Requirements or Dependencies**

n/a

**Software Requirements or Dependencies**

n/a

## Limitations and restrictions

- If all the datafills for CEPT announcements are done and if an announce can not be started due to a failure of the announce trunk then special dial tone or only dial tone is provided according to **SPECIAL\_DIAL\_TONE** of the **CEPT\_CFX** tuple. For IWUC feature, only dial tone will be provided.
- In table ANNS, CYTIME field of the announcement tuples should be datafilled the same as the recorded announcement phrase time. If the recorded phrase lengths are bigger than the datafilled CYTIME field of the ANNS table, then from the beginning of the recorded phrase, only the datafilled CYTIME period is played. If the recorded phrase lengths are smaller than the datafilled CYTIME, then after the phrase is finished it will return to the beginning and be played until the datafilled CYTIME period is ended, and dial tone is provided after this time period.
- If a PLGC warm swact takes place during the announcement, digit collection can not be performed, user must go on hook and off hook again.
- Flexible digit analysis can not be used due to the nature of warning announcement feature. Because during the announcement the first digit must be reported to CM to end the announcement and the feature. The feature will revert to normal CallP, so XPM will report the digits separately.
- When the first subscriber goes off hook and connected to the empty annnc trunk member, and if ANN\_STATE field is set to DIAL\_TONE or SPECIAL\_DIAL\_TONE, then a short time such as 0.5 sec. dial tone may be connected and then the whole annnc is applied due to the XPM applies annnc over dial tone in this case.

## Interactions

- Interactions with CFIND and MWT;  
CEPT announcements have lowest priority than CFIND and MWT announcements. If one of them has applied the announcement then CEPT announcements will not be applied.
- WML (Warm Line);  
Warm line timer will start after the announcement is completed.
- If the pilot of DLH/MLH hunt group has one or more of the active announcement features, its members will not get warning announcement due to the members don't have these feature options. Only the pilot has warning announcement.

## Applicable customer facing sections

### Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

### Configuration

Data Schema \_\_\_\_\_X\_\_\_\_\_

User Interface \_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_

## Glossary

| Term  | Description                                         |
|-------|-----------------------------------------------------|
| CEPT  | Conference of European Posts and Telecommunications |
| CFU   | Call Forward Unconditional                          |
| CFF   | Call Forward Fixed                                  |
| CFD   | Call Forward Don't Answer                           |
| CFB   | Call Forward Busy                                   |
| CDTA  | Call Diversion To Announcement                      |
| CDTO  | Call Diversion To Operator                          |
| CDND  | CEPT Do Not Disturb                                 |
| IWUC  | CEPT Wakeup Call                                    |
| SDT   | Special Dial Tone                                   |
| CFIND | Call Forward Indication                             |
| MWT   | Message Waiting                                     |
| WML   | Warm Line                                           |

## *Configuration for A00001918*

### **Hardware and Software Requirements**

n/a

### **Initial Configuration**

n/a

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

n/a

### **Upgrade Impact**

n/a

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

##### **New or modified tables**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/ OLD/UNCHANGED)</b> |
|-----------------------|---------------------------------|-------------------------------------------|
| ISERVOPT              | CHANGED                         | UNCHANGED                                 |

#### **Table/MIB/Remote Database Schema information**

##### **Name:ISERVOPT**

This table is used to configure switch wide information for service related feature.

##### **Functional description**

This activity introduces a new tuple named as CEPT\_ANN in ISERVOPT table and a new field SPECIAL\_DIAL\_TONE for the existing tuple CEPT\_CFX.

Fields of the **CEPT\_ANN** tuple;

**ANN\_STATE:** This field can be datafilled with one of the following;

- **DIAL\_TONE:** For providing dial tone until the announcement returns to the beginning
- **SPECIAL\_DIAL\_TONE:** For providing special dial tone until the announcement returns to the beginning

- **IMMEDIATELY:** For providing the announcement immediately

**CEPTANNS:** This field consists of the following options

- **CFU:** For providing CFU warning announcement,
- **CFB:** For providing CFB warning announcement,
- **CFD:** For providing CFD warning announcement,
- **CDND:** For providing CDND warning announcement,
- **CDTA:** For providing CDTA warning announcement,
- **CDTO:** For providing CDTO warning announcement,
- **IWUC:** For providing WAKEUP warning announcement,

New field for the existing **CEPT\_CFX** tuple;

**SPECIAL\_DIAL\_TONE:** This field can be datafilled with one of the following;

- **Y:** The subscriber gets special dial tone when he goes off hook.
- **N:** The subscriber gets dial tone when he goes off hook.

### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

### Size

#### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| ISERVOPT               | 0              | 1              |                       |

### Fields/OIDs

The following table lists fields for table ISERVOPT.

#### Table field descriptions

| Field    | New or Changed | Subfield or refinement | Entry    | Explanation and action      |
|----------|----------------|------------------------|----------|-----------------------------|
| SOPTSKEY | NEW            |                        | CEPT_ANN | This is the key in ISERVOPT |
| OPTION   | NEW            |                        | CEPT_ANN | This is the option name     |

**Table field descriptions**

| <b>Field</b>      | <b>New or Changed</b> | <b>Subfield or refinement</b> | <b>Entry</b> | <b>Explanation and action</b>                   |
|-------------------|-----------------------|-------------------------------|--------------|-------------------------------------------------|
| ANN_STATE         | NEW                   |                               |              | This field consists of one of the below options |
| DIAL_TONE         | NEW                   |                               |              | Announcement state options                      |
| SPECIAL_DIAL_TONE | NEW                   |                               |              |                                                 |
| IMMEDIATELY       | NEW                   |                               |              |                                                 |
| CEPTANNS          | NEW                   |                               |              | This field consists of the below options        |
| CFU               | NEW                   |                               |              | CEPT Announcement options                       |
| CFB               | NEW                   |                               |              |                                                 |
| CFD               | NEW                   |                               |              |                                                 |
| CDND              | NEW                   |                               |              |                                                 |
| CDTA              | NEW                   |                               |              |                                                 |
| CDTO              | NEW                   |                               |              |                                                 |
| IWUC              | NEW                   |                               |              |                                                 |
| SOPTSKEY          | OLD                   |                               | CEPT_CFX     | This is the key in ISERVOPT                     |
| OPTION            | OLD                   |                               | CEPT_CFX     | This is the option name                         |
| SPECIAL_DIAL_TONE | NEW                   |                               |              | Boolean;<br>Datafilled as <b>Y</b> or <b>N</b>  |

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Example of table ISERVOPT datafill**

```
>table iservopt
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISERVOPT
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_ann
OPTION:
>cept_ann
ANN_STATE:
>IMMEDIATELY
CEPTANNS:
>CFU
CEPTANNS:
>CFB
CEPTANNS:
>CFD
CEPTANNS:
>CDND
CEPTANNS:
>CDTA
CEPTANNS:
>CDTO
CEPTANNS:
>IWUC
TUPLE TO BE ADDED:
CEPT_ANN CEPT_ANN IMMEDIATELY (CFU) (CFB) (CFD) (CDND) (CDTA) (CDTO)
(IWUC) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

**Example of table ISERVOPT datafill**

```
>lis
SOPTSKEY SOPTSVAR
-----
CEPT_ANN CEPT_ANN IMMEDIATELY (CFU) (CFB) (CFD) (CDND) (CDTA) (CDTO)
(IWUC) $
```

**Example CEPT\_CFX tuple of table ISERVOPT datafill**

```

>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
SOPTSKEY:
>cept_cfx
OPTION:
>cept_cfx
OPTIONAL_HASH:
>y
FROM_RANGE:
>1
TO_RANGE:
>18
PRG_OVERRIDE:
>y
ACTIVATE_WITHOUT_PRG:
>y
ISUP_RESTRICTION:
>n
CDND_BSY_TRTMT_SUPP:
>n
MULTIPLE_CFX_ACTIVE:
>n
CFRA_ANNC:
>n
SPECIAL_DIAL_TONE:
>y
CFD_CFB_INDICATION:
>y
TUPLE TO BE ADDED:
CEPT_CFX CEPT_CFX Y 1 18 Y Y N N N N Y Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

```

**Example CEPT\_CFX tuple of table ISERVOPT datafill**

```

>lis
SOPTSKEY SOPTSVAR
-----
CEPT_CFX CEPT_CFX Y 1 18 Y Y N N N N Y Y

```

**Table release history update**

This feature adds a new tuple named as **CEPT\_ANN** in **ISERVOPT** table. The fields of this new tuple is used for providing the CEPT warning announcement when the subscriber goes off hook.

**ANN\_STATE** field indicates the status of the announcement to be given and can be datafilled with one of **DIAL\_TONE**, **SPECIAL\_DIAL\_TONE** or **IMMEDIATELY**.



**CEPTANNS** field is datafilled with the feature options which have warning announcements. These options are;

**CFU, CFB, CFD, CDND, CDTA, CDTO and IWUC**

Also a new field **SPECIAL\_DIAL\_TONE** is implemented for the existing tuple **CEPT\_CFX**. This field is datafilled as **Y** or **N**. According to this datafill the user hears special dial tone or only normal dial tone when he goes off hook.

**Supplementary information**

N/A

**Translation verification other tools**

N/A

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

## ***Product = World Trade***

### **A00001919 -- CEPT Services Password Enhancement (Succession on DMS)**

#### ***Functional Description***

This feature provides password enhancement for CEPT features and remote access to CEPT feature. These two main functionalities are:

**CEPT Features' Password (CEPTPW)**

This feature introduces a new line option to provide unique password for the subscriber. This password is valid for the features which are ILR (International Line Restriction) for IBN lines, OCB (Outgoing Call Barring) for BRI lines.

Currently, ILR and OCB have password utility and have their own passwords. Subscriber can set a new password which is valid for that feature when activating ILR on IBN lines or OCB on BRI lines. Therefore, subscriber can program different passwords for each activation of ILR or OCB.

Instead of this, new password feature provides a unique password for the subscriber, and subscriber will have ability to change this password by activation/programming this feature.

This unique password is used for existing password controlled features ILR, OCB and new feature CEPT Features Remote Access which is described in next section.

**Cept Features Remote Access (CEPTRA)**

This feature introduces new framework (CEPTRA - CEPT Features Remote Access) to control some CEPT feature functionalities of IBN lines from remote agents.

Currently, only CFRA is supported to control CEPT Call Forwarding flavors remotely. This feature replaces this CFRA functionality and CEPTRA controls following CEPT Features

- ILR (International Line Restriction)
- IWUC (International Wake-Up)
- Call Forwarding flavours (CFU, CFB and CFDA)
- CEPTPW (Cept Features' Password which is going to be implemented by first part of this activity).

CEPTRA allows activation/programming, deactivation or interrogation of CEPT features on end user's phone from a remote location. Two ways of using CEPTRA are:

- from a telephone resident on the same switch as the end user's set.
- from a set outside the end user's switch using a Direct Inward System Access (DISA) number

*Note: Throughout this document, "base station" refers to end user's telephone set, and base station can only be IBN line.*

**Notation**

ACK Positive acknowledgement

BT Busy Tone

CT Confirmation Tone

DT Dial Tone

FC Feature Code

IND Indication Tone

LH Lift Handset

NACK Negative Acknowledgement

RR Register Call (Flash)

RH Replace Handset

SC Service Code

SCT Special Confirmation tone

SDT Special Dial Tone

SIT Special Information Tone

TN Telephony Number

### **General Considerations**

CEPTPW feature is provided for both IBN and BRI lines. There are some prerequisites to allow CEPTPW which are

- Line should have CEPT line option in order to use CEPTPW option if line class code is IBN.
- CEPTPW is supported only on ETSI version of BRI lines.
- CEPTPW is applicable only Point To Multipoint connection type of BRI lines.
- A new tuple CEPTPW should be provisioned to assign this feature to the subscriber.

CEPTRA is provided for only base agents whose Line Class Code is IBN.

- Line should have CEPTPW option.
- CEPTPW feature should be in “ACTIVE” state.

### **Feature Description of CEPTPW**

This feature (CEPTPW) is assigned to the subscriber in following two ways:

- Assign directly to the subscriber by SERVORD
- Assign as a default CEPT feature via customer group

Feature has one line option field “STATUS” indicating status of the feature, it has three different states which are:

- **DEACTIVE** : states that password is equal to DEFAULT PIN which is provisioned in ISERVOPT table. Subscriber should activate password by using password changing sequence on his telephone, after that he will be able to use password controlled features such as ILR or CEPTRA. If he tries to perform one of the actions of password controlled features, he will get announcement “PLEASE CHANGE YOUR PASSWORD FIRSTLY”, after that he should go on hook and should change the password by dialing activating/programming digit sequence of CEPTPW.
- **ACTIVE**: states that password is changed by the subscriber on his telephone, and has ability to use password controlled features.
- **LOCKED**: states that maximum wrong password entry is reached while performing password controlled features. Subscriber could not use password controlled features if the status of feature is LOCKED, he will get announcement “YOUR PASSWORD IS LOCKED, PLEASE CONTACT WITH NEAREST TELECOM MANAGEMENT TO YOU” while he tries to perform one of the actions of password controlled features.

Administrator can assign, deassign, activate and deactivate this feature via SERVORD. Administrator can only activate this feature via SERVORD if and only if CEPTPW is in “LOCKED” state in order to give permission to subscriber to control password related features. In this case, password is not changed, remains same as before and subscriber continues to use old password, this process is used if subscriber remembers the old password. Otherwise, if subscriber does not remember the PIN while CEPTPW is in “LOCKED” or “ACTIVE” state, administrator deactivates the feature via SERVORD in order to reset the password as DEFAULT\_PIN and set feature status as “DEACTIVE” which means subscriber should change the PIN to activate the feature by dialing activation digit sequence.

Subscriber can perform two actions to control this feature which are:

- **Activation/Programming**: (idle) LH DT \* SC \* OLD\_PW \* NEW\_PW \* NEW\_PW# SCT RH
- **Interrogation**: (idle) LH DT \*# SC \* PW # SCT RH

The prerequisites to execute the CEPTPW are the followings:

- provisioning parameters in a new CEPTPW tuple in ISERVOPT table
- provisioning announcements

- assigning CEPTPW by SERVORD or as a default CEPT feature for IBN lines.

There are some parameters which are provisioned in existing ISERVOPT table in order to execute this feature, this is done by adding new tuple named as CEPTPW in this table and explained in detail at next section.

### Provisioning ISERVOPT parameters

There is a new tuple defined for this feature in table ISERVOPT, and the parameters of this tuple is required for CEPTPW and CEPTRA performing. This new tuple includes the following parameters:

- **MAX\_PIN\_RETRY** {0 TO 9}: indicates that how many times that subscriber can enter wrong PIN while doing password related issues. '0' means infinite PIN retry is allowed.
- **DEFAULT\_PIN** {TABLE [0 TO 3] OF DIGIT}: indicates that the initial PIN when administrator assigns this feature to the subscriber. Subscriber should change the default PIN to activate the password feature.
- **PIN\_VALIDATION** {BOOLEAN}: indicates that changing of unique password of which all digits are same as each other such as '2222 or 3333' is disallowed or allowed. If it is set as 'Y', PIN validity is on and such PIN programming is not allowed and subscriber will get NACK tone or announcement "PASSWORD NUMBERS CAN NOT BE SAME AS EACH OTHER. PLEASE PROGRAM A DIFFERENT PASSWORD" according to announcement availability.
- **ANNOUNCE** {BOOLEAN}: indicates that announcements are used instead of SDT while user programming. Announcements will be applied to the subscriber if it is set as 'Y'; otherwise when it is set as 'N', SDT or NACK/CONFIRMATION tone will be applied instead of announcements.
- **ANNOUNCE\_STATE** {SILENCE, AUD\_RNG}: indicates that the subscriber hears only silence or audible ringing until the announcement returns to the beginning, then he listens related announcement. This field is visible only if ANNOUNCE field is set as 'Y'; otherwise it is invisible because there is no need to define announcement state since tones are used instead of them.
- **CEPT\_ANNC** {CEPT\_ANNC\_VECTOR}: indicates the used announcements in CEPTRA and CEPTPW features and the corresponding announcement trunk which is connected for the entered announcement name. This optionality provides flexibility to use any announcement CLLIs. Please refer to section "Configuration for A00001919" on page 1079 for more details.

The ISERVOPT table can be datafilled as follows:

**Example of datafilling CEPTPW tuple when ANNOUNCE is 'Y'**

```

>table iservopt
>add
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT PIN:
>1111
PIN_VALIDATION:
>Y
ANNOUNCE
>Y
ANNC_STATE:
>SILENCE
CEPT_ANNC:
>dnpin cepttra_dnpin
CEPT_ANNC:
>chgpin ceptpw_chgpin
CEPT_ANNC:
>vldpin ceptpw_vldpin
CEPT_ANNC:
>$
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1234 Y Y AUD_RNG (DNPIN CEPTRA_DNPIN)
(CHGPIN CEPTPW_CHGPIN) (VLDPIN CEPTPW_VLDPIN) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

The tuple can be seen from the listing of ISERVOPT table as follows:

**The View of CEPTPW Tuple in ISERVOPT Table (ANNOUNCE is 'Y')**

```

>table iservopt

SOPTSKEY                                                    SOPTSVAR
-----
CEPTPW  CEPTPW 3 1111 Y Y SILENCE (DNPIN CEPTRA_DNPIN) (CHGPIN
CEPTPW_CHGPIN) (VLDPIN CEPTPW_VLDPIN) $

```

**Example of datafilling CEPTPW while ANNOUNCE field is 'N'**

```

>table iservopt
>add
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT PIN:
>1111
PIN_VALIDATION:
  >y
ANNOUNCE
  >n
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1111 Y N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

In this case, the tuple can be seen from the listing of ISERVOPT table as follows:

**The View of CEPTPW Tuple in ISERVOPT Table (ANNOUNCE is 'N')**

```

>table iservopt
SOPTSKEY                                SOPTSVAR
-----
CEPTW  CEPTW                          3 1111 Y N$

```

Deletion of this tuple is allowed even if there is already a line with CEPTPW option or CEPTPW is provisioned as a default CEPT feature. However, a message is displayed in order to warn administrator that CEPTPW will not provide its functionality at all. This warning message is:

**‘WARNING: CEPTPW can be on any agent or default CEPT feature.  
WARNING: CEPTPW does not work without this tuple.’**

Additionally, if this tuple is not datafilled in ISERVOPT table, assigning of this feature by SERVORD or default CEPT feature is not allowed. A message is generated as warning **‘CEPTPW tuple is not datafilled in ISERVOPT table’**.

### Provisioning Announcements

Announcements can optionally be provided instead of supported tones. The new tuple CEPTPW has ANNOUNCE fields, taking the values {N, Y}.

- if the CEPTPW tuple is not present, or the field ANNOUNCE is set to 'N', tones are given
- If ANNOUNCE is set to 'Y' announcements are provided instead of tones.

The announcement type to be used in table ANNS is STD.

The announcements are:

- **CEPTPW\_CHGPIN:** *'Please change your password firstly by activating CEPTPW feature'*

This announcement is applied to the subscriber when he tries to use one of the password controlled features in case of CEPTPW is in DEACTIVE state (means unique password is reset as DEFAULT PIN provisioned in ISERVOPT table). This announcement is datafilled as CEPTPW\_CHGPIN 0 in the Figure "Announcement Provisioning" on page 1046.

- **CEPTPW\_LOCKED:** *'Your password is LOCKED. Please contact with nearest TELECOM management to you'*

This announcement is applied to the subscriber when he tries to use one of the password controlled features in case of CEPTPW is in LOCKED state (meant subscriber had entered number of MAX\_PIN\_RETRY times wrong password sequentially). This announcement is datafilled as CEPTPW\_LOCKED 0 in Figure "Announcement Provisioning" on page 1046.

- **CEPTPW\_VLDPIN:** *'Password numbers can not be same as each other. Please program a different password'*

This announcement is applied to the subscriber when he tries to change/program a unique password of which digits are the same as each other such as '1111' or '3333'. This restriction is valid only if the PIN\_VALIDATION field of CEPTPW tuple in ISERVOPT table is set as 'Y'; otherwise such PIN entries are allowed. This announcement is datafilled as CEPTPW\_VLDPIN 0 in Figure "Announcement Provisioning" on page 1046.

Additionally, this announcement is applied to the subscriber when he tries to change the unique password to the default password provisioned in CEPTPW tuple. In this case,

if **PIN\_VALIDATION** is N, this announcement is:

*'Password can not be equal to default password. Please program a different password'*



If **PIN\_VALIDATION** is **Y**, this announcement is:

*‘Password can not be changed as default password or password digits can not be same as each other. Please program a different password’*

- **CEPTRA\_DNPIN**: ‘Please enter your telephone number followed by the star key and your unique password’

This is an interruptible announcement and applied to the subscriber when he dials DISA DN in order to use CEPTRA. It is datafilled as CEPTRA\_DNPIN 0 in the datafill example in Figure “Announcement Provisioning” on page 1046.

- **CEPTRA\_SCODE**: ‘Please enter a code to activate deactivate or query the status of desired CEPT feature’

This is an interruptible announcement and is applied to the subscriber when he entered telephone number and password successfully in time of using CEPTRA. It is datafilled as CEPTRA\_SCODE 0 in the datafill example in Figure “Announcement Provisioning” on page 1046.

In case of failure of applying any of this announcements (for example, desired announcement is not provisioned in CEPTPW tuple) the corresponding tone will be applied to the subscriber. Mapping between tones and announcements is as shown the following table:

#### Announcement to Tone mapping

| Announcement  | Tone                                                                                                               |
|---------------|--------------------------------------------------------------------------------------------------------------------|
| CEPTRA_DNPIN  | Special Dial Tone (SDT)<br>or<br><b>Dial Tone</b> (it is applied in case of R1 loopback trunk connection required) |
| CEPTRA_SCODE  |                                                                                                                    |
| CEPTPW_CHGPIN | <b>NACK tone</b>                                                                                                   |
| CEPTPW_LOCKED |                                                                                                                    |
| CEPTPW_VLDPIN |                                                                                                                    |

**Announcement Provisioning**

| TABLE CLLI   |       |          |                     |
|--------------|-------|----------|---------------------|
| CLLI         | ADNUM | TRKGRSIZ | ADMININF            |
| -----        |       |          |                     |
| CETPW_CHGPIN | 991   | 5        | CETPW_ANNOUNCEMENT  |
| CETPW_LOCKED | 992   | 5        | CETPW_ANNOUNCEMENT  |
| CETPW_VLDPIN | 993   | 5        | CETPW_ANNOUNCEMENT  |
| CEPTRA_DNPIN | 994   | 5        | CEPTRA_ANNOUNCEMENT |
| CEPTRA_SCODE | 995   | 5        | CEPTRA_ANNOUNCEMENT |

| TABLE: ANNS  |        |         |         |        |        |  |  |  |  |
|--------------|--------|---------|---------|--------|--------|--|--|--|--|
| CLLI         | ANNTYP | TRAFSNO | MAXCONN | CYTIME | MAXCYC |  |  |  |  |
| -----        |        |         |         |        |        |  |  |  |  |
| CETPW_CHGPIN | ALL    | 1 3 1   | STND N  | 255    | 1      |  |  |  |  |
| CETPW_LOCKED | ALL    | 1 3 1   | STND N  | 255    | 1      |  |  |  |  |
| CETPW_VLDPIN | ALL    | 1 3 1   | STND N  | 255    | 1      |  |  |  |  |
| CEPTRA_DNPIN | ALL    | 1 3 1   | STND N  | 255    | 1      |  |  |  |  |
| CEPTRA_SCODE | ALL    | 1 3 1   | STND N  | 255    | 1      |  |  |  |  |

| TABLE: ANNMEMS |         |      |      |         |     |   |    |    |  |
|----------------|---------|------|------|---------|-----|---|----|----|--|
| ANNMEM         | HDWTYPE |      | CARD | MEMINFO |     |   |    |    |  |
| -----          |         |      |      |         |     |   |    |    |  |
| CEPTPW_CHGPIN  | 0       | DRAM | DRA  | (0      | DTM | 0 | 5) | \$ |  |
| CEPTPW_LOCKED  | 0       | DRAM | DRA  | (0      | DTM | 0 | 6) | \$ |  |
| CEPTPW_VLDPIN  | 0       | DRAM | DRA  | (0      | DTM | 0 | 7) | \$ |  |
| CEPTRA_DNPIN   | 0       | DRAM | DRA  | (0      | DTM | 0 | 8) | \$ |  |
| CEPTRA_SCODE   | 0       | DRAM | DRA  | (0      | DTM | 0 | 9) | \$ |  |

| TABLE: ANNPHLST |                  |    |  |
|-----------------|------------------|----|--|
| ANNPHKEY        | PHSLIST          |    |  |
| -----           |                  |    |  |
| CETPW_CHGPIN    | 0 (CETPW_CHGPIN) | \$ |  |
| CETPW_LOCKED    | 0 (CETPW_LOCKED) | \$ |  |
| CETPW_VLDPIN    | 0 (CETPW_VLDPIN) | \$ |  |
| CEPTRA_DNPIN    | 0 (CEPTRA_DNPIN) | \$ |  |
| CEPTRA_SCODE    | 0 (CEPTRA_SCODE) | \$ |  |

**NOTE:** This announcement applied to the subscriber if ANNOUNCE field in CPTPW tuple which is provisioned in ISERVOPT table is datafilled as 'Y', otherwise tones (SDT, NACK) are used instead of announcements if this field is datafilled as 'N'.

**Phrase recording using dramrec level in CI prompt**

```

>dramrec
DRAM:
>connect 1 hset 0
CONNECTION MADE
>position CEPTPW_CHGPIN 5 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTPW_LOCKED 5 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTPW_VLDPIN 5 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTRA_DNPIN 5 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>position CEPTRA_SCODE 5 pad 1
RECORDING ON DRAM 0
USE TRUNK HSET MEMBER 2
>disconnect
TRUNK DISCONNECTED

```

Table ANNPHLST can be datafilled after the phrases are recorded in **dramrec** level. The announcement CLLIs use the phrases according to the datafills in table ANNPHLST. In order to be in service, each announcement CLI must be takes in service by “**bsy;rts**” using the “**mapci;mtc;trks;ttp**” level.

Since the standard announcement type is used for implementing this feature, many subscribers may connect to that same announcement CLI at the same time, and this max connections number is datafilled at the MAXCONN field of the announcement tuple in ANNS. This field can be set up to 255.

**Provisioning CEPTPW as Default Feature for IBN lines**

In the existing functionality, CEPT customer line option is assigned to customer group with DEFAULT\_FEATURE\_ON (Y/N) parameter, and if the default feature is set to Y, there will be optional sub fields indicate default features. It is expressed as following:

CUST783 CEPT CEPT Y (ICWT)(WML) (IWUC) (CDND) (CFU) (CFB) (CFD) (CFRA) (ILR)(SCL) (ICT)(LNR) (I3WC)(I6WC) (CCBS) \$

This feature defines a new default feature CEPTPW as sub field of CEPT tuple in CUSTSTN. Since CEPTPW option is incompatible with CFRA option, operator could not add CEPTPW and CFRA together to the same customer group, that means they can not be assigned same customer group. In this case, an error message will be printed

**“WARNING: CEPTPW AND CFRA ARE INCOMPATIBLE OPTIONS.  
WARNING: PLEASE REMOVE ONE OF THEM”.**

Subscriber can activate CEPTPW even if it isn't on line while CEPTPW is a default feature. In this case, subscriber can try activation infinite times.

The datafilled tuple will be as follows:

CUST783 CEPT CEPT Y (ICWT)(WML) (IWUC) (CDND) (CFU) (CFB) (CFD) (ILR)(SCL) (ICT)(LNR) (I3WC)(I6WC) (CCBS) (**CEPTPW**)\$

### **Servord Provisioning**

Servord Provisioning is provided only CEPTPW feature, and it can be controlled by the following operations:

- Administrator assignment
- Administrator deassignment
- Administrator activation
- Administrator deactivation
- Subscriber activation/programming
- Subscriber interrogation

### **Administrator Assignment**

This feature is assigned by the administrator via Service Order when requested by the subscriber.

### **For IBN lines:**

The CEPT line option is prerequisite for CEPTPW line option, so CEPT line option must be assigned first or at the same time to assign CEPTPW line option to a subscriber.

If CEPTPW option is assigned to a subscriber not having CEPT option, an error message "**Can not add CEPTPW option if line does not have CEPT option, firstly add CEPT line option**" is printed on screen.

The administrator has to enter one field STATUS within the CEPTPW option.

- STATUS should be entered "DEACTIVE". The administrator is unauthorized to enter "ACTIVE" or "LOCKED" as STATUS in order to comply with the requirement that is subscriber should activate password feature on his telephone after assignment.

**Example of CEPTPW Assignment via Service Order for IBN lines**

```
>servord
SO:
>ado
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

-----
>qdn 7835487
-----
DN:      7835487
NAME: UNASSIGNED
TYPE: SINGLE PARTY
LINESNPA: 111  SIG: DT  LNATTIDX:  1
LINE EQUIPMENT NUMBER:  HOST 00 0 00 04
LINE CLASS CODE:  STD
LINE TREATMENT GROUP:  0
CARDCODE: 6X93AA  GND: N PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER   :  45
PM TERMINAL NUMBER :  5
OPTIONS
DGT CEPT CEPTPW DEACTIVE
-----
```

**Example of CEPTPW Assignment via Service Order for BRI lines**

```

>servord
SO:
>ado
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
>1
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7831012
-----
DN: 7831012
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: N/A LNATTIDX: N/A
LTID: ISDN1 2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP: CUST783A SUBGRP: 0 NCOS: 2 RING: Y
OPTIONS:
SFC
CEPTPW DEACTIVE
-----

```

**Administrator Deassignment**

The administrator may deassign CEPTPW option by using the DEO (Delete Option) command via Service Order.

**For IBN lines:**

Removing of CEPT line option from a line is not allowed to the administrator, when CEPT and CEPTPW options are both on the line. An error message **'Deletion of CEPT line option is not allowed when CEPTPW option is on**

**the line**' is printed when the administrator tries to delete CEPT option from a line.

#### Example of Deassignment via Service Order for IBN lines

```
>servord
SO:
>deo
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 0 2 15 AM 7835487 (CEPTPW) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

#### Example of Deassignment via Service Order for BRI lines

```
>servord
SO:
>deo
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY
>1
OPTION:
>ceptpw
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 0 2 15 AM 7831012 (CEPTPW) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

### Administrator Activation

The administrator can activate CEPTPW feature if and only if CEPTPW is already in “LOCKED” state which means subscriber exceeds the maximum wrong PIN entry while performing password related feature actions.

This action is performed when subscriber remembers the old PIN and wants to continue to use this PIN as CEPT password.

### Example of CEPTPW Activation via Service Order for IBN lines

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
STATUS:
>ACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTPW ACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
-----
>qdn 7835487
-----
DN:      7835487
NAME: UNASSIGNED
TYPE: SINGLE PARTY
LINESNPA: 111  SIG: DT  LNATTIDX:  1
LINE EQUIPMENT NUMBER:  HOST 00 0 00 04
LINE CLASS CODE:  STD
LINE TREATMENT GROUP:  0
CARD CODE: 6X93AA  GND: N  PADGRP: STD LN  BNV: NL MNO: N
PM NODE NUMBER   :  45
PM TERMINAL NUMBER :  5
OPTIONS
DGT CEPT CEPTPW ACTIVE
-----
```



**Example of CEPTPW Activation via Service Order for BRI lines**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
> 1
OPTION:
>ceptpw
STATUS:
>ACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW ACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

>qdn 7831012
-----
DN: 7831012
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: N/A LNATTIDX: N/A
LTID: ISDN1 2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP: CUST783A SUBGRP: 0 NCOS: 2 RING: Y
OPTIONS:
SFC
CEPTPW ACTIVE
-----
```

**Administrator Deactivation**

The administrator may deactivate the CEPTPW on a subscriber line by using the CHF (Change Feature) command, this action can be performed if CEPTPW is already in “ACTIVE or “LOCKED” states.

This action is performed when subscriber do not remember the old PIN and wants to use default password as CEPT password. However, subscriber should

have activate the CEPTW after this function because it is now in DEACTIVE state.

**Example of CEPTW Deactivation via Service Order for IBN lines**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
-----
>qdn 7835487
-----
DN:      7835487
NAME: UNASSIGNED
TYPE: SINGLE PARTY
LINESNPA: 111 SIG: DT  LNATTIDX:  1
LINE EQUIPMENT NUMBER:  HOST 00 0 00 04
LINE CLASS CODE:  STD
LINE TREATMENT GROUP:  0
CARD CODE: 6X93AA  GND: N PADGRP: STD LN  BNV: NL MNO: N
PM NODE NUMBER   :  45
PM TERMINAL NUMBER :  5
OPTIONS
DGT CEPT CEPTW DEACTIVE
-----
```

**Example of CEPTPW Deactivation via Service Order for BRI lines**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
> 1
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7831012
-----
DN: 7831012
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: N/A LNATTIDX: N/A
LTID: ISDN1 2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP: CUST783A SUBGRP: 0 NCOS: 2 RING: Y
OPTIONS:
SFC
CEPTPW DEACTIVE
```

**Subscriber Activation/Programming**

CEPTPW option is in DEACTIVE state after assignment or deactivation by administrator, after these two actions subscriber should activate CEPTPW by using following dialing sequence:

(idle) LH DT \* SC \* OLD\_PW \* NEW\_PW \* NEW\_PW# SCT RH

OLD\_PW and NEW\_PW is a four digits pass code and OLD\_PW is equal to DEFAULT\_PW provisioned in table ISERVOPT. NEW\_PW should be different that OLD\_PW and should not be equal to DEFAULT\_PIN.

There is no difference in dialing digit sequence for activation or programming, the difference is if the OLD\_PIN is equal to DEFAULT\_PIN, this action is called as “activation” and state of the CEPTPW feature is set as “ACTIVE”, NEW\_PW is set as a unique CEPT password; otherwise, action is called as ‘programming’ and only action is setting NEW\_PW as unique CEPT password.

For only IBN lines, during the talking mode the subscriber may activate the CEPTPW by dialing the following digit sequence:

(talking) RR SDT \* SC \* OLD\_PW \* NEW\_PW \* NEW\_PW# SCT RH

The dialling accode for activation is provisioned in ACCODE table for IBN lines. The datafilling of ACCODE table is as follows:

**For IBN lines:**

```
>table accode
```

```
XLANAME FROMD TOD XLADATA
```

```
-----  
STARCEPT 66 66 FEAT (FTR CEPTPW) (PF 2) (MM 2 20) (FUNC ACT) $
```

The dialling code for activation is provisioned in IBNXLA table for BRI lines. The datafilling of IBNXLA table is as follows:

**For BRI lines:**

```
>table ibnxla
```

```
TOP
```

```
KEY RESULT
```

```
-----  
PTTACT 66 FEAT N N CEPTPWA
```

When journal file is active, subscriber activation data is updated on journal file. If journal file is inactive, CSFJF log is generated.

### Subscriber Interrogation

The subscriber may interrogate if the subscriber remembers the right CEPT unique password. In the following sequence, the subscriber receives a SCT, when dialed password is equal to CEPT unique password.

(idle) LH DT \*# SC \* PW # SCT RH

For IBN lines, during the talking mode the subscriber may interrogate the password by dialing the following sequence:

(talking) RR SDT \*# SC \* PW # SCT (talking) RH

If the dialed password is same as the CEPT unique password the subscriber receives a SCT, otherwise the dialed password is not right receives a SIT.

The dialling accode for interrogation is provisioned in ACCODE table for IBN lines. The datafilling of ACCODE table is as follows:

**For IBN lines:**

```
>table accode
```

```
XLANAME FROMD TOD XLADATA
```

```
-----  
STARCEPT C66 C66 FEAT (FTR CEPTPW) (PF 3) (MM 2 10) (FUNC INT) $
```

The dialling code for interrogation is provisioned in IBNXLA table for BRI lines. The datafilling of IBNXLA table is as follows:

**For BRI lines:**

```
>table ibnxla
```

```
TOP
```

```
KEY RESULT
```

```
-----  
PTTACT C66 FEAT N N CEPTPWI
```

### **CEPTPW Interactions with ILR & OCB**

CEPTPW feature provides a generic CEPT password for all password related CEPT features which are ILR on IBN lines and OCB on BRI lines. Normally, subscriber have ability to set different passwords while activating these features, therefore if the line has CEPTPW, subscriber should use this unique password for all functions which needs password such as activation or deactivation. However, there are some scenarios in assignment of CEPTPW, and these are explained in the following table:

**Password status after feature assignments**

| Password Status according to options on agent after action is performed |     |        |              |     |        |                                                                  |
|-------------------------------------------------------------------------|-----|--------|--------------|-----|--------|------------------------------------------------------------------|
| Before Action                                                           |     |        | After Action |     |        | PASSWORD<br>STATUS                                               |
| ILR                                                                     | OCB | CEPTPW | ILR          | OCB | CEPTPW |                                                                  |
| X                                                                       |     |        | X            |     | X      | Subscriber should use unique CEPT password while activating ILR. |
| X                                                                       |     | X      | X            |     |        | Subscriber can choose different passwords while activating ILR.  |
|                                                                         | X   |        |              | X   | X      | Subscriber should use unique CEPT password while activating OCB. |
|                                                                         | X   | X      |              | X   |        | Subscriber can choose different passwords while activating OCB.  |
|                                                                         |     | X      | X            |     | X      | Subscriber should use unique CEPT password while activating ILR. |
|                                                                         |     | X      |              | X   | X      | Subscriber should use unique CEPT password while activating OCB. |

X abbreviates this option exists on this agent.

**Note:** Subscriber should activate CEPT generic password after assignment of CEPTPW (by SERVORD or as DEFAULT feature) in order to use password related features (ILR, OCB or CEPTRA). Otherwise, announcement “**Please change your password firstly by activating CEPTPW feature**” is applied to the subscriber and not allowed to control the requested feature.

Administrator assignment of ILR and OCB is different than normal cases when CEPTPW has already on line as line option or default CEPT feature. It is explained as following:

**Administrator Assignment of ILR when CEPTPW is on line**

Administrator may assign ILR via SERVORD currently as shown in Figure “Example of the CEPTPW deassignment from IBN line in prompt mode” on page 1090, however when CEPTPW is already on line while assigning ILR, the ILRPW field is not prompted for provisioning since CEPTPW is providing a unique password for this line.

**Current Administrator Assignment of ILR (reminder)**

```
SO:
>ado
SONUMBER:      NOW   3   4 16 PM
>
DN_OR_LEN:
>7835471
OPTION:
>ilr
ILRCLASS:
>dabe
ILRPW:
>1234
ILRACTIVE:
>y
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 4 16 PM 7835471 ( ILR DABE 1234 Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

>qdn 7835471
-----
DN:      7835471
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 02 0 00 01
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE: 6X93AA   GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      44
PM TERMINAL NUMBER  :      2
OPTIONS:
CEPT DGT ILR DABE NNNN Y
-----
>
```

**Administrator Assignment of ILR while CEPTPW is on line.**

```
SO:
>ado
SONUMBER:      NOW   3   4 16 PM
>
DN_OR_LEN:
>7835471
OPTION:
>ilr
ILRCLASS:
>dabe
ILRACTIVE:
>y
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 4 16 PM 7835471 ( ILR DABE Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

>qdn 7835471
-----
DN:      7835471
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 02 0 00 01
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      44
PM TERMINAL NUMBER :      2
OPTIONS:
CEPT DGT ILR DABE Y CEPTPW DEACTIVE
-----
>
```

**Administrator Assignment of OCB when CEPTPW is on line**

Administrator may assign OCB via SERVORD currently as shown below:



**Current Administrator Assignment of OCB (reminder)**

```
SO:
>
>ado
SONUMBER:      NOW   3   4  17 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
>1
OPTION:
>ocb
BPROG:
>dabe
OCBPW:
>1234
OCBACTIVE:
>y
OPTKEY:
>$
COMMAND AS ENTERED:
ADO NOW 3 4 17 AM 7831012 ( 1 OCB DABE 1234 Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7831012
-----
DN:      7831012
TYPE: SINGLE PARTY LINE
SNPA: 102  SIG: N/A  LNATTIDX: N/A
LTID: ISDN1      2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP:      CUST783A  SUBGRP: 0  NCOS: 2  RING: Y
OPTIONS:
SFC SMDR
OCB DABE NNNN Y
-----
```

Assignment of OCB has small difference while CEPTPW is already on line (via SERVORD or as default CEPT feature), the OCBPW field is not prompted for provisioning since CEPTPW is providing unique password for this line. It is expressed as follows:

**Administrator Assignment of CEPTPW while CEPTPW is on line.**

```

SO:
>
>ado
SONUMBER:      NOW    3    4  17 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
>1
OPTION:
>ocb
BPROG:
>dabe
OCBACTIVE:
>y
OPTKEY:
>$
COMMAND AS ENTERED:
ADO NOW 3 4 17 AM 7831012 ( 1 OCB DABE Y ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7831012
-----
DN:      7831012
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: N/A   LNATTIDX: N/A
LTID: ISDN1      2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP:      CUST783A  SUBGRP: 0  NCOS: 2  RING: Y
OPTIONS:
SFC SMDR
OCB DABE Y CEPTPW ACTIVE
-----

```

**Feature Description of CEPTRA**

This feature introduces a new framework (CEPTRA - CEPT Features Remote Access) to control some CEPT feature functionalities of IBN lines from remote agents.

**Provisioning CEPTRA feature**

CEPTRA (Cept Features Remote Access) feature provides remote programming of the some CEPT features which are:

- ILR (International Line Restriction)
- IWUC (International Wake-Up)
- Call Forwarding flavours (CFU, CFB and CFD)

- CEPTPW (Cept Features' Password which is going to be implemented by first part of this activity).

In order to use this feature, a DISA DN should be defined with 'CEPTR' option. This option should be the only option on this DISA DN and is not compatible with other DISA options. This definition can be done in two ways:

- by provisioning DNROUTE table
- by using NEWDN servord command

**Definition DISA DN by provisioning DNROUTE table**

DISA DN could be defined by provisioning DNROUTE table as followS:

**Provision of DNROUTE table**

```

TABLE: DNROUTE
>
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
AREACODE:
>102
OFCCODE:
>783
STNCODE:
>9999
DN_SEL:
>feat
FEATURE:
>disa
CUSTGRP:
>cust783
SUBGRP:
>0
AUTHREQ:
>n
SMDRTO:
>n
SMDRFROM:
>n
INTRAGRP:
>n
DISAOPT:
>cptra
DISAOPT:
>$
TUPLE TO BE ADDED:
      102      783      9999      FEAT DISA CUST783 0 N N N N (CEPTRA ) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>lis all
TOP
AREACODE OFCCODE      STNCODE                                     DNRESULT
-----
      102      783      9999      FEAT DISA CUST783 0 N N N N (CEPTRA ) $
BOTTOM
>

```

**Definition DISA DN by NEWDN servord command**

DISA DN can be defined with CEPTRA option by using NEWDN command as following:

**Processing NEWDN command to define DISA DN with CEPTRA opt.**

```

SO:
>newdn
SONUMBER:      NOW    3    4    9 PM
>
BLOCK_OF_DNS:
>no
DN:
>7835499
VDNTYPE:
>disa
CUSTGRP:
>cust783
SUBGRP:
>0
AUTHREQ:
>n
SMDRTO:
>n
SMDRFROM:
>n
INTRAGRP:
>n
DISAOPT:
>cptra
DISAOPT:
>$
OPTION:
>$
COMMAND AS ENTERED:
NEWDN NOW 3 4 9 PM NO 7835499 DISA CUST783 0 N N N N ( CEPTRA ) $ $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>
>qdn 7835499
-----
DN:      7835499
TYPE:
DISAOPT:      CEPTRA
OPTIONS: NONE
-----

```

**Remote Programming of CEPT Features**

The common abbreviations used programming of the CEPT features remotely are explained as following.

A service code (SC), PIN is the Personal Identification Number, TN1 is the DISA DN, TN2 is the base station DN, TN3 is the destination number to which incoming calls of T2 shall be diverted.

## **ILR -International Line Restriction**

### **Control Procedure**

- Activation and programming: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \* SC \* PIN \* CR# SCT RH
- Deactivation: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) # SC \* PIN # SCT RH
- Interrogation: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \*# SC # SCT RH

A service code (SC) is 33, PIN is the personal Identification Number, CR Call Restriction Programming Digits (provisioned in ILRCLS tuple ISERVOPT table).

During activation and programming:

- The subscriber will receive a SIT instead of SCT if the activation fails,
- If a restriction needs to be applied on the line, the previous restriction must be cancelled by the subscriber. This ensures that no one can change the restriction class except for those who knows the password.

During deletion:

- The subscriber receives a SIT, if an invalid password (PIN) is dialled.

During interrogation:

- If ILR is active in the line, subscriber receives SCT otherwise receives SIT.

Please refer to ‘CEPT International Line Restriction AT.59019295’ for more details.

## **IWUC -International Wake-Up Call**

### **Control Procedure**

- Activation and programming: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \* SC \* Time # SCT RH
- Deactivation: LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) # SC \* Time # SCT RH **or** LH DT TN1 Announcement CEPTRA\_DNPIN (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) # SC # SCT RH

- Interrogation: LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \*# SC \* Time# SCT RH **or** LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \*# SC \* Time# SCT RH

A service code (SC) of 55 is recommended for the feature.

During activation and programming:

- On a successful subscriber activation with programming, ACK treatment will be given.
- The subscriber will receive special dial tone when going off hook while feature is active.

During deletion:

- On a successful subscriber deletion sequence, ACK treatment will be given and the diversion is cancelled.
- For unsuccessful deletion NACK is given and no change in the state of the diversion.

During interrogation:

- On a successful subscriber interrogation results in ACK treatment.
- On a un successful subscriber interrogation results in NACK treatment.

Please refer to ‘International Wake-Up Call AT.59019097’ for more details.

### **CFU – Call Forward Unconditional**

#### **Control Procedure**

- Activation and programming: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \* SC \* TN3 # SCT RH
- Deactivation: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) # SC# SCT RH
- Interrogation: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \*# SC # SCT RH

A service code (SC) of 21 is recommended for the feature.

During activation and programming:

- On a successful subscriber activation with programming, ACK treatment will be given.
- The subscriber will receive special dial tone when going off hook while feature is active.

During deletion:

- On a successful subscriber deletion sequence, ACK treatment will be given and the diversion is cancelled.
- For unsuccessful deletion NACK is given and no change in the state of the diversion.

During interrogation:

- On a successful subscriber interrogation results in ACK treatment.
- On a un successful subscriber interrogation results in NACK treatment.

Please refer to 'CEPT Call Diversion and CEPT Do Not Disturb AT.59019083' for more details.

### **CFB P – Call Forward Busy Programmable**

#### **Control Procedure**

Activation and programming: (idle) LH DT TN1 Announcement  
“CEPTRA\_DNPIN” (SDT) TN2 \* PIN # Announcement  
“CEPTRA\_SCODE” (SDT) \*SC\*TN3 ACK RH

Deletion: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT) TN2  
\* PIN # Announcement “CEPTRA\_SCODE” (SDT) #SC#ACK RH

Interrogation: (idle) LH DT TN1 Announcement “CEPTRA\_DNPIN” (SDT)  
TN2 \* PIN # Announcement “CEPTRA\_SCODE” (SDT) \*#SC#IND RH

A service code (SC) of 60 is recommended for the feature.

During activation and programming;

- On a successful subscriber activation with programming, ACK treatment will be given.
- The subscriber will receive special dial tone when going off hook while feature is active.

During deletion:

- On a successful subscriber deletion sequence, ACK treatment will be given and the diversion is cancelled.



- For unsuccessful deletion NACK is given and no change in the state of the diversion.

During interrogation:

- On a successful subscriber interrogation results in ACK treatment.
- On an unsuccessful subscriber interrogation results in NACK treatment.

Please refer to 'CEPT Call Diversion and CEPT Do Not Disturb AT.59019083' for more details.

### **CFD P - Call Forward Do not Answer Programmable**

#### **Control Procedure**

Activation and programming: (idle) LH DT TN1 Announcement  
"CEPTRA\_DNPIN" (SDT) TN2 \* PIN # Announcement  
"CEPTRA\_SCODE" (SDT) \*SC\*TN3 ACK RH

Deletion: (idle) LH DT TN1 Announcement "CEPTRA\_DNPIN" (SDT) TN2  
\* PIN # Announcement "CEPTRA\_SCODE" (SDT) #SC#ACK RH

Interrogation: (idle) LH DT TN1 Announcement "CEPTRA\_DNPIN" (SDT)  
TN2 \* PIN # Announcement "CEPTRA\_SCODE" (SDT) # SC TN3#IND RH  
**or** (idle) LH DT TN1 Announcement "CEPTRA\_DNPIN" (SDT) TN2 \* PIN  
# Announcement "CEPTRA\_SCODE" (SDT) \*#SC#IND RH

A service code (SC) for CFD is datafillable in table ACCODE by the administrator.

During activation and programming:

- On a successful subscriber activation with programming, ACK treatment will be given.
- The subscriber will receive special dial tone when going off hook while feature is active.

During deletion:

- On a successful subscriber deletion sequence, ACK treatment will be given and the diversion is cancelled.
- For unsuccessful deletion NACK is given and no change in the state of the diversion.

During interrogation:

- On a successful subscriber interrogation results in ACK treatment.
- On an unsuccessful subscriber interrogation results in NACK treatment.

Please refer to 'CEPT Call Diversion and CEPT Do Not Disturb AT.59019083' for more details.

### **Info Log for CEPTRA usages**

A new log family (CEPT) is introduced by this feature, and it has two members CEPT100 and CEPT101 logs. These are explained as:

#### **CEPT100 Log**

A new log (CEPT100) is introduced by this feature due to the security reasons and provides to trace back. This log records the some informations which are:

- Base DN
- Originating DN
- Originating Trunk

CEPT100 log is generated if and only if subscriber password feature (CEPTPW) is locked via remote accessing to CEPT features by using CEPTRA.

#### **CEPT101 Log**

This log is generated when subscriber attempts to use supported CEPT features (ILR, IWUC, CEPTPW, CFU, CFD, and CFB) from remote agents via CEPTRA. This log has five fields which are:

- Base DN
- Originating DN
- Originating Trunk
- Feature
- Action

If subscriber can not pass the authorization state (PIN verifying for base agent) or the subscriber has dialed invalid digits of which translation does not result on any CEPT feature request, this log is not generated since there is no feature request.

Please refer to FM section of this book for more details.

### **Feature Metering**

Feature metering is a system used to charge for subscriber feature meterable activities either by the administrator or the subscriber itself. Since this system is not supported on BRI agents, there will be no feature charging for this type of agents while CEPTPW actions are performed.

## Feature Metering for CEPTPW

In table MTRFEAT, the feature metering counts are provisioned for CEPTPW operations and subscriber is metered for the following operations:

**Administrator assignment:** A datafillable number of charge units may be charged for each time when the administrator assigns the feature to a line.

**Administrator deassignment:** A datafillable number of charge units may be charged for each time when the administrator deassigns the feature from a line.

If CEPTPW is a default feature (for only IBN lines), when cancelling default feature optionality of CEPTPW (via removing CEPTPW from CEPT tuple in CUSTSTN table), CEPTPW is automatically deassigned from lines of this customer group, and lines having CEPTPW option is charged as deassign feature metering.

**Administrator activation:** A datafillable number of charge units may be charged each time when the administrator successfully activates CEPTPW feature in case it is in “LOCKED” state.

**Administrator deactivation:** A datafillable number of charge units may be charged each time when the administrator successfully deactivates (resets password) CEPTPW feature in case it is in “LOCKED” state.

**Subscriber activation:** A datafillable number of charge units may be charged for each subscriber successful activation that results with a SCT.

**Subscriber Interrogation:** A datafillable number of charge units may be charged for each subscriber interrogation.

CEPTPW index is used on MTRFEAT table to get the corresponding charge unit counts for assignment, deassignment, administrator activation, administrator deactivation, subscriber activation and subscriber interrogation.

The subscriber is metered when the administrator enters MOG option and MOG\_ID like (mog\_0, mog\_1, mog\_2, . . . etc.) to subscriber's line via Service Order.

In the following figure, from the map the provisioning is as follows:

**CEPTPW Metering**

```
>table mtrfeat
```

```
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
```

```
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
```

```
TABLE: MTRFEAT
```

```
CEPTPW MOG_0 44 (ASSIGN 12) (DEASSIGN 10) (ADMACT 9)  
(ADMDEACT 7) (SUBACT 6) (INTERROG 2) $
```

**Feature Metering for CEPTRA**

There is not new additional feature metering definition for CEPTRA feature and existing procedures are valid. Subscriber is charged for meterable activities when he/she performs remote access programming of related feature, there will be no any additional feature metering for using CEPTRA.

**OM (Operational Measurements)**

The new OM group CEPTPW is introduced to measure CEPTPW operations. This OM group has 9 registers and named as:

PWACT, PWUACT, PWCHG, PWUCHG, PWINTG, PWUINTG, PWLCK, PWUSG, PWCERR

Additionally, the new OM group CEPTRA is introduced to measure CEPTRA operations. This OM group has 5 registers and named as:

CPTRAATT, CPTRAHOV, CPTRASOV, CPTRAFAL, CPTRASUC

Refer to PF Section for the meaning of these registers and details.

**Hardware Requirements or Dependencies**

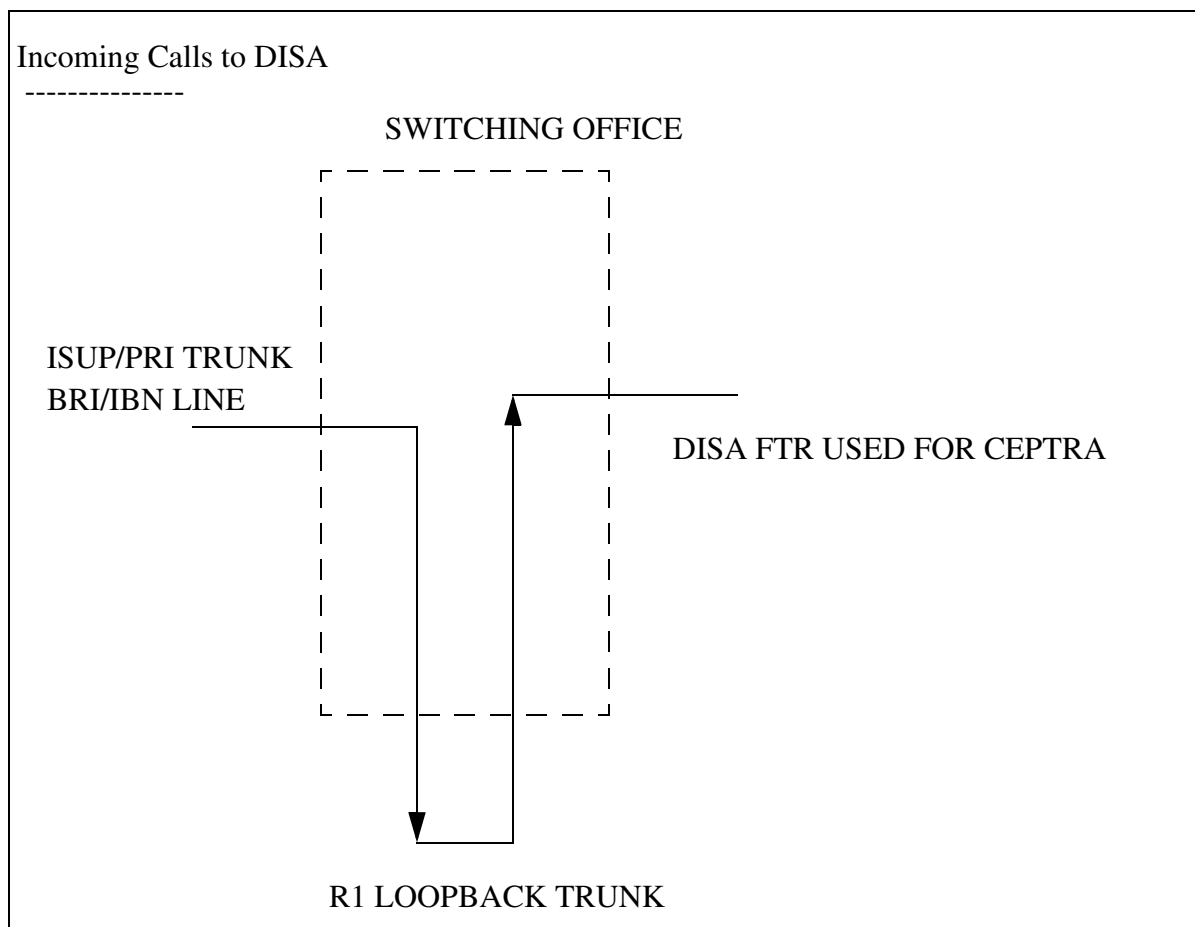
Not Applicable

**Software Requirements or Dependencies**

Not Applicable

**Limitations and restrictions**

- The R1 loopback trunks are required for the CEPTRA feature activation calls made over ISUP/PRI trunks and the BRI lines. Although R1 loopback trunks are not needed for the calls made over IBN line, they are used to have consistency for the metering point of view, therefore, the calls through DISA DN can be metered. Loopback trunks are inserted between all incoming calls and the DISA at the terminating office. In this case, if tones are used instead of announcements, DIAL TONE is applied to the subscriber instead of SDT.

**Loopback Trunk Configuration**

- CEPTRA should be the only option provisioned in DISA DN. There must be no additional option such as CFRA, SIMRING on DISA DN.
- CEPTPW is incompatible with CFRA option. Administrator could not provision these two option on same agent by SERVORD. In addition, same customer group could not have both options as default CEPT feature, these actions are restricted.
- Digits dialed by subscriber are not considered till related announcement starts. (in CEPTRA)
- Supported trunks are represented in below table. (in CEPTRA)

**Supported Trunks**

|                                |
|--------------------------------|
| ETSI ISUP                      |
| R1 (NTLS01, 02,09) , R2 (Base) |
| ETSI PRI                       |

## Interactions

- CEPT FEATURES REMOTE ACCESS (CEPTRA): If the remote station has 3WC, then the remote station will not be allowed to flash & initiate a 3WC once the remote access has started. If the remote station is involved in a call which allows three way calling, the remote station will be allowed to flash and make a remote access call. Once the remote access call is made the remote station will not be allowed to flash again to conference in the original call. The caller must wait for the remote access to complete before attempting to return to the original call. The above restriction is applied only if the remote access call is intra nodal.
- CEPTPW and AUL are incompatible with each other.
- CEPTPW and CFRA are incompatible with each other.

## Applicable customer facing sections

### Fault Management

Logs ☒

Alarms ☐

### Configuration

Data Schema ☒

User Interface ☐

Element Management ☐

Security ☐

Service Order ☒

Office Parameters ☐

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☒

## Glossary

| Term | Description                                        |
|------|----------------------------------------------------|
| CEPT | Counsel for European Postal and Telecommunications |
| CFBP | Call Forward Busy Programmable                     |
| CFDP | Call Forward Don't Answer Programmable             |
| CFU  | Call Forward Universal Programmable                |

| Term | Description                         |
|------|-------------------------------------|
| CR   | Call Restriction Programming Digits |
| IBN  | International Business Network      |
| IWUC | International Wake-Up Call          |
| MOG  | Metered Originator Group            |
| OCB  | Outgoing Call Barring               |

## ***Fault Management for A00001919***

### **Fault management strategy**

Unchanged

### **Fault management tools and utilities**

Unchanged

### **CEPT100 Logs**

#### **Explanation**

Log Title: CEPT100

Name: CEPTPW IS LOCKED REMOTELY

Description: CEPT100 log is generated when CEPT Features' Password (CEPTPW) is locked remotely usage of CEPT features which means subscriber exceeds the maximum wrong PIN entry for CEPTPW feature.

Event type:

#### **Format**

The following is the format for log report CEPT 100.

#### **Formats of log reports**

```
CEPT100 mmmdd hh:mm:ss ssdd INFO CEPTPW IS LOCKED REMOTELY
BASE DN: <base_dn>
ORIGINATING DN: <orig_dn>
ORIGINATING TRUNK: <orig_cpidd>
```

The sample log report is as shown below.

**Sample log report (CLI is available)**

```
CEPT100 APR28 09:33:57 2909 INFO CEPTPW IS LOCKED REMOTELY
BASE DN: 1027835411
ORIGINATING DN: 1027835475
ORIGINATING TRUNK: CKT    ICISP2BA  0
```

In case of the calling DN unavailability such as, incoming trunk is NTLS01 R1 Trunk, ORIGINATING DN field is printed as empty.

**.Sample log report (CLI is not available)**

```
CEPT100 APR28 09:33:57 2909 INFO CEPTPW IS LOCKED REMOTELY
BASE DN: 1027835411
ORIGINATING DN:
ORIGINATING TRUNK: CKT    ICNTLS01BA  0
```

If the originating agent is in the same switch that means line to line call (basic call) performed while dialing DISA DN, the ORIGINATING TRUNK field is printed as empty.

**.Sample log report (Line to Line call)**

```
CEPT100 APR28 09:33:57 2909 INFO CEPTPW IS LOCKED REMOTELY
BASE DN: 1027835411
ORIGINATING DN: 1027835475
ORIGINATING TRUNK:
```

## Field descriptions

### Field descriptions

| Field                          | Value              | Description                                 |
|--------------------------------|--------------------|---------------------------------------------|
| INFO CEPTPW IS LOCKED REMOTELY | Constant           | Indicates a report of CEPT information      |
| BASE DN                        | Digits (18 digits) | Identifies the SNPA + DN of the base agent. |



| Field             | Value              | Description                                       |
|-------------------|--------------------|---------------------------------------------------|
| ORIGINATING DN    | Digits (18 digits) | Identifies the SNPA + DN of the originator.       |
| ORIGINATING TRUNK | CPID               | Identifies the originator trunk (incoming trunk). |

**Action**

No immediate action is taken.

**Associated Operational Measurements or Performance Measurements**

CPTRAFAL register in CEPTRA OM group, PWUSG and PWLOCK registers in CEPTPW OM group are pegged. Note that these OM's are pegged for another cases also not only for this scenario.

**Additional information**

N/A

**CEPT101 Logs****Explanation**

Log Title: CEPT101

Name: CEPTRA USAGE ATTEMPT

Description: CEPT101 log is generated when subscriber attempts to use supported CEPT features (ILR, IWUC, CEPTPW, CFD, CFU and CFB) from remote agents via CEPTRA.

Event type:

**Format**

The following is the format for log report CEPT 101.

**Formats of log reports**

```
CEPT101 mmmdd hh:mm:ss ssdd INFO CEPTRA USAGE ATTEMPT
BASE DN: <base_dn>
ORIGINATING DN: <orig_dn>
ORIGINATING TRUNK: <orig_cpid>
FEATURE: <requested_ftr>
ACTION: <ftr_action>
```

Originating DN or Originating Trunk fields could be empty due to unavailable CLI or performing remote access in same switch (line to line call) respectively.

The sample log report is as shown below:

**Sample log report (CLI is available)**

```
CEPT101 APR28 09:33:57 2909 INFO CEPTRA USAGE ATTEMPT
BASE DN: 1027835411
ORIGINATING DN: 1027835475
ORIGINATING TRUNK: CKT      ICISP2BA  0
FEATURE: ILR
ACTION: INTER
```

In case of the calling DN unavailability such as, incoming trunk is NTLS01 R1 Trunk, ORIGINATING DN field is printed as empty.

**.Sample log report (CLI is not available)**

```
CEPT101 APR28 09:33:57 2909 INFO CEPTRA USAGE ATTEMPT
BASE DN: 1027835411
ORIGINATING DN:
ORIGINATING TRUNK: CKT      ICNTLS01BA  0
FEATURE: ILR
ACTION: INTER
```

If the originating agent is in the same switch that means line to line call (basic call) performed while dialing DISA DN, the ORIGINATING TRUNK field is printed as empty.

**.Sample log report (Line to Line call)**

```
CEPT101 APR28 09:33:57 2909 INFO CEPTRA USAGE ATTEMPT
BASE DN: 1027835411
ORIGINATING DN: 1027835475
ORIGINATING TRUNK:
FEATURE: ILR
ACTION: INTER
```

## Field descriptions

### Field descriptions

| Field                | Value                                                     | Description                                                |
|----------------------|-----------------------------------------------------------|------------------------------------------------------------|
| CEPTRA USAGE ATTEMPT | Constant                                                  | Indicates a report of CEPT information                     |
| BASE DN              | Digits (18 digits)                                        | Identifies the SNPA + DN of the base agent.                |
| ORIGINATING DN       | Digits (18 digits)                                        | Identifies the SNPA + DN of the originator.                |
| ORIGINATING TRUNK    | CPID                                                      | Identifies the originator trunk (incoming trunk).          |
| FEATURE              | line_option                                               | Identifies the which CEPT feature is requested.            |
| ACTION               | xla_ftr_function (ACT, DEACT, INTER, USAGE, PROG, DELETE) | Indicates the subscriber action on requested CEPT feature. |

### Action

No immediate action is taken.

### Associated Operational Measurements or Performance Measurements

CPTRAATT register in CEPTRA OM group is pegged, and if subscriber is unsuccessful to program one of supported CEPT feature, CPTRAFAL register is pegged; otherwise in case of successful programming CPTRASUC register is pegged. Additionally, requested CEPT feature OM register is pegged according to success of result. Note that these OM s are pegged for another cases also not only for this scenario.

### Additional information

N/A

## Configuration for A00001919

### Hardware and Software Requirements

N/A

### Initial Configuration

N/A

**Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema****New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                          |

**Table/MIB/Remote Database Schema information****Name: ISERVOPT**

This table is used to configure switch wide information for service related feature.

**Functional description**

This activity introduces a new tuple named as CEPTPW in ISERVOPT table.

Fields of the **CEPTPW** tuple:

**MAX\_PIN\_RETRY**: indicates that how many times that subscriber can enter wrong pin sequentially while doing password related issues.

**DEFAULT\_PIN**: indicates that the initial pin when administrator assigns this feature (CEPTPW) to the subscriber.

**PIN\_VALIDATION** {BOOLEAN}: indicates that changing of unique password of which all digits are same as each other such as '2222 or 3333' is disallowed or allowed. If it is set as 'Y', PIN validity is on and such PIN programming is not allowed and subscriber will get NACK tone or related announcement; otherwise, tones are applied instead of announcements.

**ANNOUNCE**: indicates the announcements are used instead of tones (SDT, SIT) while subscriber actions to control password related CEPT features. Announcements will be applied to the subscriber if it is set as 'Y'; otherwise tones are used instead of announcements.

**ANNOUNCE\_STATE** {SILENCE, AUD\_RNG}: indicates that the subscriber hears only silence or audible ringing until the announcement returns to the beginning, then he listens related announcement. **This field is visible only if ANNOUNCE field is set as ‘Y’; otherwise it is invisible because there is no need to define announcement state since tones are used instead of them.**

**CEPT\_ANNC** {CEPT\_ANNC\_VECTOR}: indicates the used announcements in CEPTRA and CEPTPW features and the corresponding announcement trunk which is connected for the entered announcement name.

- The entered CLLIs should be an announcement trunk CLI, otherwise an error message is occurred “**DATAFILL FOR ENTERED\_CLLI MISSING IN TABLE ANNS**” where ENTERED\_CLLI is the provisioned CLI.
- The announcement name should not be entered more than once, otherwise an error message is occurred “**ANNOUNCEMENT TYPE (announcement\_ID) IS DUPLICATED**”, where announcement\_ID (CHGPIN, LOCKED, VLDPIN, DNPIN, SCODE) is provisioned more than once.
- In case of non-existence of the announcement trunks in table ANNMEMS, there is a warning message “**Warning: DATAFILL FOR ENTERED\_CLLI MISSING IN TABLE ANNMEMS.**”, where ENTERED\_CLLI is the provisioned CLI.
- This feature supports only STANDART announcements, so in case of CUSTOM announcement provisioning, there occurs an error message “**ANNC CLI ENTERED\_CLLI MUST BE A STANDARD ANNOUNCEMENT**”, where ENTERED\_CLLI is the provisioned CLI of which announcement type is CUSTOM.

#### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

#### Size

Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| ISERVOPT               | 0              | 1              |                       |

#### Fields/OIDs

The following table lists fields/OIDs for ISERVOPT.

**Table field descriptions**

| Field          | New or Changed | Subfield or refinement | Entry                                                                         | Explanation and action                                                                                                                                                                             |
|----------------|----------------|------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOPTSKEY       | NEW            |                        | CEPTPW                                                                        | This is the key in ISERVOPT                                                                                                                                                                        |
| OPTION         | NEW            |                        | CEPTPW                                                                        | This is the option name                                                                                                                                                                            |
| MAX_PIN_RETRY  | NEW            |                        | 0 TO 9                                                                        | If '0' is entered, there is no limit for wrong pin entry.                                                                                                                                          |
| DEFAULT_PIN    | NEW            |                        | 0000 TO 9999                                                                  | Default PIN of CEPTPW                                                                                                                                                                              |
| PIN_VALIDATION | NEW            |                        | Y, N                                                                          | to control programming of a unique password of which digits are same as each other                                                                                                                 |
| ANNOUNCE       | NEW            |                        | Y, N                                                                          | for selecting announcements or tones are used                                                                                                                                                      |
| ANNC_STATE     | NEW            |                        | SILENCE,<br>AUD_ RNG                                                          | for selecting what subscriber hears (audible_ring or silence) while announcement returns to beginning.                                                                                             |
| CEPT_ANNC      | NEW            |                        | {<br>{<br>CHGPIN,<br>LOCKED,<br>VLDPIN,<br>DNPIN,<br>SCODE<br>},<br>CLLI<br>} | Related announcements<br><br>The announcements used by the CEPTRA & CEPTPW and corresponding announce CLLI can be entered for each ANNAME field. To terminate \$ should be entered for this field. |

**Datafill example**

The following example shows sample datafill for table ISERVOPT

**Example of ISERVOPT table datafill (ANNOUNCE is 'Y')**

```

>table iservopt
>add
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT PIN:
>1111
PIN_VALIDATION:
>y
ANNOUNCE
>y
ANNC_STATE:
>SILENCE
CEPT_ANNCS:
>dnpin ceptann_dnpin
CEPT_ANNCS:
>chgpin ceptann_chgpin
CEPT_ANNCS:
>vldpin ceptann_vldpin
CEPT_ANNCS:
>$
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1234 Y Y AUD_RNG (DNPIN CEPTANN_DNPIN)
(CHGPIN CEPTANN_CHGPIN) (VLDPIN CEPTANN_VLDPIN) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

ANNC\_CLLIs should be provisioned with the real announcement trunk CLLIs which are provisioned in TABLE ANNS.

**The View of CEPTPW Tuple in ISERVOPT Table (ANNOUNCE is 'Y')**

```

>table iservopt

SOPTSKEY
SOPTSVAR
-----
CEPTPW CEPTPW 3 1111 Y Y SILENCE (DNPIN CEPTANN_DNPIN) (CHGPIN
CEPTANN_CHGPIN) (VLDPIN CEPTANN_VLDPIN) $

```

**Example of ISERVOPT table datafill (ANNOUNCE is 'N')**

```

>table iservopt
>add
SOPTSKEY:
>ceptpw
OPTION:
>ceptpw
MAX_PIN_RETRY:
>3
DEFAULT PIN:
>1111
PIN_VALIDATION:
>y
ANNOUNCE
>n
TUPLE TO BE ADDED:
CEPTPW CEPTPW 3 1111 Y N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE

```

**The View of CEPTPW Tuple in ISERVOPT Table (ANNOUNCE is 'N')**

```

>table iservopt

SOPTSKEY
-----
CEPTPW  CEPTPW                                     3 1111 Y
N$

```

There is no restriction to remove this tuple, however since CEPTPW feature is working according the values in this tuple, CEPTPW can not activated/programmed even if it is already on agent in case of this tuple removal. Because of this reason, during CEPTPW tuple deletion there is a warning message displayed to warn the operator as:

**“WARNING: CEPTPW can be on any agent or default CEPT feature.  
WARNING: CEPTPW does not work without this tuple.”**

**Table release history update**

N/A

**Supplementary information**

N/A



**Translation verification other tools**

N/A

**Service Orders (SO) (CM & SESM)****Service order change details****LCC and options**

CEPTPW line option is created with this activity and can be assigned to each IBN and ETSI ISDN BRI line via service order session.

**Incompatible options**

AUL is incompatible with CEPTPW option

**Meridian digital centrex feature assignment requirements**

| Feature | 500<br>2500 | IBN | MDC<br>SET | ISDN<br>SET | MDC Set ISDN Set Relationship |                            |             |        |                            |                  |                  |                                 |
|---------|-------------|-----|------------|-------------|-------------------------------|----------------------------|-------------|--------|----------------------------|------------------|------------------|---------------------------------|
|         |             |     |            |             | S<br>E<br>T                   | S<br>U<br>B<br>S<br>E<br>T | K<br>E<br>Y | D<br>N | D<br>E<br>D<br>K<br>E<br>Y | L<br>A<br>M<br>P | C<br>O<br>D<br>E | D<br>I<br>S<br>P<br>L<br>A<br>Y |
| CEPTW   | N           | Y   | N          | Y           |                               |                            |             | X      |                            |                  |                  |                                 |

This feature must be assigned to any key on which DN is defined.

**New commands****How service order commands are presented**

N/A

**How service order options are presented****Description**

CEPTPW option is introduced with this activity. CEPTPW option provides password enhancement for CEPT features by introducing a unique password for the subscriber. This password is valid for the features which are ILR (International Line Restriction) and OCB (Outgoing Call Barring).

Subscriber can use this unique password to control these features, and this password can be activated, changed and interrogated by subscriber. This unique password is used for existing password controlled features ILR, OCB

and new feature CEPT Features Remote Access which is also introduced with this activity.

### Example

CEPTPW could be assigned both IBN and ETSI ISDN BRI lines.

The administrator is authorized to assign, deassign, activate or deactivate CEPTPW to IBN and ETSI ISDN BRI lines via service order.

If CEPTPW line option is to be assigned to a subscriber not having CEPT option for IBN lines, a message **“Can not add CEPTPW option if line does not have CEPT option, firstly add CEPT line option”** is printed on screen.

The administrator should enter the status of the CEPTPW while performing servord actions.

The administrator can apply the following operations via Service Order:

**Assignment:** STATUS field should be entered as ‘DEACTIVE’. This means subscriber should activate password by using password changing sequence.

‘LOCKED’ or ‘ACTIVE’ as STATUS can not be entered by administrator during assignment via Service Order. An error message **‘STATUS should be datafilled as DEACTIVE’**.

An example of CEPTPW assignment is shown in Figure “Example of the CEPTPW assignment to IBN line in prompt mode” on page 1088 and Figure “Example of the CEPTPW assignment to IBN line in no-prompt mode” on page 1088 for IBN lines, Figure “Example of the CEPTPW assignment to BRI line in prompt mode” on page 1089 and Figure “Example of the CEPTPW assignment to BRI line in no-prompt mode” on page 1089 for BRI lines.

**Deassignment:** The CEPTPW option is deassigned from a line by using DEO (Delete Option) command via Service Order.

An example of CEPTPW deassignment is shown in Figure “Example of the CEPTPW deassignment from IBN line in prompt mode” on page 1090 and Figure “Example of the CEPTPW deassignment from IBN line in no-prompt mode” on page 1090 for IBN lines, Figure “Example of the CEPTPW deassignment from BRI line in prompt mode” on page 1091 and Figure “Example of the CEPTPW deassignment from BRI line in no-prompt mode” on page 1091 for BRI lines.

**Administrator Activation:** The administrator can activate the CEPTPW if and only if CEPTPW is in “LOCKED” state which means subscriber is prohibited to control password related CEPT features due to maximum wrong

pin entry. Otherwise, CEPTPW is not in 'LOCKED' state, an error message **'CEPTPW should be in LOCKED state'** is printed.

This action is performed when subscriber remembers the old PIN and wants to continue using this PIN as CEPT password.

An example of CEPTPW activation is shown in Figure "Example of the CEPTPW activation to IBN line in prompt mode" on page 1092 and Figure "Example of the CEPTPW activation to IBN line in no-prompt mode" on page 1092 for IBN lines, Figure "Example of the CEPTPW activation to BRI line in prompt mode" on page 1093 and Figure "Example of the CEPTPW activation to BRI line in no-prompt mode" on page 1093 for BRI lines.

**Administrator Deactivation:** The administrator may deactivate the CEPTPW on a subscriber line by using the CHF (Change Feature) command, this action can be performed if and only if CEPTPW is already in "ACTIVE" or "LOCKED" states. "LOCKED" state means subscriber is prohibited to control password related CEPT features due to maximum wrong pin entry. Otherwise, CEPTPW is not in "ACTIVE" or 'LOCKED' state, an error message **'CEPTPW should be in LOCKED or ACTIVE state'** is printed.

This action is performed when subscriber does not remember the old PIN and wants to use default password as CEPT password. However, subscriber should have activate the CEPTPW after this function because it is now in DEACTIVE state.

An example of CEPTPW activation is shown in Figure "Example of the CEPTPW deactivation to IBN line in prompt mode" on page 1094 and Figure "Example of the CEPTPW deactivation to IBN line in no-prompt mode" on page 1094 for IBN lines, Figure "Example of the CEPTPW deactivation to BRI line in prompt mode" on page 1095 and Figure "Example of the CEPTPW deactivation to BRI line in no-prompt mode" on page 1095 for BRI lines.

**Example of the CEPTPW assignment to IBN line in prompt mode**

```
>servord
SO:
>ado
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
-----
>qdn 7835487
-----
DN:      7835487
NAME: UNASSIGNED
TYPE: SINGLE PARTY
LINESNPA: 111  SIG: DT  LNATTIDX:  1
LINE EQUIPMENT NUMBER:  HOST 00 0 00 04
LINE CLASS CODE:  STD
LINE TREATMENT GROUP:  0
CARDCODE: 6X93AA  GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER   :  45
PM TERMINAL NUMBER :  5
OPTIONS
DGT CEPT CEPTPW DEACTIVE
-----
```

**Example of the CEPTPW assignment to IBN line in no-prompt mode**

```
>SERVORD
SO:
> ADO $ 7835487 CEPTPW DEACTIVE $
```

**Example of the CEPTPW assignment to BRI line in prompt mode**

```

>servord
SO:
>ado
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
>1
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7831012
-----
DN:  7831012
TYPE: SINGLE PARTY LINE
SNPA: 102  SIG: N/A  LNATTIDX: N/A
LTID: ISDN1   2
LTCLASS: BRAFS
LINE CLASS CODE:  ISDNKSET
KEY: 1
CUSTGRP:    CUST783A  SUBGRP: 0  NCOS: 2  RING: Y
OPTIONS:
SFC
CEPTPW DEACTIVE
-----

```

**Example of the CEPTPW assignment to BRI line in no-prompt mode**

```

>SERVORD
SO:
> ADO $ 7831012 1 CEPTPW DEACTIVE $

```

**Example of the CEPTPW deassignment from IBN line in prompt mode**

```
>servord
SO:
>deo
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 0 2 15 AM 7835487 (CEPTPW) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Example of the CEPTPW deassignment from IBN line in no-prompt mode**

```
>SERVORD
SO:
> DEO $ 7831012 CEPTPW $
```

**Example of the CEPTPW deassignment from BRI line in prompt mode**

```
>servord
SO:
>deo
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY
>1
OPTION:
>ceptpw
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 0 2 15 AM 7835487 (CEPTPW) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Example of the CEPTPW deassignment from BRI line in no-prompt mode**

```
>SERVORD
SO:
> DEO $ 7831012 1 CEPTPW $
```

**Example of the CEPTPW activation to IBN line in prompt mode**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
STATUS:
>ACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTPW ACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Example of the CEPTPW activation to IBN line in no-prompt mode**

```
>SERVORD
SO:
> CHF $ 7835487 CEPTPW ACTIVE $
```



**Example of the CEPTPW activation to BRI line in prompt mode**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
> 1
OPTION:
>ceptpw
STATUS:
>ACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW ACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Example of the CEPTPW activation to BRI line in no-prompt mode**

```
>SERVORD
SO:
> CHF $ 7831012 1 CEPTPW ACTIVE$
```

**Example of the CEPTPW deactivation to IBN line in prompt mode**

```
>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7835487
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7835487 (CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Example of the CEPTPW deactivation to IBN line in no-prompt mode**

```
>SERVORD
SO:
> CHF $ 7835487 CEPTPW DEACTIVE $
```

**Example of the CEPTPW deactivation to BRI line in prompt mode**

```

>servord
SO:
>chf
SONUMBER:  NOW  0 2 15 AM
>
DN_OR_LEN:
>7831012
OPTKEY:
> 1
OPTION:
>ceptpw
STATUS:
>DEACTIVE
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 0 2 15 AM 7831012 ( 1 CEPTPW DEACTIVE) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y

```

**Example of the CEPTPW deactivation to BRI line in no-prompt mode**

```

>SERVORD
SO:
> CHF $ 7831012 1 CEPTPW DEACTIVE $

```

**Option prompts**

The system prompts for CEPTPW are shown in order of their appearance.

**System prompts for CEPTPW option**

| Prompt | Valid input              | Description                 | Areas affected by prompt |
|--------|--------------------------|-----------------------------|--------------------------|
| OPTION | CEPTPW                   | CEPTPW line option          | OPTION                   |
| STATUS | DEACTIVE, ACTIVE, LOCKED | state of the CEPTPW feature | OPTION                   |

**Line class code compatibility****CEPTPW compatibility to LCC**

| <b>Line class code</b> | <b>Compatible?</b> |
|------------------------|--------------------|
| IBN                    | Yes                |
| BRI                    | Yes                |

**Assignability**

The following functionalities apply to this option to ETSI ISDN BRI:

- set functionality: No
- subset functionality: No
- DN functionality: Yes
- key functionality: No

**Option prerequisites**

CEPTPW has the following prerequisites:

CEPT line option must be assigned to IBN line before the assignment of CEPTPW line option to this line.

**Notes**

None

**Feature identification**

Functionality: None

Feature number: A00001919

**SERVORD+ Exceptions****Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Security**

N/A

## **Configuration Walkthrough**

N/A

### ***Performance for A00001919***

#### **Performance management strategy**

N/A

#### **Performance management tools and utilities**

N/A

#### **Performance Measurements (PM), Operational Measurements (OM), and stats**

New OM groups CEPTPW and CEPTRA have been defined including following OM registers.

##### **CEPTPW**

- PWACT
- PWUACT
- PWCHG
- PWUCHG
- PWINTG
- PWUINTG
- PWLCK
- PWUSG
- PWCERR

##### **CEPTRA**

- CPTRAATT
- CPTRAHOV
- CPTRASOV
- CPTRAFAL
- CPTRASUC

## PM, OM, and stats format

### CEPTPW OM Group template (applies only to DMS)

#### OM description

OM group CEPTPW provides information about the usage and performance of Cept Features' Password (CEPTW). This OM group stores the counts activation, programming, interrogation, unsuccessful attempts of for all actions and error cases of CEPTPW feature.

#### Release history update

The OM group CEPTPW includes 9 registers and is created with this activity in ISN07. The register names of OM group CEPTPW are:

PWACT, PWUACT, PWCHG, PWUCHG, PWINTG, PWUINTG, PWLCK, PWUSG, PWCERR

#### Registers

OM group registers display on the MAP terminal as follows:

##### OM Group CEPTPW Display

```
> omformat ceptpw
```

```
CEPTW
```

```
        PWACT
```

```
        PWUACT
```

```
        PWCHG
```

```
        PWUCHG
```

```
        PWINTG
```

```
        PWUINTG
```

```
        PWLCK
```

```
        PWUSG
```

```
        PWCERR
```

#### Group structure

OM group CEPTPW provides one tuple for each per office.

Key field: None

Info field: None

The following figure shows the OM group CEPTPW registers as example.

**Example of OM Group CEPTPW Registers**

```
>omshow ceptpw active
CEPTPW
CLASS:    ACTIVE
START:2003/04/17 11:30:00 THU; STOP: 2003/04/17 11:36:36 THU;
SLOWSAMPLES:    4 ; FASTSAMPLES:    40 ;
      PWACT      PWUACT      PWCHG      PWUCHG
      PWINTG     PWUINTG     PWLCK      PWUSG
      PWCERR
0      0          0          0          0
      0          0          0          0
      0
```

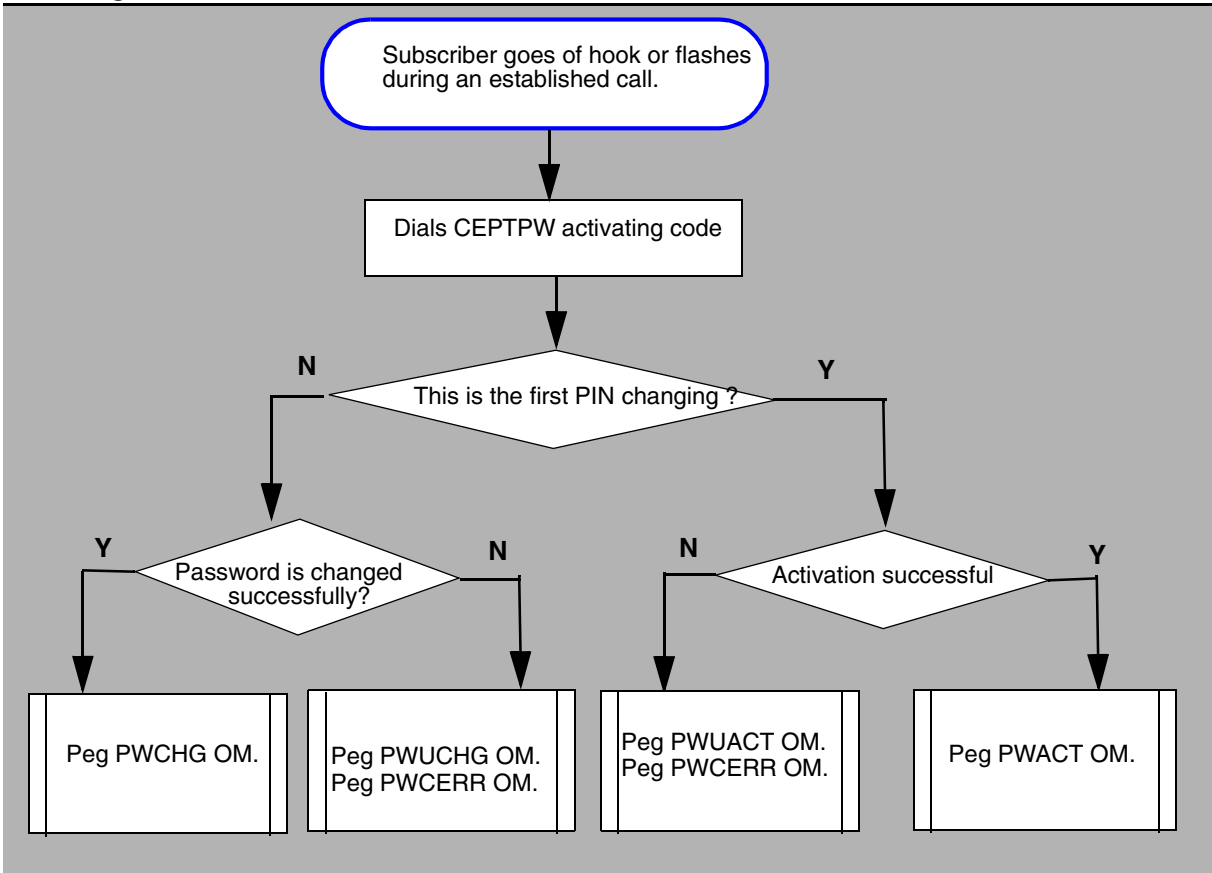
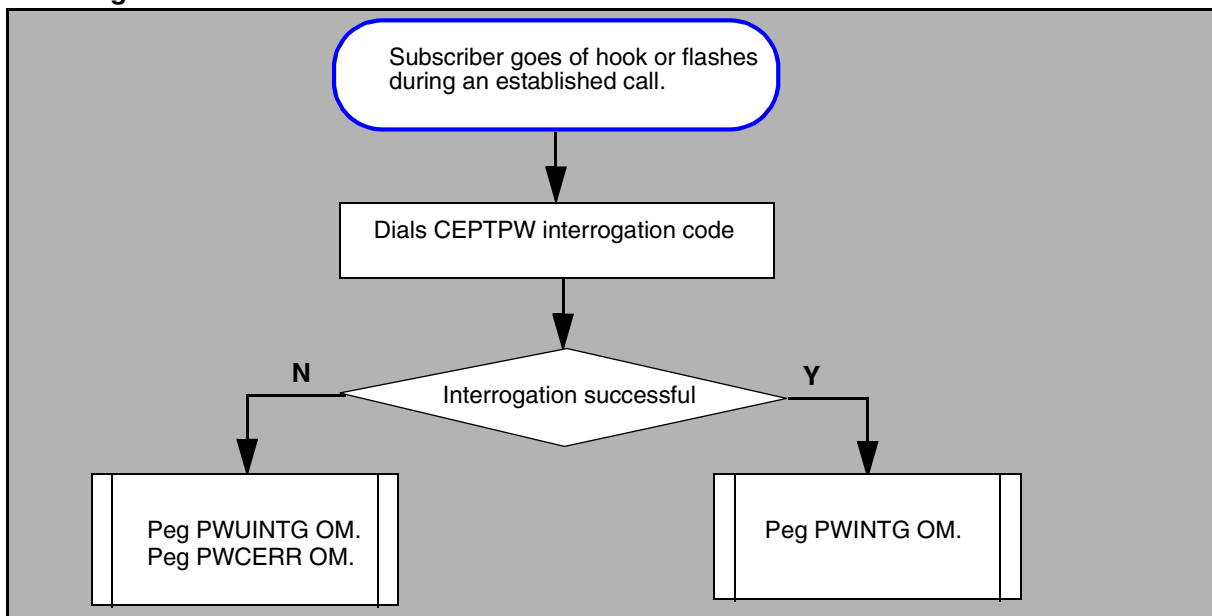
**Associated OM groups**

None

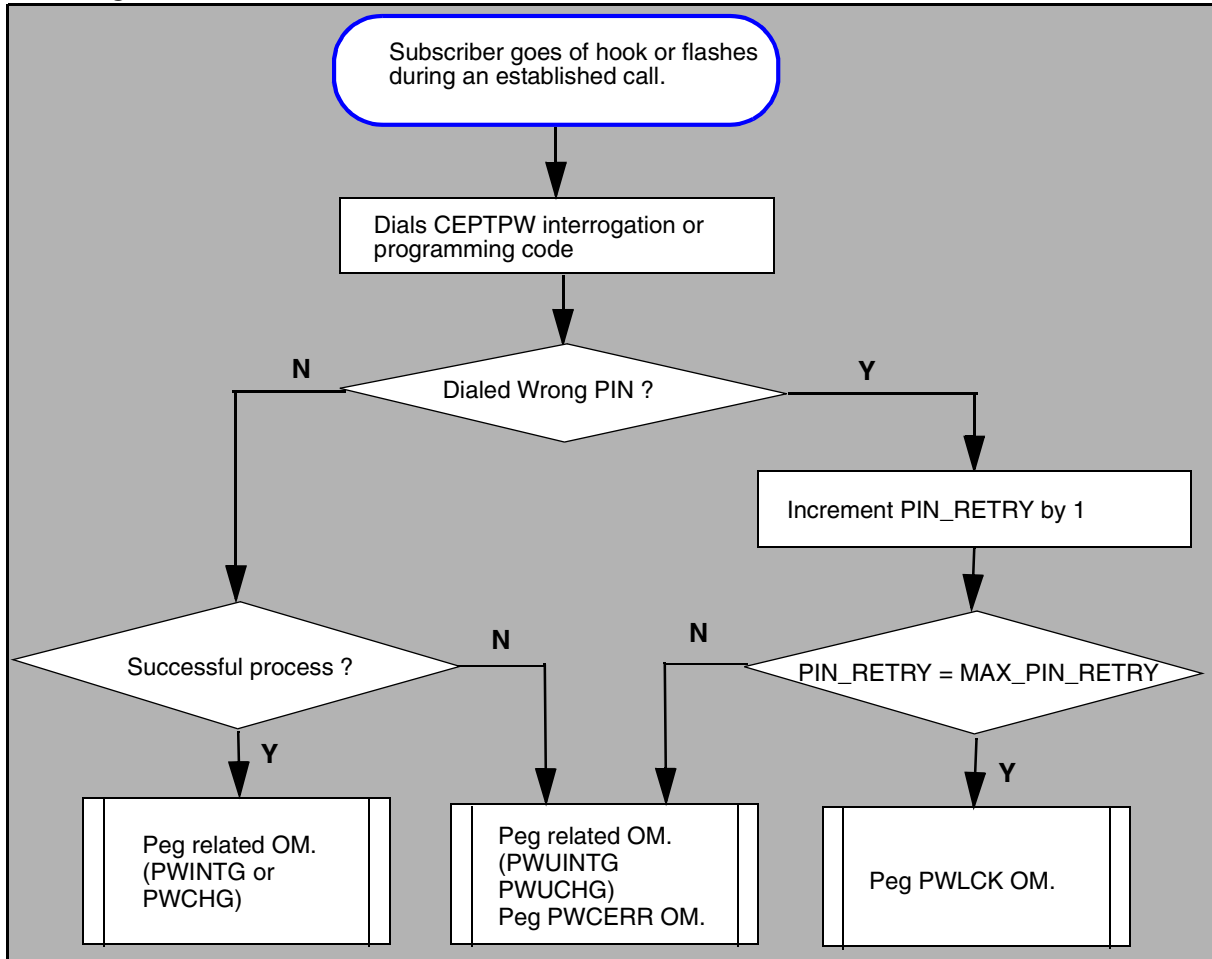
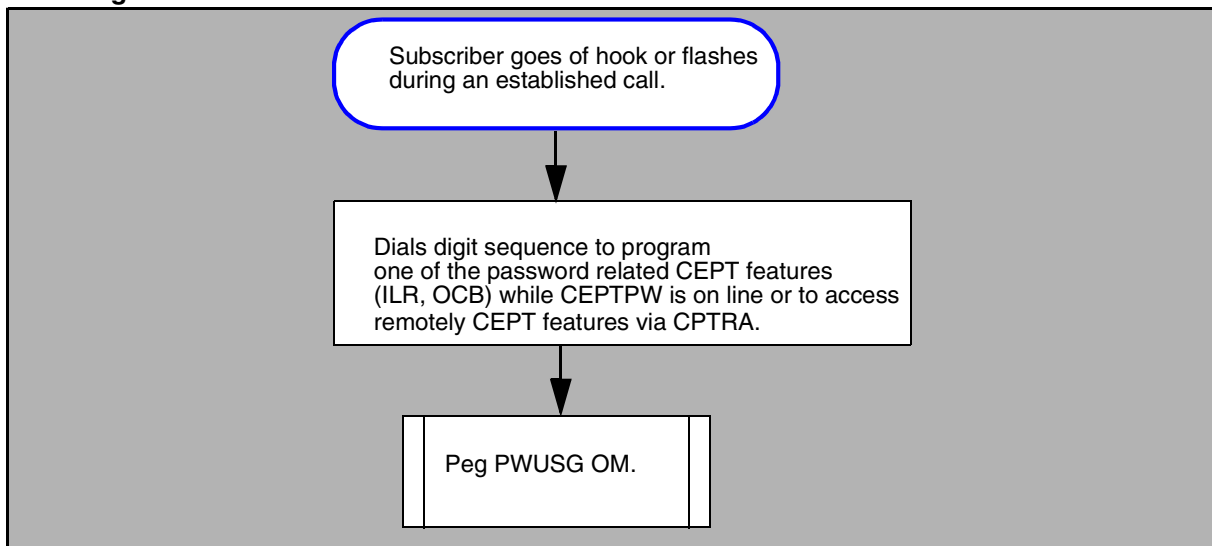
**Associated functional groups**

None

**OM group registers logic flow chart****Flow chart: OM groups CEPTPW register**

**Flow diagram for PWACT, PWUACT, PWCHG and PWUCHG OMs****Flow diagram for PWINTG and PWUINTG OM**



**Flow diagram for PWLCK OMs****Flow diagram for PWUSG OMs**

**Register PWACT (applies only to DMS)****Register description**

Cept Features' Password activation

PWACT is a peg register. It counts the number of times a subscriber activates CEPTPW feature successful. The subscriber receives the "confirmation" tone that indicates the request has been accepted.

**Register release history update**

Register PWACT is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWUACT****Register description**

Cept Features' Password unsuccessful activation

PWUACT is a peg register. It counts the number of times a subscriber unsuccessful attempts to activate CEPTPW feature. The subscriber receives the "nack" tone that indicates the request has been declined.

**Register release history update**

Register PWUACT is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWCHG****Register description**

Cept Features' Password changing

PWCHG is a peg register. It counts the number of times a subscriber changes password of CEPTPW feature successfully. The subscriber receives the “confirmation” tone that indicates the request has been accepted.

**Register release history update**

Register PWCHG is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWUCHG****Register description**

Cept Features’ Password unsuccessful changing

PWUCHG is a peg register. It counts the number of times a subscriber unsuccessful attempts to change password of CEPTPW feature. The subscriber receives the “nack” tone that indicates the request has been declined.

**Register release history update**

Register PWUCHG is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWINTG****Register description**

Cept Features’ Password interrogation

PWINTG is a peg register. It counts the number of times a subscriber queries whether the dialed password is true for CEPTPW feature. The subscriber receives the “SCT (Special Confirmation Tone)” or “SIT (Special Information Tone)” tone depending on the status.

**Register release history update**

Register PWINTG is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWUING****Register description**

Cept Features' Password unsuccessful interrogation

PWUING is a peg register. It counts the number of times a subscriber unsuccessful queries whether the dialed password is true for CEPTPW feature. The subscriber receives "nack" tone that indicates the request has been declined.

**Register release history update**

Register PWUING is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register PWLCK****Register description**

Cept Features' Password locked

PWLCK is a peg register. It counts the number of times a subscriber has caused to LOCK the CEPTPW feature by dialing more than MAX\_PIN\_RETRY times wrong pin while performing subscriber actions (activation, interrogation or programming).

**Register release history update**

Register PWLCK is created in ISN07.

**Associated registers**

None.

**Associated logs**

None.

**Register PWUSG****Register description**

Cept Features' Password usage

PWUSG is a peg register. It counts the number of times a subscriber has attempts to program password related features (ILR or OCB) while CEPTPW is assigned to line (by SERVORD or as default CEPT feature) or to access CEPT features remotely via CEPTRA.

**Register release history update**

Register PWUSG is created in ISN07.

**Associated registers**

None.

**Associated logs**

None.

**Register PWCERR****Register description**

Cept Features' Password customer error

PWCERR is a peg register. It counts the number of times a subscriber uses the CEPTPW feature incorrectly.

The following events cause this register to be implemented.

- The subscriber attempts to access CEPTPW when the feature is not assigned.
- The subscriber dials incorrectly when activating, programming or interrogating CEPTPW.
- The subscriber dials incorrect password while activating or interrogating
- The subscriber attempts to access CEPTPW when the feature is denied.

The subscriber receives 'RODR (Reorder Tone)', when CEPTPW option is not assigned on the line and subscriber attempts to dial access codes.

**Register release history update**

Register PWCERR is created in ISN07.

**Associated registers**

None

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

## CEPTRA OM Group template (applies only to DMS)

### OM description

OM group CEPTRA provides information about the usage and performance of Cept Features Remote Access (CEPTRA). This OM group stores the counts hardware and software overflow, successful usage, unsuccessful attempts of for all actions and error cases of CEPTPW feature.

### Release history update

The OM group CEPTRA includes 5 registers and is created with this activity in ISN07. The register names of OM group CEPTRA are:

CPTRAATT, CPTRAHOV, CPTRASOV, CPTRAFAL, CPTRASUC

### Registers

OM group registers display on the MAP terminal as follows:

#### OM Group CEPTRA Display

```
> omformat ceptra
CEPTRA
          CPTRAATT    CPTRAHOV    CPTRASOV    CPTRAFAL
          CPTRASUC
```

### Group structure

OM group CEPTRA provides one tuple for each per office.

Key field: None

Info field: None

The following figure shows the OM group CEPTRA registers as example.

#### Example of OM Group CEPTRA Registers

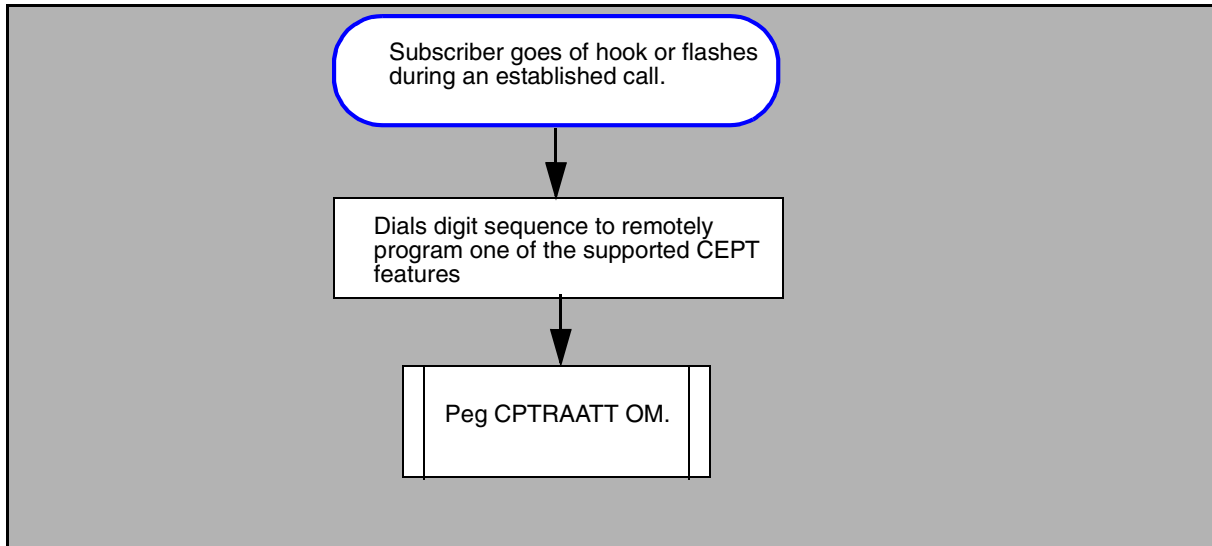
```
>omshow ceptra active
CPTRA
CLASS:    ACTIVE
START:2003/04/17 11:30:00 THU; STOP: 2003/04/17 11:36:36 THU;
SLOWSAMPLES:      4 ; FASTSAMPLES:      40 ;
          CPTRAATT    CPTRAHOV    CPTRASOV    CPTRAFAL
          CPTRASUC
          0           0           0           0           0
          0
```

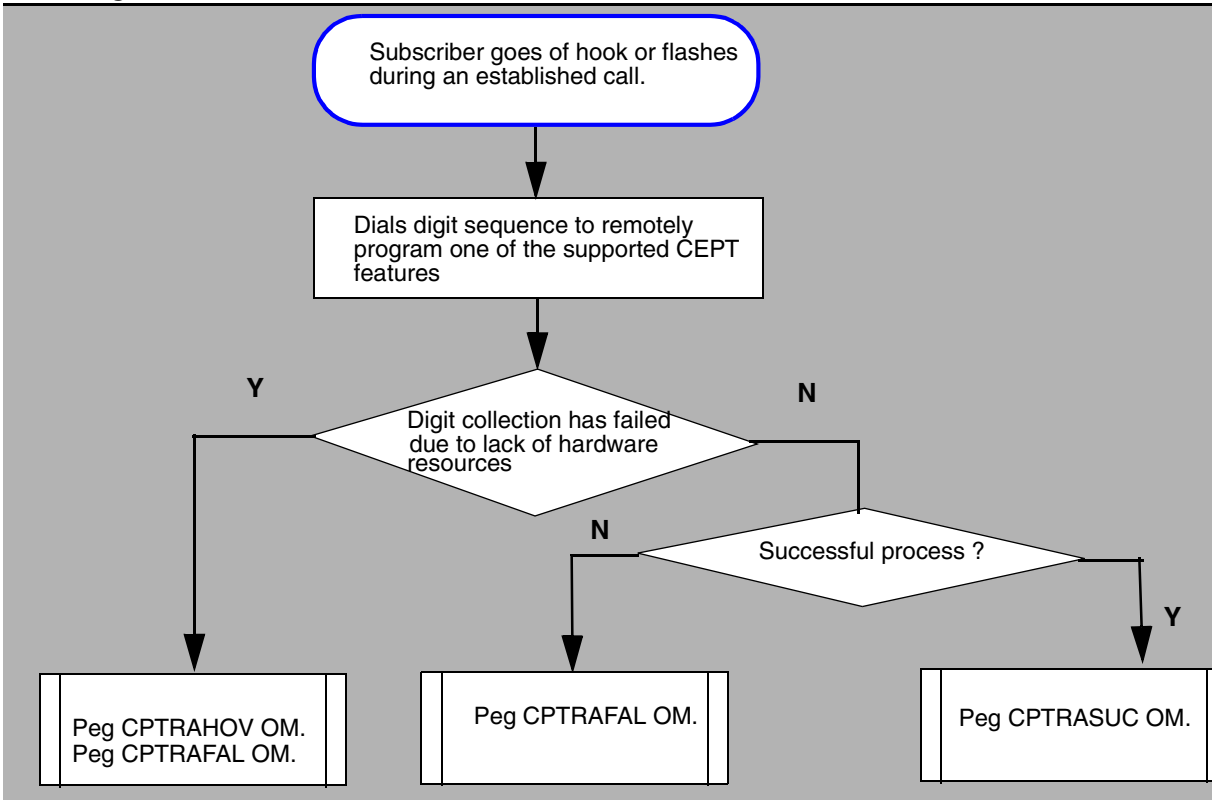
### Associated OM groups

None

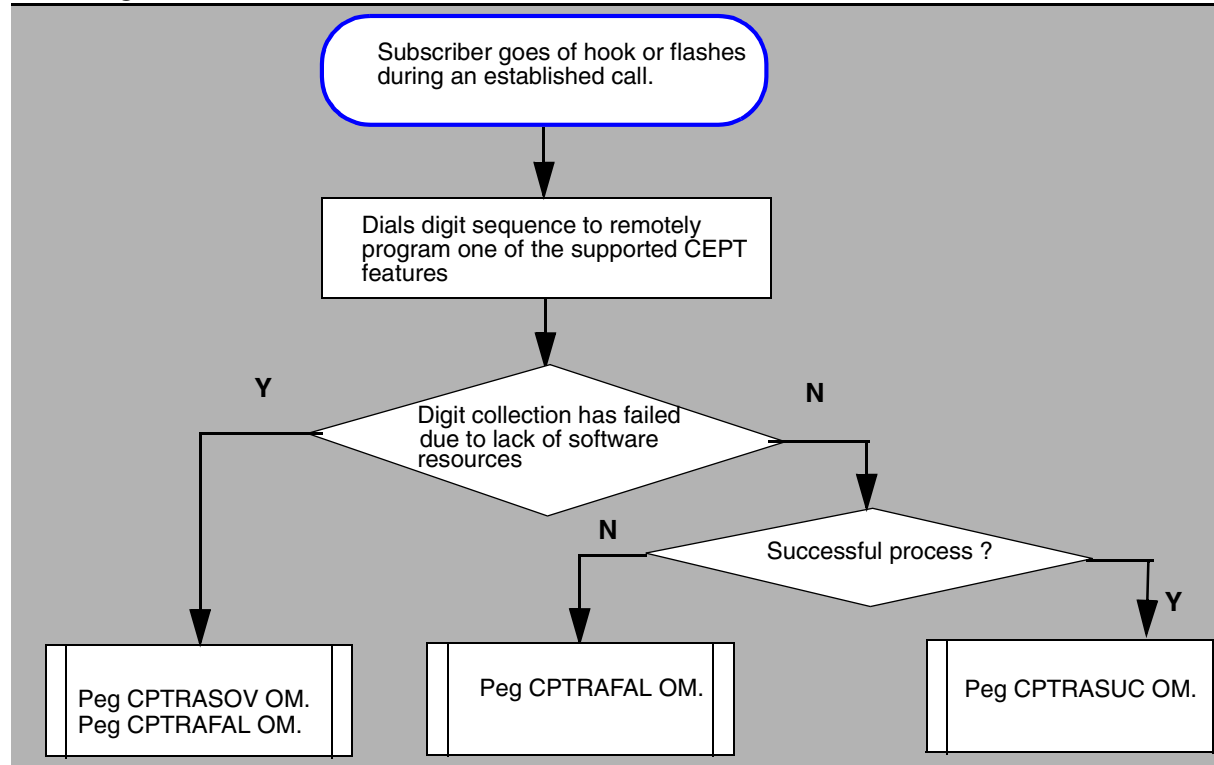
**Associated functional groups**

None

**OM group registers logic flow chart****Flow chart: OM groups CEPTRA register****Flow diagram for CPTRAATT OM**

**Flow diagram for CPTRAHOV, CPTRAFAL and CPTRASUC OMs**



**Flow diagram for CPTRASOV, CPTRAFAL and CPTRASUC OMs****Register CPTRAATT****Register description**

Cept Features' Remote Access attempt

CPTRAATT is a peg register. It counts the number of times a subscriber attempts to program one of the supported Cept Features remotely by using CEPTRA feature.

**Register release history update**

Register CPTRAATT is created in ISN07.

**Associated registers**

None.

**Associated logs**

None.

**Register CPTRAHOV****Register description**

Cept Features' Remote Access hardware overflow

CPTRAHOV is a peg register. It counts the number of times a subscriber unsuccessful attempts to program one of the supported Cept Features remotely by using CEPTRA feature due to hardware failure such as UTR is unavailable. Subscriber receives "nack" tone that indicates the request has been declined.

**Register release history update**

Register CPTRHOV is created in ISN07.

**Associated registers**

None.

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register CPTRASOV****Register description**

Cept Features' Remote Access software overflow

CPTRASOV is a peg register. It counts the number of times a subscriber unsuccessful attempts to program one of the supported Cept Features remotely by using CEPTRA feature due to software failure such as software resources are insufficient. Subscriber receives "nack" tone that indicates the request has been declined.

**Register release history update**

Register CPTRSOV is created in ISN07.

**Associated registers**

None.

**Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

**Register CPTRAFAL****Register description**

Cept Features' Remote Access fail

CPTRAFAL is a peg register. It counts the number of times a subscriber uses the CEPTRA feature incorrectly.

The following events cause this register to be implemented.

- The subscriber attempts to access CEPTRA when the CEPTPW feature is not assigned.
- The subscriber dials incorrectly when entering pin and base DN.
- The subscriber dials incorrect password for the base agent.
- The subscriber attempts to access CEPTRA when the feature is denied.
- The subscriber is unsuccessful to program one of the supported CEPT features remotely by using CEPTRA.

The subscriber receives 'RODR (Reorder Tone)', when CEPTPW option is not assigned on the line and subscriber attempts to dial access codes.

#### **Register release history update**

Register CPTRAFAL is created in ISN07.

#### **Associated registers**

None.

#### **Associated logs**

Log FTR138 is generated whenever a caller receives a treatment tone.

### **Register CPTRASUC**

#### **Register description**

Cept Features' Remote Access successful usage

CPTRASUC is a peg register. It counts the number of times a subscriber successfully programs one of the supported Cept Features remotely by using CEPTRA feature.

#### **Register release history update**

Register CPTRASUC is created in ISN07.

#### **Associated registers**

None.

#### **Associated logs**

None.

## ***Product = World Trade***

### **A00001920 -- Metering OOS Enhancements (Succession on DMS)**

#### ***Functional Description***

This feature enhances existing metering structure in terms of deassigned meters of lines. In current metering system, a subscriber becomes meterable via a MOG option. Depending on assigned MOG id, software meters (which may be up to 4) are assigned to subscriber.

When MOG option is removed from subscriber, all assigned meters on subscriber are sent to OOS. If MOG option is reprovisioned on the same DN, meter counts of assigned meters start with zero, since it is initialized.

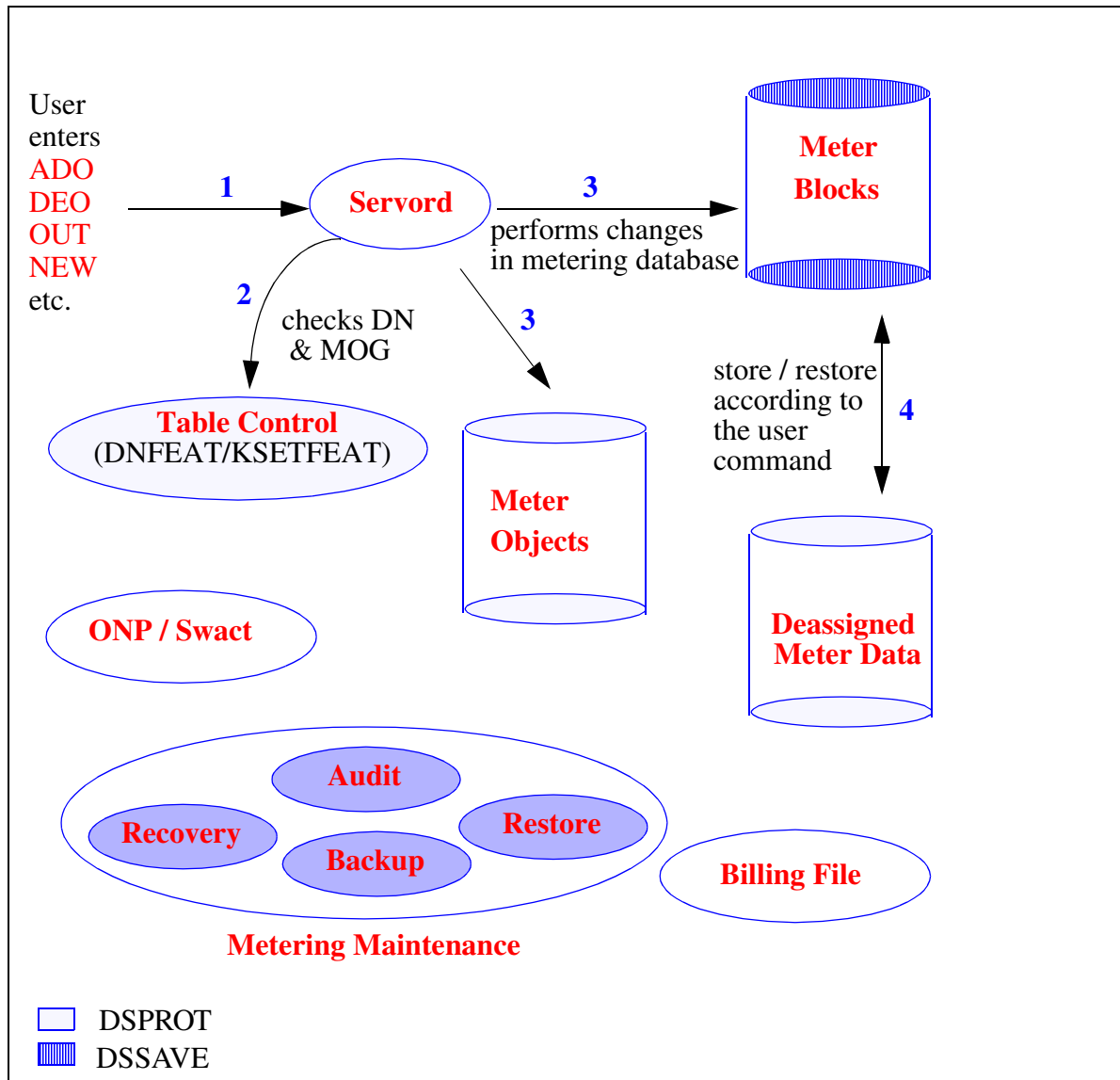
The purpose of this feature is to store meter counts of agents when any MOG deletion process is performed and to restore meter counts when MOG addition is performed on same agent.

While storing line meter counts, it is important to supply consistency after restarts, image reloads or restore operations. To manage metering consistency for deassigned meters, line metering maintenance processes (Backup & Restore, Audit, Recovery, ONP) are enhanced.

In addition to this, in current metering system, billing records for metered lines are generated by referring to billing file. Billing file includes both OOS meters and INUSE meters which means that deassigned meters are also included in this file.

This feature is optional with a SOC option. When the state of SOC is ON, the feature becomes active, otherwise the system behaves as it was before this functionality.

The feature is implemented in ISN07.

**Functional Behavior of Feature**

The main changes that have been introduced with this feature can be listed as follows;

- Activation of Feature
- New Table MTRDEASS
- Adding / Deleting MOG Option
- Metering Maintenance Support
- Billing File Interaction
- New Log MTR150

- New NONRES Command DEASSCLR

In the following sections, changes introduced with this feature are described in detail.

### Activation of Feature

This feature is functional in Bangladesh and TRNC market. For other markets this feature is not functional. So activation of this feature is controlled by SOC.

*METR\_Deassigned\_Support* is a state SOC and it has two states, ON and IDLE. Default state of *METR\_Deassigned\_Support* is IDLE. When its state is ON, this feature becomes functional.

#### SOC for Activation of Feature

|                          |                         |
|--------------------------|-------------------------|
| SOC group:               | METR                    |
| SOC option name:         | METR0016                |
| SOC option title:        | METR_Deassigned_Support |
| SOC option control type: | state                   |
| New SOC option?          | Yes                     |
| Option defined in DRU:   | WT20                    |
| Affected products:       | DMS100-MMP              |

Activation of SOC is done by a password control. The passwords are unique for each office. When deactivation is being performed, a restriction is handled in order not to change state of SOC easily. NCW\_MOG parameter in MTRSYSPM table is checked. If value of this parameter is “DISALLOWED”, changing SOC state to IDLE is forbidden. SOC can be set to IDLE, when this parameter is “ALLOWED”. Also if there is at least one tuple in MTRDEASS table, setting state of METR0016 SOC is forbidden.

**Note:** Changing value of NCW\_MOG parameter requires a reload restart.

There is another SOC option within this feature. It is used to decide sending deassigned meters to OOS or not, where Bangladesh behaves differently from other markets.

#### SOC for Preventing to Sent Deassigned Meters to OOS

|                   |                       |
|-------------------|-----------------------|
| SOC group:        | METR                  |
| SOC option name:  | METR0017              |
| SOC option title: | METR_Prevent_Sent_OOS |

|                          |              |
|--------------------------|--------------|
| SOC option control type: | state        |
| New SOC option?          | Yes          |
| Option defined in DRU:   | WT20         |
| Affected products:       | DMS100 - MMP |

*METR\_Prevent\_Sent\_OOS* is also a state SOC which has two possible states; ON and IDLE. Default state of SOC is IDLE.

Activation/Deactivation of these two SOC options depends to one another as follows:

- State of *METR\_Deassigned\_Support* can be set to IDLE only when state of *METR\_Prevent\_Sent\_OOS* is IDLE.
- State of *METR\_Prevent\_Sent\_OOS* can be set to ON only when state of *METR\_Deassigned\_Support* is ON.

Activation of feature for Bangladesh market is as following:

- State of *METR\_Deassigned\_Support* is set to ON
- Then, state of *METR\_Prevent\_Sent\_OOS* is set to ON.

Activation of feature for TRNC market is as following:

- State of *METR\_Deassigned\_Support* is set to ON.
- State of *METR\_Prevent\_Sent\_OOS* is always IDLE.

Activation/Deactivation of *METR\_Deassigned\_Support* and *METR\_Prevent\_Sent\_OOS* is forbidden while a maintenance process (meter audit/recovery) or billing process is running.

### New Table MTRDEASS

When a metered line (IBN/ETSI BRI) is deleted or when MOG option is removed from a line, assigned meters (which may be up to 4) of DN are stored as deassigned meters in a new table in DSPROT.

To provide a user interface of new storage of deassigned meters, MTRDEASS table is created. This table is read only that is, any of the tuples can not be changed or deleted. But user can see meter counts of deassigned meters of agents whenever requests.

It is important to mention that, while listing meter counts of each meter of agent, meter counts are retrieved from meter blocks in DSSAVE.

The content of each tuple in MTRDEASS table is as follows:

**Structure of MTRDEASS Table**

|    |        |       |        |       |        |       |        |       |         |
|----|--------|-------|--------|-------|--------|-------|--------|-------|---------|
| DN | meter1 | wrap1 | meter2 | wrap2 | meter3 | wrap3 | meter4 | wrap4 | OutDate |
|    |        |       |        |       |        |       |        |       |         |

**DN:** Directory number of agent (which may be up to 18)

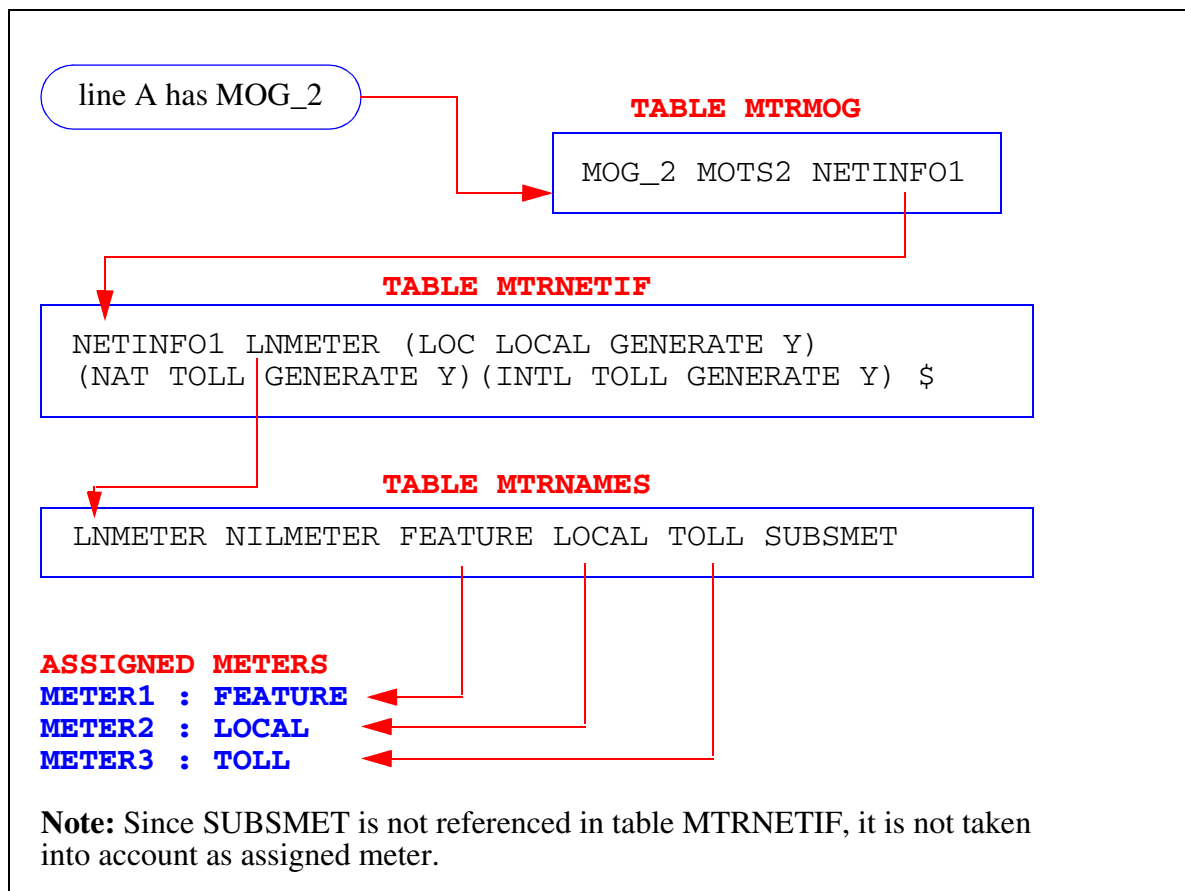
**Wrap:** Y/N, indicating date meter counts has exceeded 999999999 and wrapped.

**Date:** Date of deleting MOG option. Its format is as follows; yyyy/mm/dd hh:mm:ss. Date is modified every time a change has been made on tuple in MTRDEASS table.

**Meter1, meter2, meter3, meter4:** Assigned meters which depend on MOG id. These meters are determined as follows:



## Retrieving Assigned Meters



The table lists last counts of agent when MOG deletion is performed. For every assigned meters (which may be up to 4) of agent, meter count and wrap information are listed with date of adding tuple to MTRDEASS table.

Maximum number of tuples in MTRDEASS table is limited to 65520.

## Adding / Deleting MOG Option

When user performs any operation that results with MOG deletion, assigned meters of agent are stored in MTRDEASS table. All servord commands that causes MOG deletion/addition is considered. Some examples of commands are below.

### Delete MOG Option

DEO command is used to remove an option from a specified DN. While removing MOG option from an agent, its assigned meters are stored in the system as deassigned meters.

If there is no space available in MTRDEASS table to add deassigned meters, a warning message is displayed to inform user about this. Format of warning message is as follows:

NO SPACE AVAILABLE IN MTRDEASS TABLE.DEASSIGNED METER COUNTS WILL BE LOST!

In addition to this, a new MTR log is generated to log last count of each deassigned meter.

Here is the an example of MOG deletion process.

```
>qdn 7835401
```

```
-----
DN: 7835401
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER: HOST 00 0 00 03
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP: CUST783 SUBGRP: 0 NCOS: 0
CARDCODE: 6X93AA GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER : 42
PM TERMINAL NUMBER : 4
OPTIONS:
DGT MOG MOG_2
-----
```

```
>deo $ 7835401 mog $ y y
COMMAND AS ENTERED:
DEO NOW 3 3 31 AM 7835401 ( MOG ) $
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
```

When MOG option is deleted, corresponding meters in meter block are marked as DEASSIGNED and an entry is added into MTRDEASS table to store deassigned meters.

TABLE MTRDEASS  
TOP

| DEAKEY     | METER1   | WRAP1 | METER2   | WRAP2 | METER3  | WRAP3 | METER4 | WRAP4 | OUT_DATE           |
|------------|----------|-------|----------|-------|---------|-------|--------|-------|--------------------|
| 1027835401 | 00000012 | N     | 00000015 | N     | 0000002 | N     | -----  | -     | 003/03/31 12:34:00 |

BOTTOM

### Add MOG Option

ADO command is used to assign an option to a specified DN. While adding MOG option to a DN, deassigned meter table is checked before assigning new meters to DN. If there is any deassigned meter for the DN, a cross check between new meters and previously deassigned meters is performed. If there is any matching meters, meter counts of these meters are restored. If not, newly assigned meters are initialized to zero.

- If same MOG option is assigned to DN, all deassigned meters are reassigned with last meter counts.

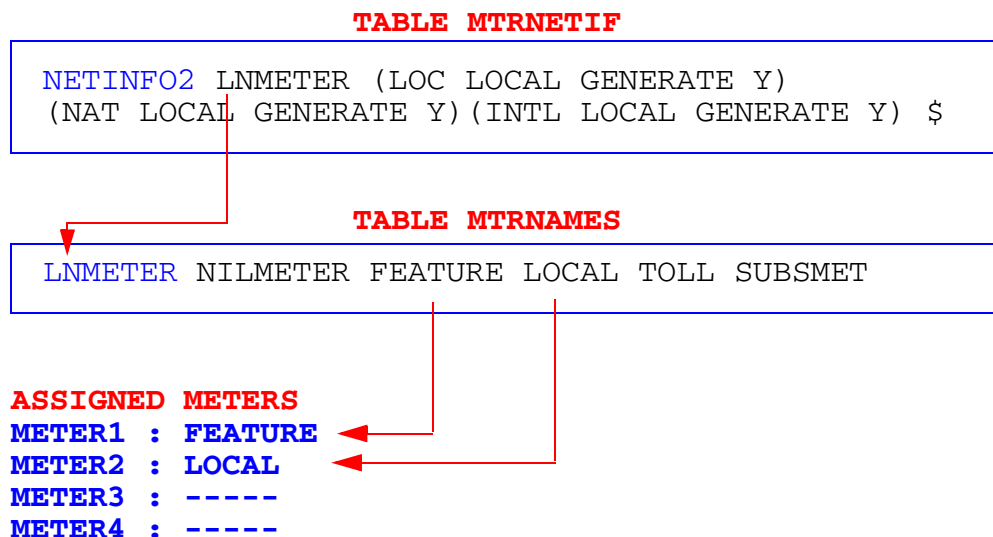
```
>ado $ 7835401 mog mog_2 $ y y
COMMAND AS ENTERED:
ADO NOW 3 3 31 AM 7835401 ( MOG MOG_2) $
1. METER NAME: FEATURE          2. METER NAME: LOCAL
3. METER NAME: TOLL             4.METER NAME: -----
MOGID MOG_2 HAS ABOVE METERS ASSIGNED.

>mtrcount line 7835401
*****
DN      : 1027835401
DATE    : 03/04/01
MTR NAME: FEATURE      MTR COUNT: 00000012 WRAP: N
MTR NAME: LOCAL        MTR COUNT: 00000015 WRAP: N
MTR NAME: TOLL         MTR COUNT: 00000020 WRAP: N
*****
```

- If a different MOG id is assigned to DN,

```
>ado $ 7835401 mog mog_3 $ y y
COMMAND AS ENTERED:
ADO NOW 3 3 31 AM 7835401 ( MOG MOG_3) $
1. METER NAME: FEATURE          2. METER NAME: LOCAL
3. METER NAME: -----          4. METER NAME: -----
MOGID MOG_3 HAS ABOVE METERS ASSIGNED.
```

Assigned meters of MOG\_3 is as follows:



Entry in MTRDEASS table is checked whether there is any matching meters with previously deassigned meters. For any matching meter, assigned bits are set to TRUE and mismatched meters are stored in MTRDEASS table.

```
TABLE MTRDEASS
TOP
```

| DEAKEY     | METER1 | WRAP1 | METER2 | WRAP2 | METER3   | WRAP3 | METER4 | WRAP4 | OUT_DATE            |
|------------|--------|-------|--------|-------|----------|-------|--------|-------|---------------------|
| 1027835401 | -----  | -     | -----  | -     | 00000020 | N     | -----  | -     | 2003/03/31 12:34:00 |

```
BOTTOM
```

```
>mtrcount line 783540
*****
DN      : 1027835401
DATE    : 03/04/01
MTR NAME: FEATURE      MTR COUNT: 00000012 WRAP: N
MTR NAME: LOCAL        MTR COUNT: 00000015 WRAP: N
*****
```

### Remove a DN From System

OUT command is used to remove an agent from system. If there is MOG option on outed DN, its assigned meters are stored in MTRDEASS table to be able to restore when this DN is given into service with MOG option again.

### Add a DN to System

NEW command is used to define a new DN in system. With this command, specified option can be assigned to DN. If MOG option is being assigned with NEW command, MTRDEASS table is checked whether there is an entry for DN. If there is, and if any deassigned meters match with newly assigned meters, meter counts of matching meters are restored back.

*Note:* This feature supports restoring deassigned meters of huntgroups (DLH, DNH, MLH) too.

### Line Metering Maintenance

Metering database composed of more than one component. Some of them resides in DSSAVE and some of them in DSPROT. These two places are affected by different process such as; DSPROT is affected by image reloads or survives all restarts whereas DSSAVE survives during image reboots and affected by RESTORE process.

Because of different effects of restarts, image reloads or restore operations there may occur inconsistencies between data in DSSAVE and data in DSPROT.

To detect and recover these inconsistencies, Audit and Recovery processes are run.

- **Meter recovery process**

Meter recovery process runs after each reload restarts and meter restore processes. After reload restarts or restore processes there may be inconsistencies in metering system. Recovery process handles this within three main passes.

In first pass, link between meter object (DSPROT) and meter blocks (DSSAVE) are broken to be associated again in further steps.

In second pass, meter blocks in inservice meter table in DSSAVE are traversed. For every in use meter block, its meter object pointer and mog id is retrieved from DNFEAT/KSETFEAT table.

- If there is no entry for this DN in DNFEAT/KSETFEAT table, or
- If there is no meter object pointer, or
- If there is no MOG option on this agent,

then this agent is decided to be recycled with its all assigned meters.

If agent has a valid meter object pointer and MOG option, assigned meters in agent data and in meter block are compared, if there is a difference, mismatched meter is recycled.

In third pass of recovery process, all meter objects are traversed to find if there is any meter object which has MOG option but has no associated meter block. If there is any, a new meter block is allocated in DSSAVE.

### **Line Meter Audit Process**

Line audit runs periodically, manually and after all restarts to verify the integrity between DSPROT (meter objects) and DSSAVE (meter blocks). It is composed of two main passes.

In first pass, all meter objects are traversed and a cross checking is done between the agent data and the information in meter block. During this cross check operation,

- agent that doesn't have a meter block although there is MOG in meter object
- agent whose owner doesn't match with the owner in the meter block
- agent whose assigned meters doesn't match with the ones in meter block

are controlled and necessary logs are generated to inform the user about inconsistency.

If there an inconsistency between assigned meters of an agent, mismatched meters are set as recycled and if at least one meter of meter block is recycled this meter block is added into recovery table. During third run of audit process after line meter recovery, these recycled meters are cleared and sent to OOS.

In second pass of audit process, all in service meter blocks are traversed (examining audited meter blocks) to report such inconsistencies as non-existent owners and to rebuild the free queue as it goes along. During second pass,

- if owner of meter block is not valid, then agent is recycled.
- If meter block is in use, its meter object is tried to be reached. If there is no associated meter object with this meter block, then this agent is recycled.
- Or, if agent has a meter object but it doesn't have mog option, then agent is recycled.

### **Enhancement of Metering Recovery Process**

Behavior of metering recovery process is changed as follows.

In terms of deassigned meters in meter block, recovery process tries to provide a consistency between data in meter block and data in MTRDEASS table.

In second pass, if DN doesn't exist in KSETFEAT/DNFEAT tables, MTRDEASS table is checked.

- If it is there, agent is not recycled and if there is any deassigned meter in meter block, date information of related tuple in MTRDEASS is updated. If there is not any deassigned meter in meter block, tuple in MTRDEASS table is cleared.
- But if doesn't exist in MTRDEASS table too, deassigned meters in meter block are checked. If there is at least one deassigned meter in meter block, a new entry is added into MTRDEASS table to be in sync with meter block.
- While adding a tuple into MTRDEAS table during recovery, MTR153 log is not generated.

In third pass of recovery process, after allocating a new meter block for DN, MTRDEASS table is checked whether there is an entry in MTRDEASS for this DN. If there is, tuple is deleted since there is not any deassigned meter in newly allocated meter block.

### Enhancement of Metering Audit Process

Behavior of metering audit process is changed, as follows.

Audit process tries to recycle agent whose DNs do not exist in KSETFEAT/DNFEAT tables. But within this feature, a further check is made in MTRDEASS table, since DN can be found there. If it is there, recycling agent is avoided.

During third run of audit process after recovery, meters that are decided to be recycled are saved in MTRDEASS table as deassigned meters.

To decide to send them to OOS or not, *METR\_Prevent\_Sent\_OOS* SOC option check is required, since Bangladesh behaves differently.

- For Bangladesh market, state of *METR\_Prevent\_Sent\_OOS* is ON which means that recycled meters are not sent to OOS.

### ONP and Swact Support

This feature changes the behavior of ONP as follows;

- MTRDEASS table is not transferred during ONP, instead this during transfer of meter blocks, for deassigned meters in meter block a new entry is added into MTRDEASS table. By this way, MTRDEASS is re-datafilled and date information reflects the date of ONP.
- During transfer of meter blocks in MASPECT stage of SWACT, meter counts of deassigned meters are transferred too.

## Billing File Generation

Billing file is used to generate billing record for metered lines. Storage of meter billing records are to an external store type such as disk or tape.

Billing file includes both OOS meters and inservice meters. OOS meters are written into file first, then inservice meters are appended. To distinguish OOS meters and inservice meters a separator is used. An example for content of billing file is as follows;

```

BILLING IS TAKEN .....
R021112132202BIL
>mtrprint R021112132202BIL
DN                DATE    METER NAME    COUNT    WRAP
-----
1027838888        02/11/12  FEATURE    00000009  NO
1027838888        02/11/12  LOCAL      00000005  NO
1027838888        02/11/12  TOLL       00000008  NO
9999999999        99/99/99  * END OOS * 99999999  NO
1027835572        02/11/12  FEATURE    00000084  NO
1027835572        02/11/12  LOCAL      00000018  NO
1027835572        02/11/12  TOLL       00000000  NO

```

With this functionality, deassigned meters are also included in billing file. But the section where deassigned meters are included differs in Bangladesh and TRNC market.

- In Bangladesh market, deassigned meters are included within inservice meters section since they are not sent to OOS.
- In TRNC market, deassigned meters are included within OOS meters section.

There is no indication for deassigned meters in billing file, they are distinguished from INUSE meters by the help of another report that has been reported manually to billing center or by checking unchanged meter counts during billing periods.

When *METR\_Prevent\_Sent\_OOS* SOC is ON, OOS file is not included in billing file although it contains OOS meters.

## Log Generation

A new log report MTR150 is added to the MTR log system. This log is generated when there is no space available in MTRDEASS table for a new tuple.

An example of the log format is as follows:



```
MTR150 APR1 12:00:13 1234 INFO MTRDEASS DATA LOST
DN:7835401 METER NAME: LOCAL USER:ADMIN
METER COUNT: 00000012 WRAP:N
NO FREE SPACE IS AVAILABLE IN MTRDEASS TABLE
```

This log is generated for each assigned meter of DN.

User is also warned by a warning message which is displayed while deleting MOG option from DN. By the help of this warning message, user can give up deleting MOG option.

In existing structure, when MOG option is removed, MTR153 log is generated while deallocating the meter block or when clearing all recycle meters. MTR153 log is an information log, whose text is as follows;

```
MTR153 APR1 12:00:13 1234 INFO METER DELETED
DN:000001027835401
MANUALLY DELETED METERS ARE RECORDED ON OOS JOURNAL FILE.
METER NAME: LOCAL METER COUNT: 0000 0012
```

For deassigned meters which are not sent to OOS with this feature, MTR153 log is generated with a different text.

```
MTR153 APR1 12:00:13 1234 INFO METER DELETED
DN:000001027835401
MANUALLY DELETED METERS ARE RECORDED ON MTRDEASS TABLE.
METER NAME: LOCAL METER COUNT: 0000 0012
```

In TRNC market, deassigned meters are sent to both OOS and MTRDEASS tables. In these cases, MTR153 log is generated as follows:

```
MTR153 APR1 12:00:13 1234 INFO METER DELETED
DN:000001027835401
MANUALLY DELETED METERS ARE RECORDED ON MTRDEASS TABLE
AND OOS JOURNAL FILE.
METER NAME: LOCAL METER COUNT: 0000 0012
```

## New NONRES Command DEASSCLR

This is a NONRES command and it is accessed by TOOLSUP. It is used for deleting all content of MTRDEASS table.

There is no need to add a help option to DEASSCLR command since a detailed warning message is displayed to inform the user about result of executing this command.

> DEASSCLR

A warning message is displayed first when DEASSCLR command is run.

```
*****  
DANGER: LOSS OF METERING DATA IN MTRDEASS TABLE  
This command deletes all tuples in  
MTRDEASS table.  
*****
```

Then a YES/NO prompt is displayed. If user select Y, command is executed, otherwise user gives up to continue.

This command is referenced when all DN numbers is to be changed. In such a case all DNs are needed to be removed from system and added again. In this period, number of tuples in MTRDEASS table can reach maximum limit. By using this command, all content of MTRDEASS table is cleared.

## Enhanced ZAPMTRS Command

ZAPMTRS command clears meter counts of all software meter including recycled meters.

When this feature is functional, if ZAPMTRS command is executed, meter counts of deassigned meters are cleared too. Since meter counts of deassigned meters are cleared, there is no need to keep a tuple associated with these deassigned meters. So all content of MTRDEASS table is cleared during process of ZAPMTRS command.

## Hardware Requirements or Dependencies

None.

## Software Requirements or Dependencies

None.

## Limitations and restrictions

- Maximum number of entries in MTRDEASS table is 65520.
- Limitations and restrictions of metering system exists for this feature.
- *METR\_Prevent\_Sent\_OOS* can not be activated when state of *METR\_Deassigned\_Support* is IDLE.
- Metering OOS enhancements are not supported for meter trunk agent.
- Number of deassigned DN's and INUSE DN's can not exceed 120000.
- Adding or deleting a tuple into MTRDEASS table via RESTAB tool is restricted.
- Journal file is not updated during adding/deleting a tuple to/from MTRDEASS table since they are done internally.
- Maximum number of entries in recovery table is 2048, when it exceeds this size, meter counts of these meter blocks are lost.

## Interactions

- Feature is not affected by ENABLE\_METERING parameter in OFCENG table.
- Feature is not affected by ACT.59022090 "Excessive Metering Detection"

## Applicable customer facing sections

### Fault Management

|        |              |
|--------|--------------|
| Logs   | <u>  X  </u> |
| Alarms | <u> N/A </u> |

### Configuration

|                    |              |
|--------------------|--------------|
| Data Schema        | <u>  X  </u> |
| User Interface     | <u>  X  </u> |
| Element Management | <u> N/A </u> |
| Security           | <u> N/A </u> |
| Service Order      | <u> N/A </u> |
| Office Parameters  | <u> N/A </u> |

|                                   |              |
|-----------------------------------|--------------|
| Accounting (includes AMA billing) | <u> N/A </u> |
|-----------------------------------|--------------|

|                                                 |              |
|-------------------------------------------------|--------------|
| Performance (includes operational measurements) | <u> N/A </u> |
|-------------------------------------------------|--------------|

## Glossary

| Term | Description                                     |
|------|-------------------------------------------------|
| OOS  | Out of Service                                  |
| TRNC | Turkish Republic of Northern Cyprus             |
| ONP  | One Night Process                               |
| MOG  | Meter Origination Group                         |
| SOC  | Software Optionality Control                    |
| SO   | Service Order                                   |
| ETSI | European Telecommunications Standards Institute |

### *Fault Management for A00001920*

#### **Fault management strategy**

N/A

#### **Fault management tools and utilities**

N/A

#### **Logs**

##### **Explanation**

Log Title: MTRDEASS DATA LOST

Name: MTR 150

Description: This log is generated when there is no space available in MTRDEASS table for a new entry.

MTRDEASS table is used to keep deassigned meters of subscribers. Adding a new tuple to MTRDEASS table is performed when MOG deletion is done. If there is no space for new entry, MTR 150 log is generated for each deassigned meter of subscriber.

Event type: Information

##### **Format**

MTR150 <mmdd hh:mm:ss ssdd> INFO MTRDEASS DATA LOST

DN: <Directory Number> METER NAME: <Meter Name>

METER COUNT: <Meter Count> WRAP: <Wrap>

NO SPACE IS AVAILABLE IN MTRDEASS TABLE

**Example:**

MTR150 APR1 12:00:13 1234 INFO MTRDEASS DATA LOST

DN:7835401 METER NAME: LOCAL

METER COUNT: 00000012 WRAP:N

NO FREE SPACE IS AVAILABLE IN MTRDEASS TABLE

## Field descriptions

### Field descriptions

| Field       | Value            | Description                                                     |
|-------------|------------------|-----------------------------------------------------------------|
| DN          | Directory Number | Directory Number of subscriber                                  |
| Meter Name  | character set    | Meter names that are defined in table MTRNAMES                  |
| Meter Count | Numeric          | Meter count of deassigned meter which may be up to 99999999     |
| Wrap        | Y/N              | Boolean to indicate whether meter counts has exceeded 99999999. |

## Action

MTR 150 log is an information log. It requires no immediate action.

## Associated Operational Measurements or Performance Measurements

N/A

**Additional information**

N/A

***Configuration for A00001920*****Hardware and Software Requirements**

N/A

**Initial Configuration**

N/A

**Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

**Upgrade Impact****Dump and Restore**

None

**Element Management Upgrade**

None

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema****New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| MTRDEASS       | NEW                      | NEW                               |

**Table/MIB/Remote Database Schema information****Name: MTRDEASS**

Deassigned meters table.

**Functional description**

MTRDEASS table is used to keep deassigned meters of subscriber to be able to restore them when a MOG reprovisioning is done.

A new tuple is added to this table when a MOG deletion is performed and tuple is deleted when agent is assigned with same MOG option.

### Usage sequence and implications (CM Only)

User has no chance to datafill MTRDEASS table. Entries are added into this table internally. But in order to be able add a tuple into MTRDEASS table internally, world metering tables are needed to be available in office.

### Size

Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                 |
|------------------------|----------------|----------------|-------------------------------------------------------|
| MTRDEASS               | 0              | 65520          | Memory is allocated automatically for each new tuple. |

### Fields/OIDs

The following table lists fields/OIDs for MTRDEASS table.

Table field descriptions

| Field  | New or Changed | Subfield or refinement | Entry               | Explanation and action                       |
|--------|----------------|------------------------|---------------------|----------------------------------------------|
| DEAKEY | New            | None                   | Up to 18 digits     | Directory Number of subscriber               |
| METER1 | New            | None                   | 00000000 - 99999999 | Meter Counts of deassigned meter             |
| WRAP1  | New            | None                   | Y/N/-               | Indicates whether counts are wrapped or not. |
| METER2 | New            | None                   | 00000000 - 99999999 | Meter Counts of deassigned meter             |
| WRAP2  | New            | None                   | Y/N/-               | Indicates whether counts are wrapped or not. |
| METER3 | New            | None                   | 00000000 - 99999999 | Meter Counts of deassigned meter             |
| WRAP3  | New            | None                   | Y/N/-               | Indicates whether counts are wrapped or not. |
| METER4 | New            | None                   | 00000000 - 99999999 | Meter Counts of deassigned meter             |

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry                  | Explanation and action                       |
|---------|----------------|------------------------|------------------------|----------------------------------------------|
| WRAP4   | New            | None                   | Y/N/-                  | Indicates whether counts are wrapped or not. |
| OUTDATE | New            | None                   | YYYY/MM/DD<br>HH:MM:SS | Date of deassigning meters                   |

**Datafill example**

The following example shows sample datafill for table MTRDEASS

.

TABLE MTRDEASS  
TOP

```
DEAKEY      METER1 WRAP1 METER2 WRAP2 METER3 WRAP3 METER4  WRAP4  OUTDATE
-----
1027835401 00000012  N  00000015  N  00000020  N  ----- - 20 03/03/31 16:03:56
```

BOTTOM

**Table release history update**

MTRDEASS table is introduced in ISN07. Maximum table size of 65520 tuples for deassigned meters.

**Supplementary information**

- Tuples of MTRDEASS table can not be changed or deleted.
- New tuples can not be added manually.
- When maximum number of tuples is reached, MTR150 log is generated.

**Translation verification other tools**

MTRDEASS table does not use translation verification tools.

**Service Orders (SO) (CM & SESM)**

N/A



## Software optionality control (SOC)

There are two new SOC options that are introduced with this feature; *METR\_Deassigned\_Support* and *METR\_Prevent\_Sent\_OOS*.

*METR\_Deassigned\_Support* is defined under METR SOC group. Functionality of feature is controlled with this SOC option. It is a state SOC, whose states can be ON or IDLE. When state of *METR\_Deassigned\_Support* is ON, feature becomes functional.

### METR\_Deassigned\_Support SOC

|                          |                         |
|--------------------------|-------------------------|
| SOC option name:         | METR0016                |
| SOC option title:        | METR_Deassigned_Support |
| SOC option control type: | state                   |
| New SOC option?          | Yes                     |
| SOC option order code    | METR0016                |
| Option defined in DRU:   | WT                      |
| Affected products:       | ISN07                   |

The second SOC, *METR\_Prevent\_Sent\_OOS*, is defined under METR SOC group and it is used to decide sending recycled meters to OOS or not. For Bangladesh, recycled meters should not be sent to OOS. So when this SOC is ON, sending recycled meters to OOS is prevented.

### METR\_Prevent\_Sent\_OOS SOC

|                          |                       |
|--------------------------|-----------------------|
| SOC option name:         | METR0017              |
| SOC option title:        | METR_Prevent_Sent_OOS |
| SOC option control type: | state                 |
| New SOC option?          | Yes                   |
| SOC option order code    | METR0017              |
| Option defined in DRU:   | WT                    |
| Affected products:       | ISN07                 |

There is a dependency between these two SOC options. *METR\_Deassigned\_Support* can not be made IDLE when

*METR\_Prevent\_Sent\_OOS* is ON. Furthermore, *METR\_Prevent\_Sent\_OOS* can be made ON only when *METR\_Deassigned\_Support* is ON.

## Element Management

N/A

## Command interface changes

### Command: DEASSCLR

Clear Deassigned Meters

**Command type:** NON-MENU

**Command target:** BRISC, XACORE

**Command availability:** NONRES

### Command description

This command is used to clear all content of MTRDEASS table.

### Command syntax

There is no parameter for DEASSCLR command.

### DEASSCLR command parameters and variables

| Command  | Parameters and variables |
|----------|--------------------------|
| DEASSCLR | N/A                      |

### Qualifications and warnings

A warning message is displayed to inform user about loss of deassigned meter data.

### Responses

After displaying warning message, user is asked to confirm his/her request since executing command results with loss of deassigned meter data.

### Confirmation Message

Y: content of MTRDEASS table is cleared

N: user gives up clearing the content of MTRDEASS table.

**MAP outputs with associated meanings and actions**

|                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Command: DEASSCLR</b>                                                                                                                                                                                                                                                                                                                                                                            |
| <p>WARNING: All deassigned meters data will be lost. Do you wish to continue?</p> <p>Please confirm ("Yes", "Y", "No", "N").</p> <p><b>Meaning:</b> This response warns user that all tuples in MTRDEASS table are cleared and this result with losing meter counts of deassigned meters.</p> <p><b>System or user actions:</b></p> <p>User should select Yes/Y to continue or No/N to give up.</p> |

**Example****Usage examples for DEASSCLR command**

|                      |                                                                                                                                                                                           |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of task: |                                                                                                                                                                                           |
| Description of task  | Clear all content of MTRDEASS table                                                                                                                                                       |
| Command:             | >DEASSCLR                                                                                                                                                                                 |
| MAP response:        | <p>&gt;WARNING: All deassigned meters data will be lost. Do you wish to continue?</p> <p>Please confirm ("Yes", "Y", "No", "N").</p> <p>&gt;Y</p> <p>&gt;Table MTRDEASS is cleared...</p> |

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = World Trade*****A00001921 -- CIS Toll Call Ringing (Succession on DMS)*****Functional Description***

When a call request comes from toll exchange over any incoming trunk to a line, a distinct ringing is applied to the called subscriber indicating that it is a

toll call. This functionality is provided by existing feature AU3129 Long Distance Alert (LDA). With this activity ACT.A00001921 “CIS Toll Call Ringing”, the existing LDA feature is enhanced to provide CIS market requirements. Refer to AU3129FN.AB06 in PLS DOC Library for existing LDA feature details.

There are three enhancement items to apply toll call ringing for CIS market requirements:

- Existing LDA feature is still working with C, S, F, C30, CSR, C3C ringing schemes. The new ringing scheme C6R for CIS market will be added with this activity.
- Existing office parameters LDA\_ENABLED, LDA\_DEFAULT\_CALLTYPE, LDA\_OM\_ENABLED, LDA\_ALERT\_NO\_CLID, LDA\_CWT\_TIMEOUT, LDA\_PATTERN in table OFCENG are moved to the new tuple “LONG\_DIST\_ALERT” in table ISERVOPT.
- Existing datafill sequence for LDA option in table TRKOPTS will be changed to apply toll call ringing for incoming ETSI ISUP V2+ trunk group using the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message.

The new ringing scheme “C6R” is defined to provide the required values for CIS in this activity. Toll call ringing cadence will be different from the local call ringing cadence.

Previous documentation specified the following:

- Part of “CPC is Operator” is not provided in existing functionality.
- The office parameter LDA\_DEFAULT\_CALL\_TYPE in table OFCENG and CALLTYPE field in table LDASCRN can take any value of LONG\_DISTANCE or NORMAL.

## CIS Ringing Patterns

Physical ringing is the application of an alternating current (AC) applied between the tip (A lead) and the ring (B lead) of the line loop. The frequency of the alternations and the voltage are distinctive parameters of the ringing. The waveform of the AC current is usually sinusoidal. The overall timing envelope of these current pulses is termed the cadence. The initial pattern repeats and the time needed to complete one iteration is termed the cycle time. The complete toll call ringing signal specification is:

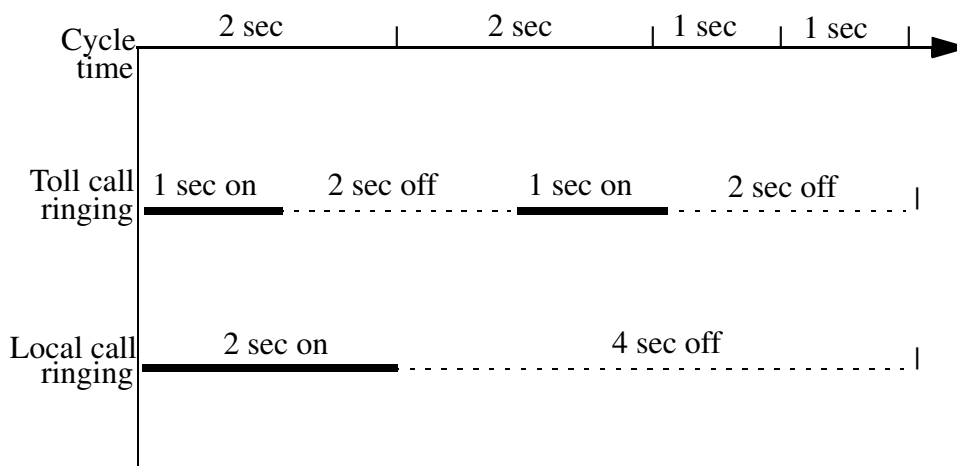
- Frequency: 25 +/- 2 Hz
- Output level: 95 +/- 5 Hz
- Cadence: 1.2 sec on (+/- 0.12), 2 sec off (+/- 0.2)

The toll call ringing cadence required for CIS is 1.2 seconds on, 2 seconds off, giving a cycle time of 3.2 seconds. However, due to the fact that actual cycle time of the Ringing Generator to be used in CIS (6X30AA, 6x30CA for ILCM, 6x60CA for RLCM) is 6 seconds, actual pattern will be 1 seconds on, 2 seconds off, 1 seconds on, 2 seconds off. This cadence lies well within 10% tolerance of the CIS.

Field RNGTHYPE for related frame in table LCMINV and V5SIG must be datafilled to the new ring type “C6R” in order to provide ringing cadence required for CIS market.

DMS-100i standard ringing cadence which is 2 seconds on, 4 seconds off is used for local call ringing. The actual toll call ringing and local call (standard) ringing cadences provided for CIS are shown in the following figure:

#### CIS Ringing Cadences



#### Standard Ringing Specification

| RING CODE | RING TYPE | DESCRIPTI ON      | CADENCE (Seconds)               |
|-----------|-----------|-------------------|---------------------------------|
| P(0)      | C6R       | Standard ringing  | 2 s ON, 4 s OFF                 |
| P(4)      | C6R       | Toll Call Ringing | 1 s ON, 2 s OFF, 1 s ON, 2s OFF |

#### Enhancement of existing LDA feature to apply Toll Call Ringing

There are three enhancement items to apply toll call ringing:

- Existing LDA feature is still working with C, S, F, C30, CSR, C3C ringing schemes. The new ringing scheme C6R will be added with this activity.
- Existing office parameters LDA\_ENABLED, LDA\_DEFAULT\_CALLTYPE, LDA\_OM\_ENABLED, LDA\_ALERT\_NO\_CLID, LDA\_CWT\_TIMEOUT, LDA\_PATTERN in table OFCENG are moved to the new tuple “LONG\_DIST\_ALERT” in table ISERVOPT.

Refer to the Configuration section of this document for more details.

- Existing datafill sequence for LDA feature in table TRKOPTS will be changed to apply toll call ringing for incoming ETSI ISUP V2+ trunk group using the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message. The new field CHECK\_NOA for LDA option in table TRKOPTS is defined to supply CIS market requirement. If dedicated trunk group with LDA option in table TRKOPTS is datafilled any kind of ETSI ISUP V2+, the value of CHECK\_NOA is used to apply toll ringing. If this value is Y, local terminating exchange checks the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message and applies toll call ringing patterns to terminating line if NOA is equal to:

- National Number

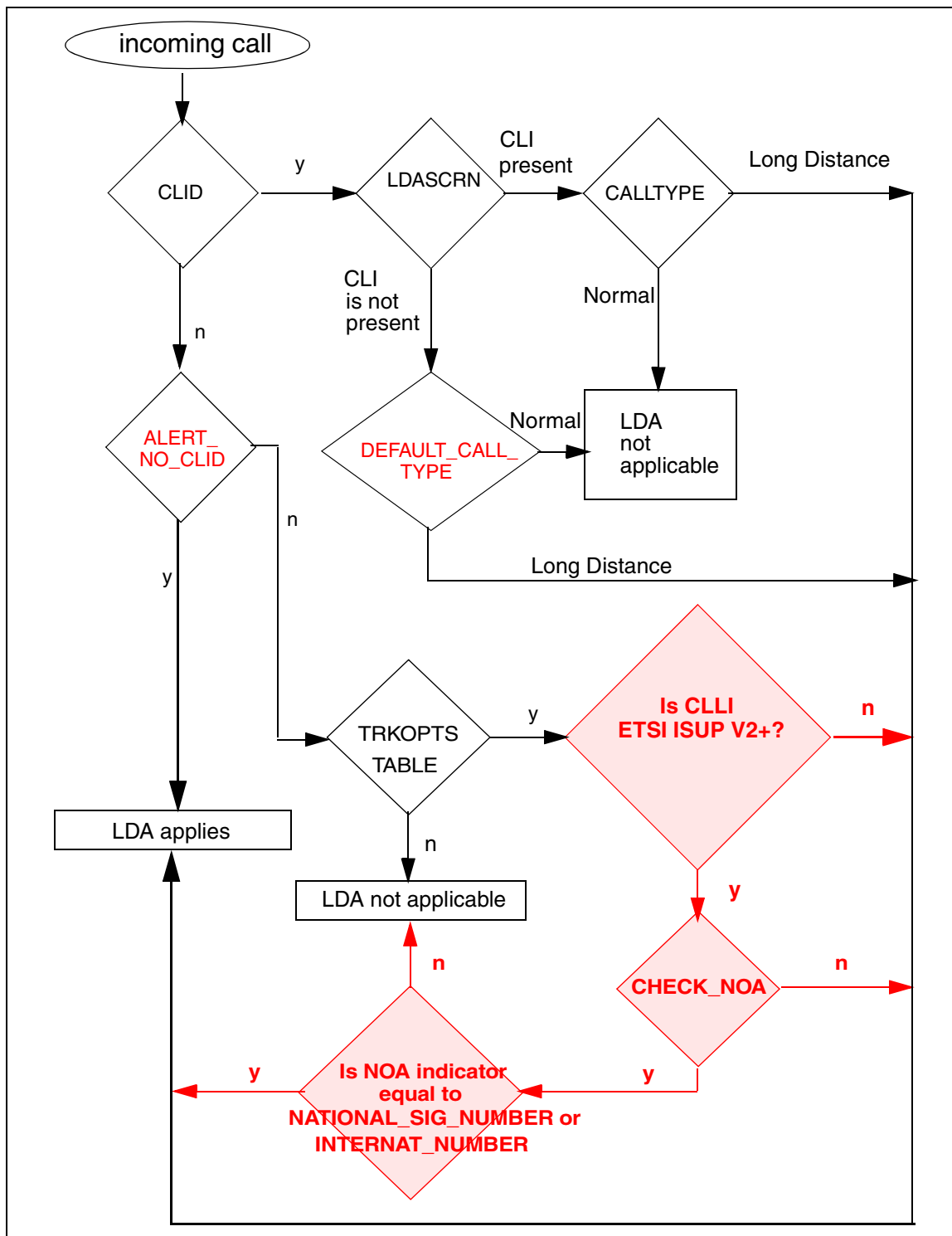
- International Number

Otherwise, the local ringing pattern is applied to the terminating line.

If the value of CHECK\_NOA field is N, toll call ringing pattern is applied to the terminating line.

Refer to the Configuration section of this document for more details.

## Functional flow diagram for Toll call recognition



The red parts of the functional flow diagram are improved with this activity.

Toll call can be recognized by the following methods. Please refer to Figure “Functional flow diagram for Toll call recognition” on page 1139.

- Screening (If the CLI is delivered.)
- Dedicated Toll Trunks (If CLI is not delivered.)

### **Screening**

This method is applicable only if the CLI is delivered. Existing table LDASCRN is used to screen the incoming CLI against a CLI\_RANGE of numbers and identify the call type (Long Distance or Normal)

If the CLI of an incoming call cannot be screened with the Table LDASCRN, the call type will be the value of DEFAULT\_CALL\_TYPE field of LONG\_DIST\_ALERT tuple in table ISERVOPT.

By default DEFAULT\_CALL\_TYPE is LONG\_DISTANCE.

### **Table LDASCRN**

The existing table LDASCRN has fields ZONE, CLI\_RANGE and CALLTYPE. For MBS sets, an additional field KEYLIST is added. The fields ZONE as well as CLI\_RANGE will be used as the key for searching the table.

#### **ZONE**

This field is a part of the key used to search the LDASCRN table. The ZONE sub-option of the LDA option in the terminating line, will be used to index into this table. Logically, this field is a representation of the Called DN range.

#### **CLI\_RANGE**

This field represents the range of Calling Line Id (CLI) to be screened for the corresponding ZONE. It is divided into 2 subfields:

FROMDIGS, specifying the starting number of the CLI\_RANGE

TODIGS specifying the ending number of the CLI\_RANGE.

This field also forms a part of the key to search in the LDASCRN table.

#### **CALLTYPE**

It can take any value of LONG\_DISTANCE or NORMAL. This field has the call type for the corresponding ZONE.

This list contains the key numbers of the DNs to which the LDA feature applies. All of the DNs must belong to the same ZONE.



**Method of Determination:**

1. The ZONE of the terminating station is obtained from the ZONE sub-option in it's LDA line option.
2. This ZONE as well as the calling DN(CLI) is used as the key to search in the table LDASCRN.
3. If the search is successful, the type of the call will be the CALLTYPE of the tuple matched.
4. If the search fails, the check for CPC will be made to determine if the caller is an operator.
5. If the search fails and the caller is not operator, the type of the call will be that of DEFAULT\_CALL\_TYPE of LONG\_DIST\_ALERT tuple in table ISERVOPT.

**Dedicated Toll Trunk**

If CLI is not available then the toll call recognition is done depending on the value of ALERT\_NO\_CLID field of LONG\_DIST\_ALERT tuple in table ISERVOPT.

If its value is Y, then distinctive alerting is provided to the terminating line.

If its value is N, feature processing will continue to check table TRKOPTS for an alerting indication. Incoming trunk CLLI with LDA option is searched in the table TRKOPTS for toll call determination.

If dedicated trunk group with LDA option in table TRKOPTS is datafilled any kind of ETSI ISUP V2+, the value of CHECK\_NOA is used to apply toll ringing. If this value is Y, local terminating exchange checks the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message and applies toll call ringing patterns to terminating line if NOA is equal to:

- National Number
- International Number

Otherwise, local ringing pattern is applied to the terminating line.

If the value of CHECK\_NOA field is N, toll call ringing pattern is applied to the terminating line.

## Hardware Requirements or Dependencies

The ring generators are partly controlled by four internal 8-section Dual-In-Line Package (DIP) switches. The DIP switches control the ringing subcycle length, ringing frequency and amplitude, and direct current (DC) offsets of ringing voltages. Each DIP switch controls the characteristics of each subcycle, there being four subcycles in a ringing cycle.

For CIS, the switches on the 6X30AA need to be set as follows:

**The switches on the 6X30AA for CIS market**

| SWITCH  | SETTINGS        | VOLTAGE  | FREQ | SLOT SUBCYCLES |
|---------|-----------------|----------|------|----------------|
| (SW1-4) | 8 7 6 5 4 3 2 1 | AC / DC  | (HZ) | (SECONDS)      |
| 1 to 4  | X 1 1 1 0 1 0 0 | 82 / -52 | 25   | 2 2 1 1        |

**Note:** The symbols under the heading SETTINGS are interpreted as: 0 = ON, 1 = OFF, X = either ON or OFF.

The arrow on the DIP switch indicates the ON direction.

The Ringing will be supported over the following peripherals:

- Line Concentrating Module (LCM).
- Remote Line Concentrating Module (RLCM)

## Software Requirements or Dependencies

The new ringing scheme datafilled in table LCMINV can be downloaded to LCM during RTS as part of the static data. The static data for the ringing scheme for the CIS market are defined in a separate new WT module "C6RRGINI".

## Limitations and restrictions

For CIS, the office parameter IMMEDIATE\_RING\_ENABLE in table OFCENG will be set to "Y" since immediate physical ringing is required. But immediate physical ringing does not work for long distance calls.

## Interactions

N/A.

## Applicable customer facing sections

Fault Management

Logs

\_\_\_\_\_

Alarms

\_\_\_\_\_

**Configuration**Data Schema \_\_\_\_\_ **x** \_\_\_\_\_

User Interface \_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_

**Glossary**

| <b>Term</b> | <b>Description</b>                      |
|-------------|-----------------------------------------|
| CIS         | Commonwealth of Independent States      |
| DMS         | Digital Multiplex System                |
| DMS-100i    | DMS-100 International                   |
| LCM         | Line Concentrating Module               |
| XPM         | Extended Peripheral Module              |
| GPP         | Global Peripheral Platform              |
| DRU         | Development Release Unit                |
| CND         | Calling Number Delivery                 |
| ISUP        | ISDN User Part                          |
| CPE         | Customer Premises Equipment             |
| NOA         | Nature of Address                       |
| DIP         | Dual In-Line Package                    |
| AC          | Alternating Current                     |
| DC          | Direct Current                          |
| LCE         | Line Concentrating Equipment            |
| RSC         | Remote Switching Center                 |
| LCME        | Enhanced ISDN Line Concentrating Module |
| RLCM        | Remote Line Concentrating Module        |

| Term     | Description                                   |
|----------|-----------------------------------------------|
| MBS      | Meridian Business Set                         |
| CLID,CLI | Calling Line ID                               |
| CLLI     | Common Language Location Identifier           |
| ETSI     | European Telecommunication Standard Institute |
| IBN      | Integrated Business Network                   |
| LDA      | Long Distance Alert                           |
| LCM      | Line Concentrating Module                     |
| MBS      | Meridian Business Set                         |
| VLCM     | Virtual LCM                                   |

## *Configuration for A00001921*

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

##### **New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| TRKOPTS        | CHANGED                  | UNCHANGED                         |
| ISERVOPT       | CHANGED                  | UNCHANGED                         |

#### **Table/MIB/Remote Database Schema information**

##### **Name: TRKOPTS**

Trunk options

##### **Functional description**

Table TRKOPTS is used to give trunk group specific options to trunk groups. LDA trunk group option gives ability of toll call ringing to the terminating exchange office.

If CLI is not available then the toll call recognition is done depending on the value of ALERT\_NO\_CLID of the new tuple LDA in table ISERVOPT.

If the value is Y, then distinctive alerting is provided to the terminating line.

If the value is N, feature processing will continue to check table TRKOPTS for an alerting indication. Incoming trunk CLLI with LDA option is searched in the table TRKOPTS for toll call determination. If found incoming trunk CLLI with LDA option in table TRKOPTS is ETSI ISUP V2+, the value of CHECK\_NOA field is seen. If this field is datafilled as Y, local terminating exchange checks the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message and applies toll call ringing patterns to terminating line if NOA is equal to:

- National Number
- International Number

If this CHECK\_NOA field is datafilled as N, toll call ringing pattern is applied to the terminating line.

#### Usage sequence and implications (CM Only)

The current datafill sequence will be changed to datafill LDA option to the trunk group. TRKGRP and TRKSGRP datafill of this trunk group must be done before LDA option is datafilled to the table TRKOPTS.

#### Size

Unchanged.

#### Fields/OIDs

The following table lists fields/OIDs for table TRKOPTS

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry                                      | Explanation and action                                                |
|---------|----------------|------------------------|--------------------------------------------|-----------------------------------------------------------------------|
| OPTKEY  | Changed        | CLLI                   | CLLI name of any incoming or 2-way trunks. | Trunk group name datafilled in table CLLI and LDA trunk group option. |
|         |                | TRKOPTS_OPTION         | LDA                                        |                                                                       |
| OPTINFO | Changed        | OPTION<br>CHECK_NOA    | LDA<br>BOOLEAN                             | LDA trunk group option and CHECK_NOA field with boolean entry.        |

#### Datafill example

The following example shows sample datafill for table TRKOPTS.

**Example of datafilling of the LDA tuple in TRKOPTS table**

```

> table trkopts
> add
SOPTSKEY:
> icrsisupba   lda
OPTION:
> lda
CHECK_NOA:
> y

```

**The View of LDATuples in TRKOPTS Table**

```

> table trkopts

OPTKEY                                     OPTINFO
-----
ICRSISUPBA   LDA                               LDA   Y

```

**Table release history update**

ISN07 ACT.A00001921 “CIS Toll Call Ringing”

**Supplementary information**

A new field “CHECK\_NOA” is added to the existing tuple related with “LDA” feature in table TRKOPTS.

**CHECK\_NOA** : If CLLI is a ETSI ISUP V2+ trunk group, this field is checked to apply toll ringing to the terminating line. If this field is Y, local terminating exchange checks the Nature of Address (NOA) indicator of called party number parameter in received ISUP\_IAM message and applies toll call ringing patterns to terminating line if NOA is equal to:

- National Number
- International Number

If this CHECK\_NOA field is datafilled as N, toll call ringing pattern is applied to the terminating line.

The default value of CHECK\_NOA field will be N.

LDA option can be given to only incoming trunks. If the administrator tries to give this option to outgoing trunks, the following error is displayed:

“LDA option can only be assigned to incoming and 2W trunks”

To datafill LDA option in TRKOPTS, table TRKSGRP must be datafilled for the CLLI before. If this condition is not satisfied, the following error is generated:

“Trunk not datafilled in Table TRKSGRP.

Datafill Table TRKSGRP with the CLLI first.”

#### **Translation verification other tools**

N/A.

#### **Name: ISERVOPT**

This table is used to configure switch wide information for service related feature.

#### **Functional description**

This activity introduces a new tuple named LONG\_DIST\_ALERT in ISERVOPT table.

The following existing office parameters in table OFCENG are removed, and their functionality is taken over by the new tuple “LONG\_DIST\_ALERT” in table ISERVOPT:

- LDA\_ENABLED
- LDA\_DEFAULT\_CALLTYPE
- LDA\_OM\_ENABLED
- LDA\_ALERT\_NO\_CLID
- LDA\_CWT\_TIMEOUT
- LDA\_PATTERN

**Remove from table OFCENG to table ISERVOPT**

| PARMNAME             | PARMVAL       |
|----------------------|---------------|
| LDA_ALERT_NO_CLID    | N             |
| LDA_CWT_TIMEOUT      | 0             |
| LDA_DEFAULT_CALLTYPE | LONG_DISTANCE |
| LDA_ENABLED          | N             |
| LDA_OM_ENABLED       | N             |
| LDA_PATTERN          | LDA_RING_4    |

**TABLE: ISERVOPT**

>

>add

MACHINES NOT IN SYNC - DMOS NOT ALLOWED

JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED

ENTER Y TO CONTINUE PROCESSING OR N TO QUIT

>y

SOPTSKEY:

>long\_dist\_alert

OPTION:

>long\_dist\_alert

ENABLED: ☒

>y

DEFAULT\_CALL\_TYPE: ☒

>normal

RINGING\_CHAR: ☒

>LDA\_RING\_4

CWT\_TIMEOUT\_VAL: ☒

>10

OM\_ENABLED: ☒

>y

ALERT\_NO\_CLID: ☒

>y

TUPLE TO BE ADDED:

LONG\_DIST\_ALERT

LONG\_DIST\_ALERT Y      NORMAL

LDA\_RING\_4    10 Y Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>y

TUPLE ADDED

JOURNAL FILE INACTIVE

**Usage sequence and implications (CM Only)**

There is no requirement to datafill tables in a specific order for LONG\_DIST\_ALERT tuples.



**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| ISERVOPT               | 0              | 1              |                       |

**Fields/OIDs**

The following table lists fields/OIDs for table ISERVOPT

**Field descriptions for LDA tuple in ISERVOPT table**

| Field             | New or Changed | Subfield or refinement | Entry                                                                                                               | Explanation and action                                                                           |
|-------------------|----------------|------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| SOPTSKEY          | NEW            |                        | LONG_DIST_ALERT                                                                                                     | This is the key in ISERVOPT                                                                      |
| OPTION            | NEW            |                        | LONG_DIST_ALERT                                                                                                     | This is the option name                                                                          |
| ENABLED           | NEW            |                        | Y,N                                                                                                                 | Long distance alertly) enabled field. The field that are supported by the market can be entered. |
| DEFAULT_CALL_TYPE | NEW            |                        | NORMAL, LONG_DISTANCE                                                                                               | LDA default call type field. The field that are supported by the market can be entered.          |
| RINGING_CHARACTER | NEW            |                        | LDA_RING_1,<br>LDA_RING_2,<br>LDA_RING_3,<br>LDA_RING_4,<br>LDA_RING_5,<br>LDA_RING_6,<br>LDA_RING_7,<br>LDA_RING_8 | LDA pattern field. The field that are supported by the market can be entered.                    |
| CWT_TIMEOUT_VAL   | NEW            |                        | 0 TO 316                                                                                                            | LDA cwt timeout value field. The field that are supported by the market can be entered.          |
| OM_ENABLED        | NEW            |                        | Y,N                                                                                                                 | LDA om enabled field. The field that are supported by the market can be entered.                 |
| ALERT_NO_CLID     | NEW            |                        | Y,N                                                                                                                 | LDA alert no CLID field. The field that are supported by the market can be entered.              |

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Example of datafilling of the LONG\_DIST\_ALERT tuple in ISERVOPT table**

```

> table iservopt
> add
SOPTSKEY:
> long_dist_alert
OPTION:
> long_dist_alert
ENABLED:
> y
DEFAULT_CALL_TYPE:
> LONG_DISTANCE
RINGING_CHAR:
> LDA_RING_4
CWT_TIME_OUT_VAL:
> 10
OM_ENABLED:
> y
ALERT_NO_CLID:
> y

```

**The View of LONG\_DIST\_ALERT Tuples in ISERVOPT Table**

```

> table iservopt

SOPTSKEY                                SOPTSVAR
-----
LONG_DIST_ALERT  LONG_DIST_ALERT  Y  LONG_DISTANCE
                                LDA_RING_4  10  Y  Y

```

**Table release history update**

ISN07 ACT.A00001921 “CIS Toll Call Ringing”

**Supplementary information**

A new tuple with a symbol “LONG\_DIST\_ALERT” is added to the table ISERVOPT to provide CIS market requirement related with “Toll Call Ringing” feature. The sub fields of this new tuple will be “ENABLED”, “DEFAULT\_CALL\_TYPE”, “RINGING\_CHAR”, “CWT\_TIME\_OUT\_VAL”, “OM\_ENABLED” and “ALERT\_NO\_CLID”.

**ENABLED:** This is moved from table OFCENG-LDA\_ENABLED parameter to table ISERVOPT under new ENABLED field of new tuple. This field is used to activate or deactivate LDA functionality office-wide. If it is set to N, LDA functionality is available to none of the lines in the switch. Its default value will be N.

**DEFAULT\_CALL\_TYPE:** This is moved from table OFCENG-LDA\_DEFAULT\_CALL\_TYPE parameter to table ISERVOPT under new DEFAULT\_CALL\_TYPE field of new tuple. This field is used to determine the call type if it is not able to identify the type of the call by screening through the table LDASCRN. It takes the value of NORMAL or LONG\_DISTANCE. Its default value will be LONG\_DISTANCE.

**RINGING\_CHAR:** This is moved from table OFCENG-LDA\_PATTERN parameter to table ISERVOPT under new RINGING\_CHAR field of new tuple. This field is used to determine which toll ringing pattern is applied to the terminating line.

**CWT\_TIME\_OUT\_VAL:** This is moved from table OFCENG-LDA\_CWT\_TIMEOUT parameter to table ISERVOPT under new CWT\_TIME\_OUT\_VAL field of new tuple. This field gives the operating company the ability to force a toll call that is call waited for more than a specified duration to be routed to the NTRS treatment. The parameter allows the operating company to specify the length of this duration. Its default value will be 0.

**OM\_ENABLED:** This is moved from table OFCENG-LDA\_OM\_ENABLED parameter to table ISERVOPT under new OM\_ENABLED field of new tuple. This field turns OM pegging ON or OFF. Its default value will be N.

**ALERT\_NO\_CLID:** This is moved from table OFCENG-LDA\_ALERT\_NO\_CLID parameter to table ISERVOPT under new ALERT\_NO\_CLID field of new tuple. This field allows the operating company to specify whether distinctive alerting should be provided to the terminating line when the CLID is not delivered along with the incoming call. If ALERT\_NO\_CLID is set to 'N', the feature will not provide distinctive alerting by default, and will continue feature processing by checking table TRKOPTS for an alerting indication. Its default value will be N.

#### **Translation verification other tools**

N/A.

## ***Product = World Trade***

### **A00001923 -- CIS Subscriber Categories (Succession on DMS)**

#### ***Functional Description***

This feature is to support subscriber categories for CIS market. In this way:

- Existing Calling Party Category (CPC) line options feature which assigns subscriber category to IBN line is used,
- CPC line options feature is also extended to assign subscriber category to BRI lines,
- CPC option is also given as customer group option,
- Subscriber category based authentication in CIS network is implemented.

#### **Overview**

In CIS telephony network, subscribers are categorized according to network access privileges. Subscriber categories are the ten privilege categories according to the rights such as accessing to intrazonal, interzonal, international networks and to special services out of local network. CIS Subscriber categories with their definition are given in Table , “CIS Subscriber Categories.”.

**CIS Subscriber Categories**

| <b>CATX</b> | <b>Definition</b>                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAT1        | Apartment or enterprise telephone, having access rights to intrazonal, interzonal and international networks.                                                                                                                                                                                    |
| CAT2        | Hotel telephone, having access rights to intrazonal, interzonal and international networks.                                                                                                                                                                                                      |
| CAT3        | Apartment, enterprise or hotel telephone, for local calls only.                                                                                                                                                                                                                                  |
| CAT4        | Enterprise telephone, having access rights to intrazonal interzonal and international networks, and to special services out of local network. Although it is not supported as DMS tool, a priority is ensured waiting for free resources in connections with intrazonal and interzonal networks. |
| CAT5        | Enterprise tel.for offices of Ministry of Communication, having access rights to intrazonal, interzonal, and international networks, and to special services out of local network.                                                                                                               |
| CAT6        | Interzonal or universal pay station, having access rights to intrazonal, interzonal, and international networks, and to special services out of local network.                                                                                                                                   |
| CAT7        | Apartment or enterprise telephone, having access rights to intrazonal, interzonal and international networks, and to special services out of local network.                                                                                                                                      |
| CAT8        | Enterprise telephone with data transmitting devices, facsimile facilities and electronic mail, having access rights to intrazonal, interzonal, and international networks.                                                                                                                       |

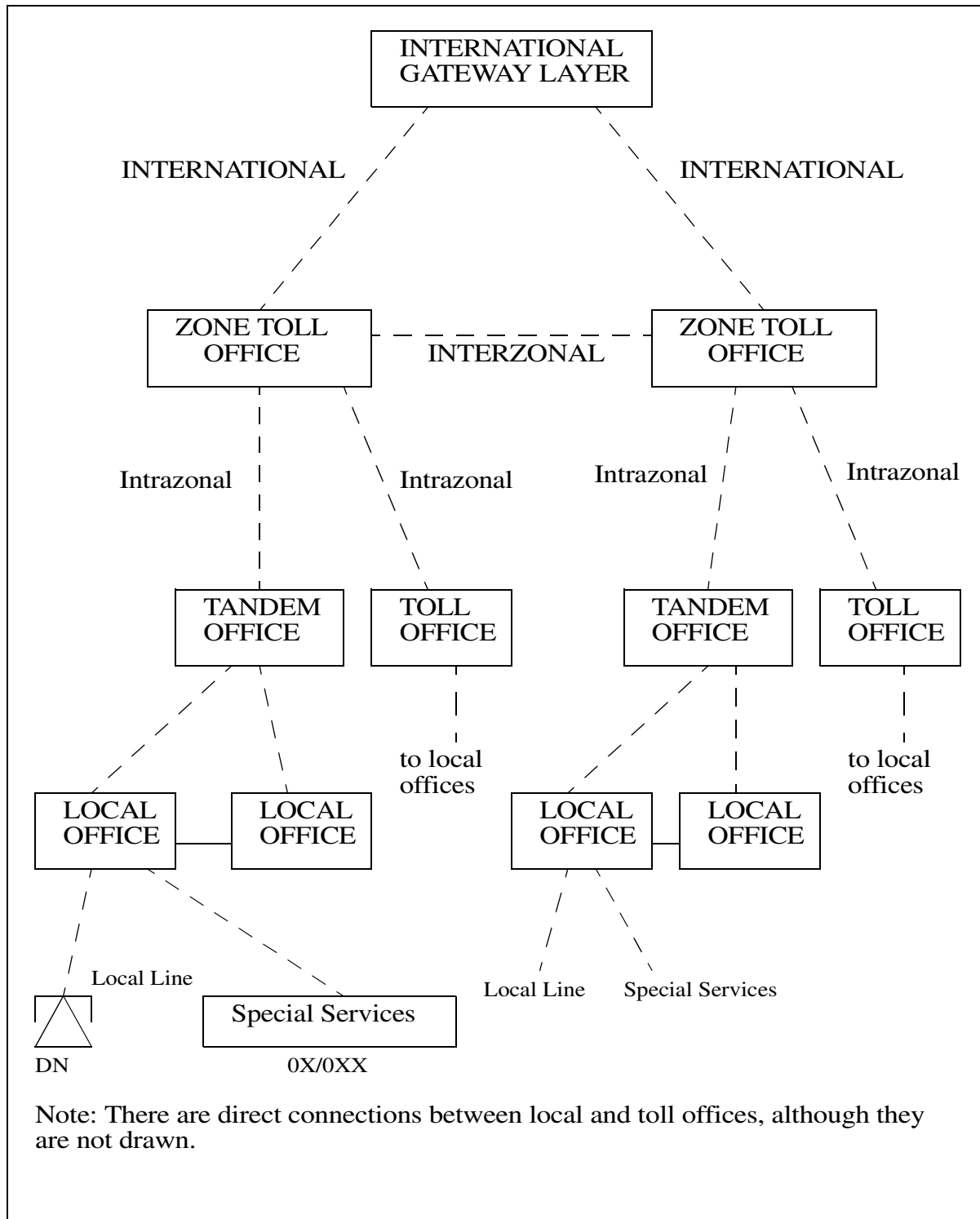
| CATX | Definition                                |
|------|-------------------------------------------|
| CAT9 | Local pay stations, for local calls only. |
| CAT0 | Reserved                                  |

Figure “CIS Telephony Network Topology” on page 1154 gives a concise view of CIS network. Network types in CIS network are:

- International network
- Interzonal network
- Intrazonal network
- Local network

Groups of local offices build areal zones. There can be several toll offices serving local networks in a zone but there is one zone toll office, which is a gateway to the zone such that provides intrazonal, interzonal, international, intrazonal special services and interzonal special services calls. Local offices provide local calls and local special service calls.

There are no restrictions for local calls, and operator calls. All other types of toll routed calls have restrictions differing from one subscriber category to another.

**CIS Telephony Network Topology**

This feature consists of the following main parts:

- Assigning subscriber categories as line or customer group option, and mapping CIS Subscriber Categories to Calling Party Categories (CPC).
- Definition and evaluation of authorization for the categories in zone toll offices of CIS network.

### Assigning Subscriber Category (CPC)

In feature CPC line options, CPC value can be assigned as line option for IBN lines, and in this feature, this functionality is extended for BRI lines.

Additionally, CPC value can be assigned to customer group option of the line. CPC line option has priority on customer group CPC option, and if line option CPC is assigned then customer group CPC option will be ignored. When CPC line option and CPC option of line's customer group are not assigned, default CPC values are assumed to be valid and their corresponding values are sent in outgoing trunk message.

CPC name is assigned as line or customer group option. To assign a CPC value to a line, SERVORD commands are used (refer to SO section of Configuration document, optcn). CPC names are shown in Table , "CPC names to assign as line or customer group options and their definitions.". CPC name RSRVD is defined in this feature to meet CIS market requirement for CAT0 (reserved).

#### CPC names to assign as line or customer group options and their definitions

| CPC names (MMP) | Description                           |
|-----------------|---------------------------------------|
| UNKNOWN         | unknown subscriber                    |
| ORD             | ordinary subscriber                   |
| PRIOR           | subscriber with priority              |
| MAINT           | test call                             |
| SPM             | pay phone                             |
| OPER            | national operator                     |
| TRAN            | data call                             |
| ITDN            | subscriber with special services      |
| FOC             | free of charge subscriber             |
| METER           | local pay phone                       |
| VIS             | voice information services subscriber |
| LOCAL           | local network subscriber              |
| CNDB            | subscriber owner of CNDB              |
| HOTEL           | hotel subscriber                      |

**CPC names to assign as line or customer group options and their definitions**

| <b>CPC names (MMP)</b> | <b>Description</b>                                      |
|------------------------|---------------------------------------------------------|
| AU_ORD                 | automatic subscriber without priority                   |
| AU_PRIO                | automatic subscriber with priority                      |
| RSRVD (new)            | Reserved (newly added type to support CIS Subs. Cat. 0) |

To assign as customer group option, table control commands are used for table CUSTSTN (refer to DS section of Configuration document, optcn). In “Example CUSTSTN datafill for customer group option CPC” on page 1156, customer group CPC option example datafill is shown.

**Example CUSTSTN datafill for customer group option CPC**

```
TABLE: CUSTSTN
CUSTNAME OPTNAME OPTION
-----
CUST783  CPC  CPC  ORD
```

In this feature, CIS Subscriber Categories (CATX, X: 0 to 9) are mapped to CPC values and corresponding CPC values are assigned as subscriber categories. This mapping is shown in Please refer to “CPC name, CIS Subscriber Category and Russian ISUP CPC mapping” on page 1157.. When a CPC value not shown in Table , “CIS Subscriber Categories and their corresponding CPC values for MMP.” is assigned in CIS network, its corresponding CIS subscriber category is assumed to be CAT1 (CPC assumed to be ORD). But, when CPC values not shown in Table , “CIS Subscriber Categories and their corresponding CPC values for MMP.” are assigned at zone toll offices and line screening is enabled, each CPC’s privilege is evaluated itself (not as ORD).

**CIS Subscriber Categories and their corresponding CPC values for MMP**

| <b>CIS Subs. Cat.</b> | <b>CPC value (MMP)</b> |
|-----------------------|------------------------|
| CAT1                  | ORD                    |
| CAT2                  | HOTEL                  |
| CAT3                  | LOCAL                  |
| CAT4                  | PRIOR                  |
| CAT5                  | FOC                    |
| CAT6                  | SPM                    |



**CIS Subscriber Categories and their corresponding CPC values for MMP**

| <b>CIS Subs. Cat.</b> | <b>CPC value (MMP)</b> |
|-----------------------|------------------------|
| CAT1                  | ORD                    |
| CAT7                  | ITDN                   |
| CAT8                  | TRAN                   |
| CAT9                  | METER                  |
| CAT0                  | RSRVD (new)            |

In the CIS Subscriber Categories feature, only Russian ISUP V2+ trunk is supported that is dissimilar to CPC line options feature which also supports FDCP trunks. CPC values are mapped to Russian ISUP CPC values internally in software. In Table , “CPC name, CIS Subscriber Category and Russian ISUP CPC mapping.”, CPC name, corresponding CIS Subscriber Category and Russian ISUP CPC mapping is shown for Russian ISUP v2+ trunks.

**CPC name, CIS Subscriber Category and Russian ISUP CPC mapping**

| <b>CPC name</b> | <b>CIS Subs. Cat.</b> | <b>Russian ISUP CPC</b>              |
|-----------------|-----------------------|--------------------------------------|
| UNKNOWN*        | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| ORD             | CAT1                  | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| PRIOR           | CAT4                  | ISUP_CPC_PRIORITY (#0B)              |
| MAINT*          | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| SPM             | CAT6                  | RISUP_TOLL_PAYPHONE (#0F)            |
| OPER*           | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| TRAN            | CAT8                  | ISUP_CPC_DATA_CALL (#0C)             |
| ITDN            | CAT7                  | RISUP_SUBSCRIBER_W_ACCESS_SS (#E3)   |
| FOC             | CAT5                  | RISUP_SUBSCRIBER_FREE_OF_CRG (#E2)   |
| METER           | CAT9                  | RISUP_LOCAL_PAYPHONE (#E5)           |
| VIS*            | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| LOCAL           | CAT3                  | RISUP_LOCAL_NETWORK_SUBSCRIBER (#E4) |
| CNDB*           | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |
| HOTEL           | CAT2                  | RISUP_HOTEL_SUBSCRIBER (#E1)         |
| AU_ORD*         | (CAT1)                | ISUP_CPC_SUBSCRIBER_1 (#0A)          |

**CPC name, CIS Subscriber Category and Russian ISUP CPC mapping**

| CPC name    | CIS Subs. Cat. | Russian ISUP CPC                  |
|-------------|----------------|-----------------------------------|
| AU_PRIO*    | (CAT1)         | ISUP_CPC_SUBSCRIBER_1 (#0A)       |
| RSRVD (new) | CAT0           | RISUP_SUBSCRIBER_CATEGORY_0 (#E0) |

\* These CPC values are assignable but don't have their own CIS Subs. Cat. equivalent. Therefore, their corresponding CIS categories are assumed to be CAT1 and they are equivalent to CPC value ORD (ORDinary).

**Authorization at Zone Toll Offices of CIS Network**

Subscriber category based authorization is controlled at zone toll offices of CIS network.

This feature introduces two new boolean parameter on ISERVOPT table to control category screening on zone toll offices. A zone toll office is the one whose zone toll screening functionality is set to YES. The second parameter is defined to control screening of subscribers which are connected to office. When this parameter is set to YES, zone toll screening is done for calls of subscribers connected to zone toll office.

The parameters are set with table control commands in table ISERVOPT by system engineering (refer to DS section of Configuration document, optcn). In Table , “Example ISERVOPT datafill for CIS market.”, an example tuple datafill is shown.

**Example ISERVOPT datafill for CIS market**

```
TABLE: ISERVOPT
SOPTSKEY SOPTNAM ZONETOLL_SCRN LINE_SCRN
-----
zonetoll_scrn zonetoll_scrn Y/N Y/N
```

At the zone toll office, ISUP CPC of originator (call coming from incoming trunk or zone toll office itself) is inverse mapped to CPC value. Hence, corresponding CIS subscriber category for this CPC value can also be obtained (refer to Please refer to “ CPC name, CIS Subscriber Category and Russian ISUP CPC mapping” on page 1157.).

Network and service access privileges of each subscriber category are given in Please refer to “ Network and Service Access Privileges of Categories (Y: allowed, N: not allowed)” on page 1159.. These are derived from subscriber category definitions.

**Network and Service Access Privileges of Categories (Y: allowed, N: not allowed)**

| Categories |                | Network Types /Inter- and Intrazonal Special Services |                    |                       |                                   |
|------------|----------------|-------------------------------------------------------|--------------------|-----------------------|-----------------------------------|
| CPC value  | CIS Subs. Cat. | Intrazonal Network                                    | Interzonal Network | International Network | Inter-/Intrazonal Sp. Serv. Calls |
| ORD        | CAT1           | Y                                                     | Y                  | Y                     | N                                 |
| HOTEL      | CAT2           | Y                                                     | Y                  | Y                     | N                                 |
| LOCAL      | CAT3           | N                                                     | N                  | N                     | N                                 |
| PRIOR      | CAT4           | Y                                                     | Y                  | Y                     | Y                                 |
| FOC        | CAT5           | Y                                                     | Y                  | Y                     | Y                                 |
| SPM        | CAT6           | Y                                                     | Y                  | Y                     | Y                                 |
| ITDN       | CAT7           | Y                                                     | Y                  | Y                     | Y                                 |
| TRAN       | CAT8           | Y                                                     | Y                  | Y                     | N                                 |
| METER      | CAT9           | N                                                     | N                  | N                     | N                                 |
| RSRVD      | CAT0           | N                                                     | N                  | N                     | N                                 |

This feature implements network and service access privileges of CIS subscriber categories in terms of call translation classes. A two dimensional table which is indexed with CPC name (CIS Subs. Cat.) and call translation class is used to obtain privileges of CIS subscriber categories. This table is named CISCPCPR (CIS CPC PRivileges, refer to DS section of Configuration document, optcn). It is datafillable for all CPC values. Default values are empty, and no restriction is applied to subscriber categories having no tuple. In Please refer to “ Example CISCPCPR datafill for CIS market” on page 1160., an example datafill for table CISCPCPR is shown. In this example, subscriber category ORD has privilege YES for all call translation classes. YES means call routing is allowed at zone toll office. All CPC values can be datafilled to table CISCPCPR. When line screening is enabled at table ISERVOPT, all assignable 17 CPC values are checked for their privilege at table CISCPCPR. But, CPC values from incoming Russian ISUP v2+ trunk are expected to be the ones in Please refer to “ CPC name, CIS Subscriber Category and Russian ISUP CPC mapping” on page 1157..

**Example CISCPCPR datafill for CIS market**

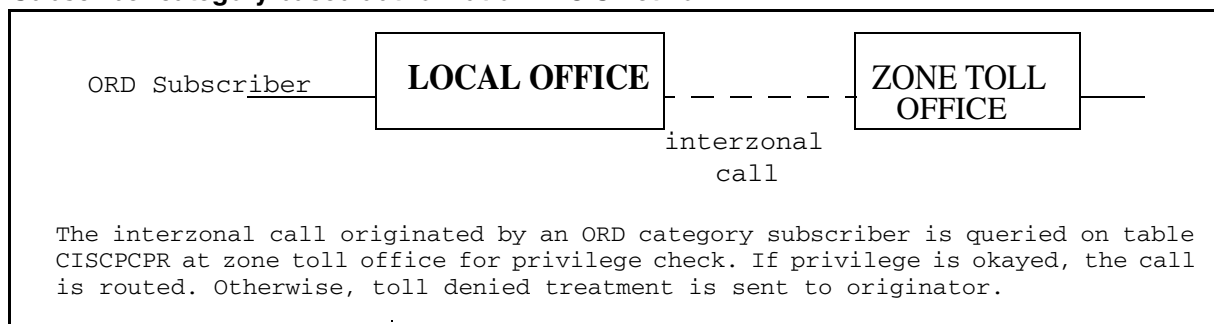
```

TABLE: CISCPCPR
CPC_NAME

                                OPTIONS
-----
ORD (unknown) (iagrp) (attend) (dial_att) (local) (special)
(emergency) (national) (continental) (intercontinental)
(international) (operator_assisted) (intl_op_assisted) (rural)
(collect) (cellular) $

```

Table CISCPCPR is used to authorize the call at zone toll office. By using CIS Subs. Cat. (CPC name) and call translation class on table CISCPCPR, zone toll office decides to route the call. When privilege is okay, the call is routed to destination. Otherwise, toll denied treatment is sent to originator. An example situation is illustrated in Figure “Subscriber category based authorization in CIS network”.

**Subscriber category based authorization in CIS network****Hardware Requirements or Dependencies**

N/A

**Software Requirements or Dependencies**

N/A

**Limitations and restrictions**

- CPC line and customer group option feature is applicable only for IBN, BRI and coin lines. Lines which are connected with v5.2 link can also be given CPC option.
- Pphones can not be assigned CPC line option.
- CPC line option has priority on CPC customer group option. When both of them are not assigned, default values are sent.

- In CPC options feature, sending CP Activity over FDCP outgoing trunk is only supported for default variant. Non-default variant(s) (today, China market) is/are not supported.
- In CIS network, CPC screening at zone toll office is done for incoming Russian ISUP V2+ trunk calls, and can also be enabled for calls originated from lines connected to zone toll office.
- When ISUP CPC values except from ones in Please refer to “CPC name, CIS Subscriber Category and Russian ISUP CPC mapping” on page 1157. come to zone toll office from Russian ISUP v2+ trunk, it is treated as CPC value of ORD. Hence, no restriction is applied to such calls.

## Interactions

N/A

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order X

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term     | Description                                        |
|----------|----------------------------------------------------|
| CIS      | Commonwealth of Independent States                 |
| CISCPCPR | CIS Calling Party Category access PRivileges Table |

## Recommended Reading/References

- 1 TA0122 CIS Subscriber Categories
- 2 TA0073 USSR Signalling Specifications

## *Configuration for A00001923*

### Hardware and Software Requirements

N/A

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

### Upgrade Impact

#### Dump and Restore

N/A

#### Element Management Upgrade

N/A

### Data schema (DS) (CM, MIBS, RDB)

#### New/modified tables, MIBs, or Database Schema

##### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| ISERVOPT       | CHANGED                  | UNCHANGED                         |
| CISCPCPR       | NEW                      | UNCHANGED                         |
| CUSTSTN        | CHANGED                  | UNCHANGED                         |
| CPCOPMAP       | CHANGED                  | UNCHANGED                         |

## Table/MIB/Remote Database Schema information

### Name: ISERVOPT

A new tuple to table ISERVOPT will be added: zonetoll\_scrn. An example datafill is as: zonetoll\_scrn zonetoll\_scrn Y Y.

### Functional description

It is used to activate zone toll screening for the office in CIS network. Hence, zone toll office is also defined. It is accessed with the Table Control operations. Tuple can be added, deleted or changed.

Zone toll screening active field determines whether office is a zone toll office or not.

Line screening active field determines whether office makes screening for lines connected to itself or not.

When this tuple does not exist, it is accepted to have values NO (not a zone toll office).

### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

### Size

#### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| ISERVOPT               | UNCHANGED      | UNCHANGED      | UNCHANGED             |

### Fields/OIDs

The following table lists fields/OIDs for ISERVOPT.

#### Table field descriptions

| Field              | New or Changed | Subfield or refinement | Entry         | Explanation and action  |
|--------------------|----------------|------------------------|---------------|-------------------------|
| ZONETOLL SCREENING | NEW            | NO                     | zonetoll_scrn | filled as zonetoll_scrn |
| ZONETOLL SCREENING | NEW            | NO                     | zonetoll_scrn | filled as zonetoll_scrn |

**Table field descriptions**

| <b>Field</b>                    | <b>New or Changed</b> | <b>Subfield or refinement</b> | <b>Entry</b> | <b>Explanation and action</b>                                                                                      |
|---------------------------------|-----------------------|-------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------|
| ZONETOLL<br>SCREENING<br>ACTIVE | NEW                   | NO                            | YES_NO       | zone toll screening is activated or deactivated for incoming Russian ISUP V2+ trunk call<br><br>Y (Yes), N (No)    |
| LINE<br>SCREENING<br>ACTIVE     | NEW                   | NO                            | YES_NO       | line screening is activated or deactivated for call whose originator is connected to office<br><br>Y (Yes), N (No) |

**Datafill example**

The following examples show sample datafill for table ISERVOPT.



**Adding ZONETOLL\_SCRN parameter to table ISERVOPT**

```

CI:
> TABLE ISERVOPT
TABLE: ISERVOPT
>ADD ZONETOLL_SCRN ZONETOLL_SCRN Y Y
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE ADDED:
      ZONETOLL_SCRN
                                ZONETOLL_SCRN Y Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
>LIS
      SOPTSKEY
                                SOPTSVAR
-----
      ZONETOLL_SCRN
                                ZONETOLL_SCRN Y Y
STEPWISE PARAMETER ADDITION
>ADD
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
SOPTSKEY:
>ZONETOLL_SCRN
OPTION:
>ZONETOLL_SCRN
ZONETOLL_SCRN:
>Y
ZONETOLL_LINE_SCRN:
>Y

TUPLE TO BE ADDED:
      ZONETOLL_SCRN
                                ZONETOLL_SCRN Y Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED

```

**Changing ZONETOLL\_SCRN parameter in ISERVOPT**

```
>CHA
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
OPTION: ZONETOLL_SCRN
>
ZONETOLL_SCRN: Y
>N
ZONETOLL_LINE_SCRN: Y
>N
TUPLE TO BE CHANGED:
      ZONETOLL_SCRN
                                ZONETOLL_SCRN N N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE CHANGED
```

**Deleting ZONETOLL\_SCRN parameter from ISERVOPT**

```
>DEL
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE DELETED:
      ZONETOLL_SCRN
                                ZONETOLL_SCRN N N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE DELETED
```

**Table release history update**

NONE

**Supplementary information**

NONE

**Translation verification other tools**

NONE

**Name: CISCPCPR**

A new table CISCPCPR (Commonwealth of Independent States Calling Party Category PRivileges) is defined. Table is not initialized to default values. This table is only used at CIS network.

**Functional description**

Table is used to define network and service access privileges in terms of CPC value and call translation class. It is accessed with the Table Control operations. Add, delete and changing a tuple is possible.

When a tuple for a CPC type does not exist, no restrictions are applied to calls having that CPC type.

When a tuple for a CPC type exists, call translation classes it has are allowed to for calls.

### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

### Size

Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| CISCP CPR              | 0              | 17             | -                     |

### Fields/OIDs

The following table lists fields/OIDs for CISCP CPR.

Table field descriptions

| Field     | New or Changed | Subfield or refinement | Entry         | Explanation and action                                                                                                                                                    |
|-----------|----------------|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cpc       | NEW            | NO                     | CPC_name_type | INDEX FIELD<br><br>CPC values in Please refer to “CPC name and Call translation class entry values for table CISCP CPR” on page 1168. are valid inputs                    |
| class     | NEW            | NO                     | ixla_class    | INDEX FIELD<br><br>Call translation class values in Please refer to “CPC name and Call translation class entry values for table CISCP CPR” on page 1168. are valid inputs |
| privilege | NEW            | NO                     | Yes_No        | privilege information<br><br>It is YES, when CPC and translation class have privilege.                                                                                    |

**CPC name and Call translation class entry values for table CISCPCPR**

| <b>CPC_name_type</b> | <b>Call translation class</b> |
|----------------------|-------------------------------|
| UNKNOWN              | UNKW                          |
| ORD                  | IAGRP                         |
| PRIOR                | ATT                           |
| MAINT                | DATT                          |
| SPM                  | LCL                           |
| OPER                 | SPEC                          |
| TRAN                 | EMRG                          |
| ITDN                 | NATL                          |
| FOC                  | CNTL                          |
| METER                | ICNTL                         |
| LOCL                 | INTL                          |
| VIS                  | OPRA                          |
| CNDB                 | IOPRA                         |
| HOTEL                | RURAL                         |
| AU_ORD               | COLL                          |
| AU_PRIO              | CELL                          |
| RSRVD                |                               |

**Datafill example**

The following example shows sample datafill for table CISCPCPR.

Call translation class values entered are evaluated as YES in privilege field of CISCPCPR table (calls allowed). Call translation class values which are not entered are evaluated to have NO privilege in table (calls not allowed).

**Adding parameter to table CISCPCPR**

```
CI:
>TABLE CISCPCPR
EMPTY TABLE
TABLE: CISCPCPR
>ADD
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
CPC_NAME:
>ORD
XLAClass:
>LCL
XLAClass:
>INTL
XLAClass:
>NATL
XLAClass:
>$
TUPLE TO BE ADDED:
    ORD
                                (LCL) (INTL) (NATL) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
```

**Adding and changing parameter in table CISCPCPR**

```
SINGLE COMMAND LINE ADDITION
>ADD RSRVD LCL CELL $
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE ADDED:
    RSRVD
                                (LCL) (CELL) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED

>CHA
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
XLAClass: LCL
>
XLAClass: CELL
>NATL
XLAClass:
>INTL
XLAClass:
>$
TUPLE TO BE CHANGED:
    RSRVD
                                (LCL) (NATL) (INTL) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE CHANGED
```

**Deleting parameter from table CISCPCPR**

```
>DEL
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE DELETED:
  RSRVD
                                (LCL) (NATL) (INTL) $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE DELETED
```

**Table release history update**

NONE

**Supplementary information**

NONE

**Translation verification other tools**

NONE

**Name: CUSTSTN**

A new field to table CUSTSTN is added: CPC. Tuple can be added, deleted or changed. An example datafill is as: CUST783 CPC CPC **ORD**.

**Functional description**

It is used to assign CPC value to customer groups. It is accessed with the Table Control operations.

**Usage sequence and implications (CM Only)**

There is no requirement to datafill tables in a specific order.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| CUSTSTN                | UNCHANGED      | UNCHANGED      | UNCHANGED             |

**Fields/OIDs**

The following table lists fields/OIDs for CUSTSTN.

**Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry          | Explanation and action                                                             |
|----------|----------------|------------------------|----------------|------------------------------------------------------------------------------------|
| CUSTNAME | Changed        | NO                     | Customer_group | INDEX FIELD<br>Customer group which will be assigned CPC is entered in this field. |
| OPTNAME  | Changed        | NO                     | CPC            | Customer group Option Name is entered as CPC                                       |
| OPTION   | Changed        | NO                     | CPC            | Option is entered as CPC.                                                          |
| CPC      | NEW            | NO                     | CPC_name_type  | CPC name which will be assigned to customer group is entered in this field.        |

**Entry values for CPC\_name\_type for table CUSTSTN**

| CPC_name_type |         |
|---------------|---------|
| UNKNOWN       | FOC     |
| ORD           | METER   |
| PRIOR         | VIS     |
| MAINT         | LOCAL   |
| SPM           | CNDB    |
| OPER          | HOTEL   |
| TRAN          | AU_ORD  |
| ITDN          | AU_PRIO |
|               | RSRVD   |

**Datafill example**

The following example shows sample datafills for table CUSTSTN.

**CPC option addition to customer group in table CUSTSTN**

```
CI:
>TABLE CUSTSTN
TABLE: CUSTSTN
>ADD CUST783A CPC CPC ORD $ Y Y
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE ADDED:
      CUST783A      CPC                      CPC      ORD
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED

                        STEPWISE  ADDITION

>ADD
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
CUSTNAME:
>CUST783A
OPTNAME:
>CPC
OPTION:
>CPC
CPC_NAME:
>ORD
TUPLE TO BE ADDED:
      CUST783A      CPC                      CPC      ORD
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
```

**Changing CPC option of a customer group in table CUSTSTN**

```
>CHA
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
OPTION: CPC
>
CPC_NAME: ORD
>RSRVD
TUPLE TO BE CHANGED:
      CUST783A      CPC                      CPC      RSRVD
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE CHANGED
```

**Deleting CPC option of a customer group in table CUSTSTN**

```
>DEL
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE DELETED:
      CUST783A      CPC                      CPC      RSRVD
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE DELETED
```



**Table release history update**

NONE

**Supplementary information**

NONE

**Translation verification other tools**

NONE

**Name: CPCOPMAP**

CPCOPMAP is a table of CPC line options feature (A59032371.AA07).

**Functional description**

Table CPCOPMAP translates CPC values to ISUP CPC and R2 categories (CP activity). Table datafill can be changed with change (CHA) table control command.

In this feature, a new CPC value (RSRVD) is added to range of CPC values. And this value is also used in CPCOPMAP table. However, table CPCOPMAP is not used in CIS network.

Default values loaded at IPL for RSRVD are shown in datafill example section below.

**Usage sequence and implications (CM Only)**

There is no requirement to datafill tables in a specific order. Size

**Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| CPCOPMAP               | UNCHANGED      | UNCHANGED      | UNCHANGED             |

**Fields/OIDs**

The following table lists fields/OIDs for CPCOPMAP.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry         | Explanation and action              |
|---------|----------------|------------------------|---------------|-------------------------------------|
| CPCMKEY | NEW            | NO                     | CPC_name_type | INDEX FIELD<br>CPC name is entered. |

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry         | Explanation and action                                                                                                   |
|---------|----------------|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------|
| ISUPCPC | NEW            | NO                     | ISUP CPC name | ISUP CPC value corresponding to CPC name is entered here (Table , "Entry values for ISUP CPC name and CP Activity.").    |
| MFCACT  | NEW            | NO                     | CP ACTIVITY   | CP activity value corresponding to CPC name is entered here (Table , "Entry values for ISUP CPC name and CP Activity."). |

**Entry values for ISUP CPC name and CP Activity**

| ISUP CPC name              | CP Activity    |
|----------------------------|----------------|
| Default ISUP CPC name      |                |
| ISUP_CPC_UNKNOWN           | REGULAR        |
| ISUP_CPC_SUBSCRIBER_1      | PRIORITY       |
| ISUP_CPC_PRIORITY          | MTE_EQ         |
| ISUP_CPC_TEST_CALL         | LOCAL_COIN     |
| ISUP_CPC_PAYPHONE          | OPER           |
| ISUP_CPC_OP_NATIONAL       | DATA           |
| ISUP_CPC_DATA_CALL         | VIS_CALL       |
| ISUP_CPC_VOICE_INFOSERVICE | CLI_RESTRICTED |

**Datafill example**

The following example shows sample datafill for table CPCOPMAP.

**Changing a tuple in table CPCOPMAP**

```

CI :
>TABLE CPCOPMAP
TABLE: CPCOPMAP
>LIS ALL
TOP
  CPCCAT                ISUPCPC                MFCACT
-----
UNKNOWN                ISUP_CPC_UNKNOWN                REGULAR
  ORD    ISUP_CPC_SUBSCRIBER_1                REGULAR
  PRIOR   ISUP_CPC_PRIORITY                PRIORITY
  MAINT    ISUP_CPC_TEST_CALL                MTC_EQ
  SPM      ISUP_CPC_PAYPHONE                LOCAL_COIN
  OPER     ISUP_CPC_OP_NATIONAL                OPER
  TRAN     ISUP_CPC_DATA_CALL                DATA
  ITDN     ISUP_CPC_SUBSCRIBER_1                REGULAR
  FOC      ISUP_CPC_SUBSCRIBER_1                REGULAR
  METER    ISUP_CPC_SUBSCRIBER_1                LOCAL_COIN
  LOCL     ISUP_CPC_SUBSCRIBER_1                REGULAR
  VIS      ISUP_CPC_SUBSCRIBER_1                VIS_CALL
  CNDB     ISUP_CPC_SUBSCRIBER_1                CLI_RESTRICTED
  HOTEL    ISUP_CPC_SUBSCRIBER_1                REGULAR
  AU_ORD   ISUP_CPC_SUBSCRIBER_1                REGULAR
  AU_PRIO  ISUP_CPC_SUBSCRIBER_1                REGULAR
  RSRVD    ISUP_CPC_SUBSCRIBER_1                REGULAR
BOTTOM
>POS RSRVD
  RSRVD    ISUP_CPC_SUBSCRIBER_1                REGULAR
>CHA ISUPCPC ISUP_CPC_UNKNOWN MFCACT DATA
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
TUPLE TO BE CHANGED:
  RSRVD    ISUP_CPC_UNKNOWN                REGULAR
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE CHANGED

```

**Table release history update**

NONE

**Supplementary information**

NONE

**Translation verification other tools**

NONE

**Service Orders (SO) (CM & SESM)****Service order change details****LCC and options**

This feature introduces new value **RSRVD** for CPC line option field.

## New commands

This feature introduces a new value for existing service order option CPC.

## How service order commands are presented

N/A

## How service order options are presented

### Description

CPC option can be assigned as line option via SERVORD commands.

### Example

#### Example of the CPC option in prompt mode

```
> ADO
SONUMBER:      NOW    1   3 11 PM
>
DN_OR_LEN
>3450001
OPTION:
>CPC
CPC_VALUE:
>RSRVD
>$
```

#### Example of the CPC option in no-prompt mode

```
> ADO $ 3450001 CPC ORD $ yy
```

**Option prompts****System prompts for CPC option**

| <b>Prompt</b> | <b>Valid input</b> | <b>Description</b>                       | <b>Areas affected by prompt</b> |
|---------------|--------------------|------------------------------------------|---------------------------------|
| OPTION        | CPC                | CPC line option                          |                                 |
| CPC_VALUE     | UNKNOWN            | unknown subscriber                       |                                 |
|               | ORD                | ordinary subscriber                      |                                 |
|               | PRIOR              | subscriber with priority                 |                                 |
|               | MAIN               | test call                                |                                 |
|               | SPM                | pay phone                                |                                 |
|               | OPER               | national operator                        |                                 |
|               | TRAN               | data call                                |                                 |
|               | ITDN               | subscriber with special services         |                                 |
|               | FOC                | free change subscriber                   |                                 |
|               | METER              | local pay phone                          |                                 |
|               | LOCAL              | local network subscriber                 |                                 |
|               | VIS                | voice information services subscriber    |                                 |
|               | CNDB               | subscriber owner of CNDB                 |                                 |
|               | HOTEL              | hotel subscriber                         |                                 |
|               | AUORD              | automatic subscriber without priority    |                                 |
|               | AUPRIO             | automatic subscriber with priority       |                                 |
|               | RSRVD              | <b>Reserved (CIS Subs. Cat. 0) (new)</b> |                                 |

**Line class code compatibility****CPC compatibility to LCC**

| <b>Line class code</b> | <b>Compatible?</b> |
|------------------------|--------------------|
| IBN                    | YES                |
| BRI                    | YES                |

**Assignability**

The following functionalities apply to this option:

- set functionality: NO
- subset functionality: NO
- DN functionality: YES
- key functionality: NO

**Option prerequisites**

CPC has no prerequisites.

**Feature identification**

Functionality: WT20

Feature number: A00001923

**SERVORD+ Exceptions**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = World Trade*****A00001930 -- Last and Total Call Meter Inquiry Services (Succession on DMS)*****Functional Description***

This activity is providing Last and Total Call Meter Inquiry (CMI) services.

- **LCMI (Last Call Meter Inquiry)** is a service which allows the subscriber to inquire about the meter count for the last call made, by dialing a predefined number. When the number is dialed, the meter count of the last call and the feature meter count of the last call (if exists) is announced in English. Note that only answered calls and feature calls (i.e. subscriber activation, deactivation, interrogation calls and feature usage) are taken into consideration for the announcement provided to LCMI service.

When the last call meter count is zero, it is announced to indicate that it was a free call. However, the feature meter count is not announced if it is equal to zero.

- Like LCMI, **TCMI (Total Call Meter Inquiry)** allows the subscriber to inquire about the total meter count, via dialing a predefined number. When the number is dialed, the total of all assigned meters of the subscriber is announced in English<sup>1</sup>.

CMI services are supported for IBN lines with FPS or MOG option, and ETSI BRI lines with MOG option. Please note that FPS (Fixed Price Service) option can be assigned to IBN lines only. Refer to the activity A89007209 “Fixed Price Service for Bangladesh” for further information on FPS.

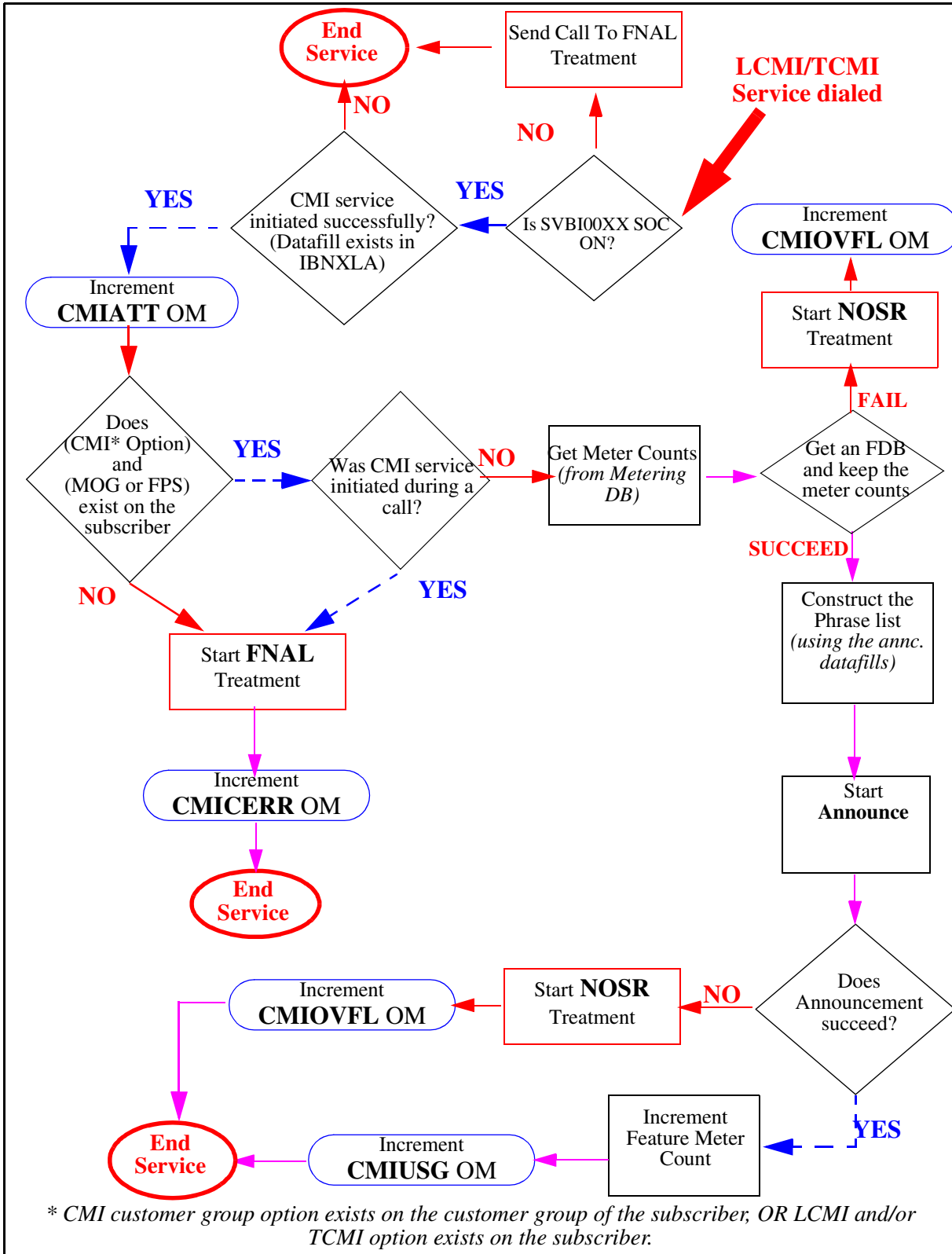
CMI services can be used by subscribers who use hardware metering (i.e. SPM and COIN) as well as software metered subscribers.

The following figure shows the steps followed when the TCMI or LCMI service is initiated.

---

1. In the total call meter announce for subscribers with FPS option, instead of MOG, re-maining credits, not the total of meters, is announced.

## Flow Chart of CMI Services





## Activation of Feature

CMI services will be activated for a subscriber, only if the following are provided:

- 1 State of SVBI0033 SOC must be ON in the office.
- 2 Since this is a metering dependant service, MOG option must have been assigned to the line or FPS option must exist on the subscriber.
- 3 TCMI/LCMI option must exist on the subscriber or the CMI customer group option must exist on the customer group that the subscriber belongs to.

## SVBI0033 SOC

In order to control the office wide functionality of the TCMI and LCMI services, one state SOC is designed, which is given the name SVBI0033 SOC. SVBI0033 SOC has two states: SOC\_ON and SOC\_IDLE. In the SOC\_ON state, SVBI0033 SOC is fully functional. In the IDLE state, the LCMI and TCMI features can be provisioned, but the usage of the service is not enabled.

### SVBI0033 SOC

|                         |                    |
|-------------------------|--------------------|
| SOC Group               | SVBI               |
| SOC Option Name         | SVBI0033           |
| SOC Option Title        | Call Meter Inquiry |
| SOC Option Control Type | State              |
| New SOC Option?         | Yes                |
| Option defined in DRU   | WT20               |
| Affected Products       | DMS100 - MMP       |

Default state of SOC is IDLE.

Activation/Deactivation of SOC is done by password control. The password is unique for each office.

However, datafilling tables (i.e IBNXLA, IBNLINES, CUSTSTN, etc.) does not depend on the state of the SOC. This means that datafills could be done even if SVBI0033 SOC is not ON. But note that CMI services can not be activated if SVBI0033 SOC is IDLE.

For all MOG and FPS subscribers, last call and last feature meter counts are initialized when state of SVBI0033 SOC is changed to IDLE.

State of SVBI0033 SOC can not be changed from ON to IDLE while one of DUMP, METERING RESTORE, or METERING LINE RECOVERY processes is in progress. One of following error messages are displayed:

“DUMP is in progress“

“METER LINE RECOVERY process is in progress“

“METER RESTORE is in progress“

and change state is aborted.

### **LCMI and TCMi Line Options**

Two new line options TCMi and LCMI are introduced. CMI line options are boolean options, which means it has no subfields. For ETSI BRI lines, they are compatible with point to point and point to multi point mode.

CMI line options can be assigned/deassigned to subscriber via SERVORD software. When TCMi/LCMI line options are assigned to a line, datafill will be added into one of tables IBNLINES (for IBN lines) or KSETLINE (for ETSI BRI lines) depending on the line type.

### **Administrator Assignment**

CMI line options can be assigned to IBN lines and ETSI BRI lines through SERVORD software via ADO (Add Option) and NEW commands. TCMi and LCMI line options can be assigned to IBN and ETSI BRI subscribers only (as a DN feature for ETSI BRI lines, and the assignment is only applicable to the keys of ETSI BRI line that has a DN). In order to assign TCMi or LCMI option to a line, line should have a MOG or FPS option. Please note that FPS option is supported for IBN lines only.

```
ado $ <DN> TCMi $
```

```
ado $ <DN> LCMI $
```

If line has none of MOG or FPS options, new CMI option can not be assigned to the subscriber. In this case system will reply with one of the following error messages.

“Cannot add LCMI since line does not have MOG or FPS option”

“Cannot add TCMi since line does not have MOG or FPS option”

If MOG and CMI options are intended to be assigned at the same time, MOG option should be given first so that the feature metering of administrative assignment is done correctly. Please refer to Section on page 1187 for more information on feature metering.

LCMI and TCMC line options cannot be added via EST (Establish hunt group) command, since addition of MOG and FPS by EST is not allowed and LCMI and TCMC line options require MOG or FPS previously assigned.

**Administrator Deassignment**

The administrator may deassign CMI option by using the DEO (Delete Option) and OUT commands through SERVORD software.

```
deo $ <DN> TCMC $
```

```
deo $ <DN> LCMI $
```

**Deassignment of MOG Option**

If both MOG and CMI options are intended to be deassigned from a line at the same time, CMI option must be deassigned first, so that feature metering of administrator deassignment is done correctly. Please refer to Section on page 1187 for more information on feature metering.

```
deo $ <DN> LCMI MOG $
```

```
deo $ <DN> TCMC MOG $
```

MOG option deletion is prohibited if line has TCMC and/or LCMI option. The following error message is generated:

“Error: Cannot delete MOG since TCMC requires MOG option.”

“Error: Cannot delete MOG since LCMI requires MOG option.”

**Deassignment of FPS Option**

FPS option deletion is prohibited if line has LCMI and/or TCMC line options. The following error message is generated FPS option is attempted to be deassigned from a line which has LCMI/TCMC line option.

“Error: Cannot delete FPS since TCMC requires FPS option.”

“Error: Cannot delete FPS since LCMI requires FPS option.”

**Interaction with SWAP and CLN Commands**

Last call and last feature meter counts of FPS and MOG agents are preserved during SWAP and CLN operations. In other words, last call and last feature meter counts of old len will be moved to new len during SWAP and CLN.

The following example shows the behavior of CMI service when SWAP command is applied to FPS agent (Behavior of MOG agent is the same). Please note that CMI SOC is ON.

**SWAP Example (FPS Subscriber)****Before SWAP**

```
>qdn 7835401
```

```
-----
DN:      7835401
TYPE: SINGLE PARTY LINE
SNPA: 102  SIG: DT  LNATTIDX: N/A
LINE EQUIPMENT NUMBER:  HOST  00 0 00 03
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      42
PM TERMINAL NUMBER :      4
OPTIONS:
DGT FPS MOG_1 FPS1 160
```

```
>qdn 7835402
```

```
-----
DN:      7835402
TYPE: SINGLE PARTY LINE
SNPA: 102  SIG: DT  LNATTIDX: N/A
LINE EQUIPMENT NUMBER:  HOST  00 0 00 05
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      42
PM TERMINAL NUMBER :      6
OPTIONS:
DGT FPS MOG_2 FPS2 203
```

```
FPS:
```

```
>qfps all
```

```
WARNING: Query of all FPS counters may take a significant amount of time
```

```
Please confirm ("YES", "Y", "NO", or "N"):
```

```
>Y
```

```
DN:      1027835401  MOG_ID: MOG_1      FPS1  160
Last Call Credit   : 10
Last Feature Credit : 3
```

```
DN:      1027835402  MOG_ID: MOG_2      FPS2  203
Last Call Credit   : 12
Last Feature Credit : 5
```

```
=====
TOTAL: 2 FPS subscriber(s) found
```

```
>
```

```
>swap $ 7835401 7835402 $ loop y y
```

**After SWAP**

```
>qfps all
WARNING: Query of all FPS counters may take a significant amount of
time
Please confirm ("YES", "Y", "NO", or "N"):
>y
DN:          1027835402  MOG_ID: MOG_2                FPS2    203
Last Call Credit      : 12
Last Feature Credit   : 5

DN:          1027835401  MOG_ID: MOG_1                FPS1    160
Last Call Credit      : 10
Last Feature Credit   : 3

=====
TOTAL: 2 FPS subscriber(s) found

>qdn 7835401
-----
DN:          7835401
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 00 0 00 05
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE: 6X93AA  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      42
PM TERMINAL NUMBER  :      6
OPTIONS:
DGT FPS MOG_1 FPS1 160

-----
>qdn 7835402
-----
DN:          7835402
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 00 0 00 03
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE: 6X93AA  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      42
PM TERMINAL NUMBER  :      4
OPTIONS:
DGT FPS MOG_2 FPS2 203

-----
>
```

### Adding TCMI and LCMI Line Options to IBNXLA

TCMI and LCMI services are provisioned through translation table IBNXLA. The numbers to be dialed for TCMI and LCMI services are provisioned in table IBNXLA and can be datafilled by the customer. LCMI and TCMI features are added to the FEATURE field of the FEAT TRanslations SElector (TRSEL) for table IBNXLA.

```
>add NETXLA XXX FEAT N N LCMI
>add NETXLA XXX FEAT N N TCMI
XXX - number to be dialed for the service
```

In the following example, 117 is used for TCMI, and 118 is used for LCMI provisioning.

#### Datafill Sample for Translation Table IBNXLA

```
>table IBNXLA
>pos NETXLA 117
>lis
KEY      RESULT
-----
NETXLA 117  FEAT N N TCMI

>pos NETXLA 118
>lis
KEY      RESULT
-----
NETXLA 118  FEAT N N LCMI
```

### CMI Customer Group Option

CMI customer group option can be assigned to a customer group via CMI customer group option.

The CMI option has two suboptions: TCMI and LCMI. At least one suboption must be assigned while assigning the CMI customer group option. CMI Customer Group option is datafilled in table CUSTSTN.

#### Administrator Assignment

CMI customer group option can be assigned to customer groups via datafilling the CUSTSTN table. Since CMI customer group has two suboptions TCMI and LCMI, followings are possible:

```
table CUSTSTN
add <CUSTNAME> CMI CMI TCMI $
add <CUSTNAME> CMI CMI LCMI $
```

```
add <CUSTNAME> CMI CMI TCMI LCMI $
```

In case subscriber has TCMI or LCMI suboption assigned already, and existing option is attempted to be assigned again, one of the following error messages is displayed:

```
"Duplicate XXX option is not allowed."
```

```
"XXX option already exists."
```

*XXX - LCMI or TCMI*

However CMI customer group option can be assigned to customer group although all of the group members do not have MOG or FPS option. But in order to use CMI service, IBN/ETSI BRI subscriber must have MOG or FPS option.

### Administrator Deassignment

The administrator may deassign CMI option completely by deleting the tuple using the DEL command.

```
del <CUSTNAME> CMI
```

Please note that removing CMI option from a customer group means that removing both LCMI and/or TCMI options from the customer group.

In order to remove one of TCMI or LCMI features, independent from the other, related tuple must be changed from CUSTSTN table.

```
cha <CUSTNAME> CMI XXX
```

*XXX - LCMI or TCMI*

### Feature Metering

LCMI/TCMI services will be charged when an administrator assignment, deassignment or subscriber usage action of LCMI/TCMI line option occurs. This means feature meter of the subscriber is incremented when the administrator initiates an LCMI/TCMI line option assignment/deassignment to a line, or when the subscriber uses LCMI/TCMI services.

Like LCMI and TCMI line options, feature metering of the subscriber is incremented during the subscriber usage only.

Please note that feature metering is only supported for IBN lines. Feature metering on ETSI BRI lines is not supported. For IBN lines, MTRFEAT table must be datafilled properly for feature metering.

For subscribers with FPS option, feature meter count is decremented from subscriber's credit directly. Refer to the activity A89007209 "Fixed Price Service for Bangladesh" for further information on FPS.

In the announcement, provided by LCMI service, the feature meter count of the last call (if any) will be included. In other words, feature meter count increment, which is caused by the current usage of the LCMI service, will not be reflected to the announcement. Feature meter increments caused by the administrator assignment/deassignment of any feature are not reflected to the LCMI announcement (i.e. only increment of feature meter count caused by subscriber usage is announced).

### **CMI OM Group**

CMI OM Group provides information about the successful and unsuccessful usage and performance of CMI features (SVBI0033 SOC must be ON). CMI OM group has four registers with names CMIATT, CMIUSG, CMIOVFL, and CMICERR. These OM registers are pegged by LCMI and TCMI features. CMI OM group is multi-tuple, which includes LCMI and TCMI tuples.

#### **CMI Registers**

- **CMIATT - CMI ATTEMPT**

This register counts the number of attempts for TCMI/LCMI service to be invoked. Generally this register is incremented each time LCMI or TCMI service is initiated. This means, LCMI/TCMI service is successfully translated through translation table IBNXL and successfully activated.

- **CMIUSG - CMI USAGE**

This register counts the number of times LCMI/TCMI service is successfully completed. This register is incremented just after the announcement is successfully played.

- **CMIOVFL - CMI OVERFLOW**

This register counts the number of times LCMI/TCMI service can not be successfully completed due to insufficient system resources. It is incremented when the announcement can not be provided to the subscriber.

- **CMICERR - CMI CUSTOMER ERROR**

This register counts the number of times CMI service is not provided to the subscriber, due to illegal initiation (i.e. initiation of the CMI service during active call) of the service or subscriber is not allowed to use the service.

The following figure shows the map display of CMI OM registers.



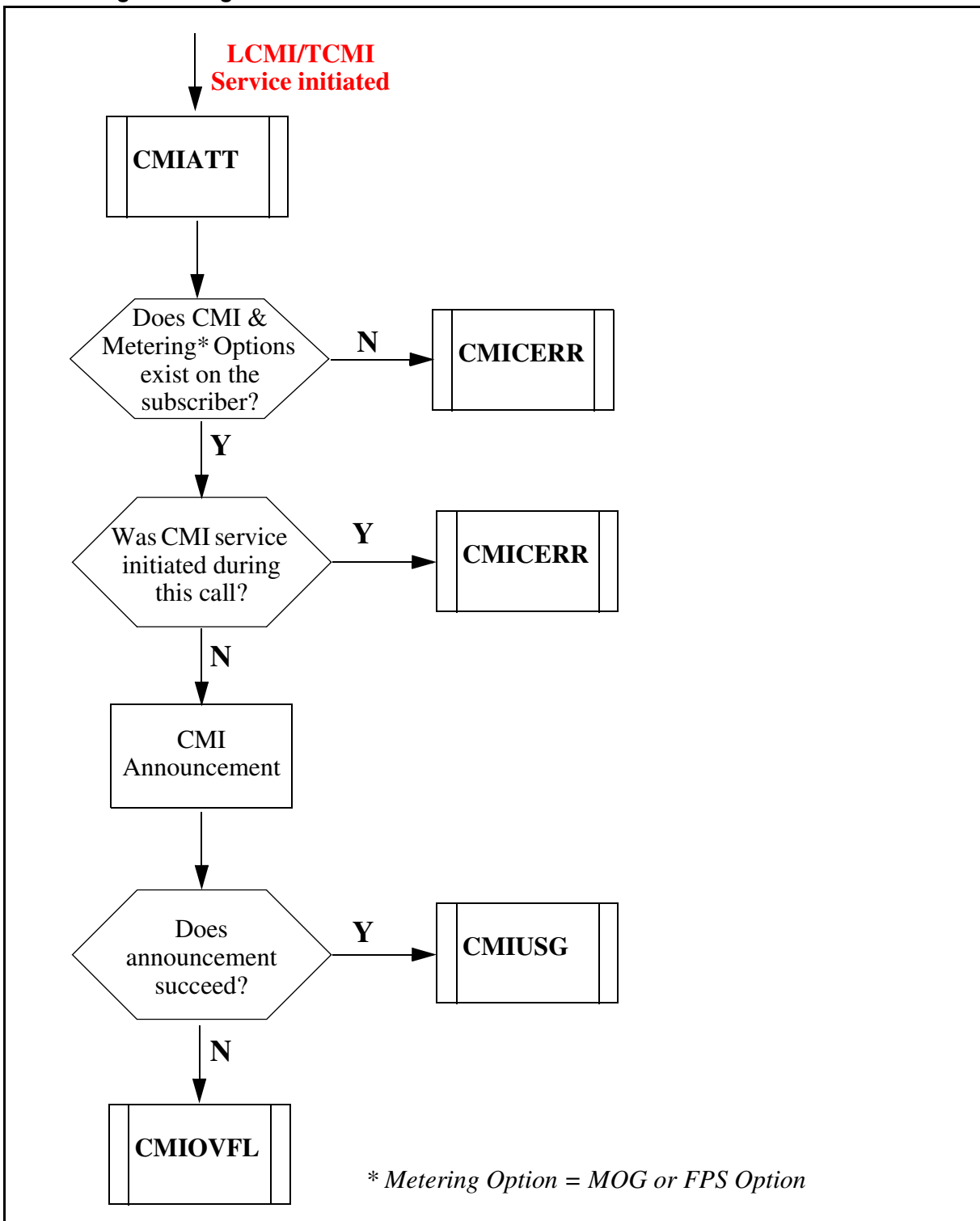
**Map display of CMI OM Registers**

```
>omshow CMI active
CMI

CLASS:    ACTIVE
START:2003/05/25 12:00:00 SUN; STOP: 2003/05/25 12:01:47 SUN;
SLOWSAMPLES:      2 ; FASTSAMPLES:      11 ;
  KEY (CMI_OPTIONS)

          CMIATT CMIUSG    CMIOVFL    CMICERR
0  TCMI    4      2        1          1
1  LCMI   10      9        1          0
```

See the preceding figure for pegging cases of CMI OM registers.

**CMI OM Registers Logic Flowchart**

### Enhancement of MTRCOUNT Command

MTRCOUNT command, which displays the software meter counts of the subscriber having MOG, is enhanced in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON (when used with “line” parameter). Map display is as follows:

#### Map Display for MTRCOUNT LINE command

```
>mtrcount LINE 7835406
*****

DN      : 1027835406
DATE    : 03/07/18
MTR NAME: FEATURE      MTR COUNT: 00000000 WRAP: N
MTR NAME: LOCAL        MTR COUNT: 00000000 WRAP: N
MTR NAME: TOLL          MTR COUNT: 00000000 WRAP: N

          TOTAL          MTR COUNT: 000000000
          LAST CALL      MTR COUNT: 00000000
          LAST FEATURE    MTR COUNT: 00000000
*****
```

When MTRCOUNT command is used with TRUNK/LMG (Line Meter Group) option, when SVBI0033 SOC is ON, TOTAL of assigned meter counts of trunk/lmg is displayed. Example map displays are as follows:

#### Map Display for MTRCOUNT TRUNK command

```
>mtrcount trunk 2WBDISP2AB
*****

TRUNK GROUP: 2WBDISP2AB
DATE      : 04/03/05

INCOMING CALLS
-----
MTR NAME: METER1      MTR COUNT: 000000000000 WRAP:Y
MTR NAME: METER2      MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER3      MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER4      MTR COUNT: 999999999999 WRAP:Y

          TOTAL          MTR COUNT: 6999999999997

OUTGOING CALLS
-----
MTR NAME: METER1      MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER2      MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER3      MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER4      MTR COUNT: 999999999999 WRAP:Y

          TOTAL          MTR COUNT: 7999999999996
*****
```

**Map Display for MTRCOUNT LMG command**

```
>mtrcount lmg 533
*****

LOGICAL METERING GROUP: 533
DATE      : 04/03/05

INCOMING CALLS
-----
MTR NAME: TLOCAL          MTR COUNT:  999999999999 WRAP:N
MTR NAME: TTOLL           MTR COUNT:  000000000134 WRAP:Y

                TOTAL          MTR COUNT: 2000000000133

OUTGOING CALLS
-----
MTR NAME: TLOCAL          MTR COUNT:  000000000145 WRAP:N
MTR NAME: TTOLL           MTR COUNT:  000000000125 WRAP:Y

                TOTAL          MTR COUNT: 1000000000270
*****
```

**Enhancement of QFPS Command**

QFPS FPS CI command, which displays the FPS credit of the subscriber having FPS, is enhanced in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON. QFPS command with ZERO, UNUSEDFOR, DN and ALL options are enhanced by this activity. Map display is as follows:

**Map Display for QFPS command**

```

>qfps all
WARNING: Query of all FPS counters may take a significant amount of time
Please confirm ("YES", "Y", "NO", or "N"):
>y
DN:          1027835407  MOG_ID: MOG_2                FPS2    256
Last Call Credit      : 10
Last Feature Credit   : 0

DN:          1027835401  MOG_ID: MOG_3                FPS1    176
Last Call Credit      : 20
Last Feature Credit   : 2

DN:          1027835403  MOG_ID: MOG_2                FPS1    176
Last Call Credit      : 0
Last Feature Credit   : 0

DN:          1027835402  MOG_ID: MOG_2                FPS2    256
Last Call Credit      : 0
Last Feature Credit   : 10

=====
TOTAL: 4 FPS subscriber(s) found

>qfps dn 7835407
-----
DN: 7835407      MOG_ID: MOG_2                FPS2    256

Last Call Credit      : 10
Last Feature Credit   : 0
>

>qfps unusedfor 1
WARNING: Query of all FPS counters may take a significant amount of time
Please confirm ("YES", "Y", "NO", or "N"):
>y
DN:          1027835403  MOG_ID: MOG_2                FPS1    176
Last Call Credit      : 0
Last Feature Credit   : 0

=====
TOTAL: 1 FPS subscriber(s) found

```

**CMI Announcements**

CMI announcements are custom announcements that consist of a number of simple phrases, in English, datafilled in table ANNPHLST (See Appendix B for sample announcement datafill). Each simple phrase has a corresponding recording on the EDRAM card.

Feature meter count announce is provided by datafilling table ANNPHLST properly. CMIFTRANN\_START phrase indicates the start of feature announce sentence, while CMIFTRANN\_STOP indicates the end of the feature announce sentence.

Please note that announcement sequence strictly depends on the datafill in table ANNPHLST. If it is not datafilled properly, announcement will be provided in wrong sequence.

### Simple Phrase Names Used in CMI Announcement

The simple phrase names provided for CMI service for English language and the corresponding phrases recorded on the EDRAM are shown in table below. These are assigned on a EDRAM using the ASSIGN command. Please refer to APPENDIX A, "Assigning EDRAM Phrases Using DRAMREC CI Command".

#### List of English Phrases in CMI Service

| Phrase Name | Recording    | Phrase Name | Recording                        |
|-------------|--------------|-------------|----------------------------------|
| CMIENG1     | Your         | CMIENG2     | Last Call                        |
| CMIENG3     | Total        | CMIENG4     | Meter Count is                   |
| CMIENG37    | Last Feature | CMIENG5     | Thank you for your calling       |
| CMIENG39    | Credit is    | CMIENG38    | Remaining                        |
| CMIENG6     | One          | CMIENG7     | Two                              |
| CMIENG8     | Three        | CMIENG9     | Four                             |
| CMIENG10    | Five         | CMIENG11    | Six                              |
| CMIENG12    | Seven        | CMIENG13    | Eight                            |
| CMIENG14    | Nine         | CMIENG15    | Ten                              |
| CMIENG16    | Eleven       | CMIENG17    | Twelve                           |
| CMIENG18    | Thirteen     | CMIENG19    | Fourteen                         |
| CMIENG20    | Fifteen      | CMIENG21    | Sixteen                          |
| CMIENG22    | Seventeen    | CMIENG23    | Eighteen                         |
| CMIENG24    | Nineteen     | CMIENG25    | Twenty                           |
| CMIENG26    | Thirty       | CMIENG27    | Forty                            |
| CMIENG28    | Fifty        | CMIENG29    | Sixty                            |
| CMIENG30    | Seventy      | CMIENG31    | Eighty                           |
| CMIENG32    | Ninety       | CMIENG33    | Hundred                          |
| CMIENG34    | Thousand     | CMIENG35    | Million                          |
| CMIENG36    | Zero         | CMIENG      | Language delimiter<br>(optional) |

| Phrase Name         | Recording                               | Phrase Name        | Recording                               |
|---------------------|-----------------------------------------|--------------------|-----------------------------------------|
| CMIENGFTTRANN_START | delimiter for feature announce starting | CMIENGFTTRANN_STOP | delimiter for feature announce stopping |
| CMIENG_MTR_CREDIT   | meter count/credit                      | CMIENG_CNT_LSTFTR  | last feature meter count                |
| CMIENG_CNT_LSTOT    | last/total/remaining                    | CMIENGLSTOT        | last//total                             |

**Red** - Main phrases

**Blue** - Number Phrases

**Black** - Compound Phrases

**Green** - delimiters

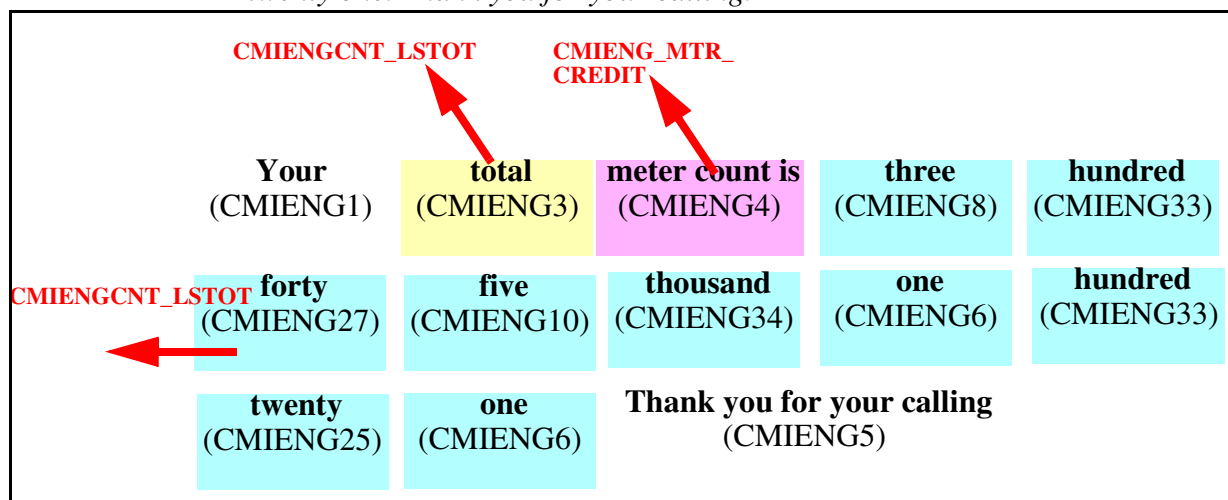
Please note that compound phrases and delimiters should not be recorded manually. Corresponding phrases are decided dynamically at run time.

### CMI Announcement Example

Examples of announcements for CMI service is shown in the following table, announcing:

- Example 1: TCMI announcement provided to subscriber having MOG option.**

*“Your total meter count is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”*

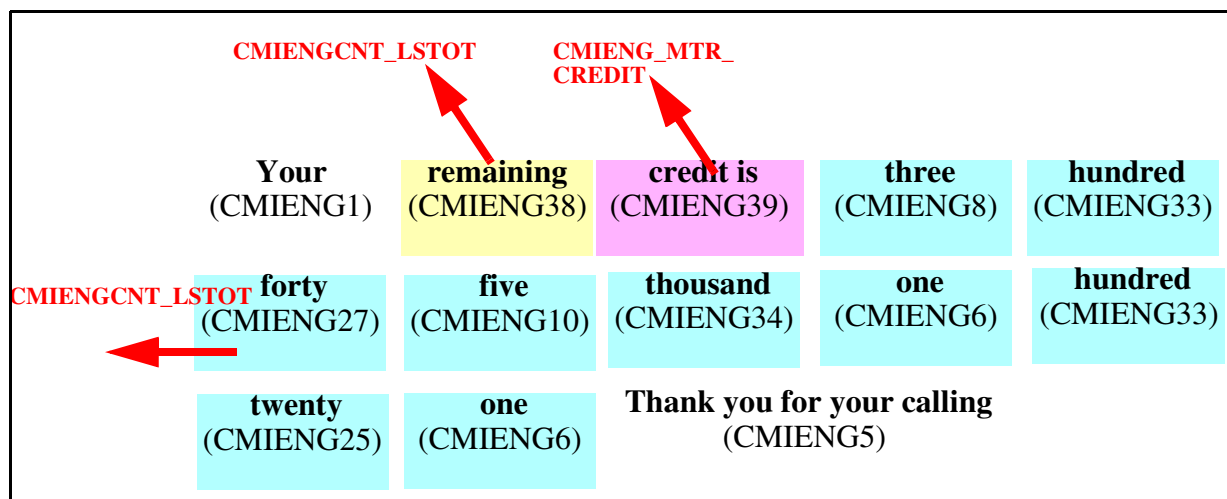


- **Example 2: TCMI announcement provided to subscriber having FPS option.**

*“Your remaining credit is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”*

- **Example 3: TCMI announcement provided to subscriber having FPS option.**

*“Your remaining credit is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”*



## Hardware Requirements or Dependencies

This feature uses the Enhanced Digital Recorded Announcement Machine (EDRAM) to provide the announcement for CMI service. The CMI simple phrases are loaded into EDRAM as voice files.

## Software Requirements or Dependencies

Software and hardware metering should be enabled via office parameter ENABLE\_METERING. ENABLE\_METERING must be YES in order to use CMI services.

## Limitations and Restrictions

1. The total recording time for all the phrases is limited by the EDRAM hardware. All phrases making up CMI announcement must exist on one physical EDRAM card. NTP-297-1001-527 contains the complete description on EDRAM.



2. Hardware and software metering should be enabled via office parameter ENABLE\_METERING. In case ENABLE\_METERING is NO, meter counts are not updated after each call, and CMI announcement does not reflect the correct values of meter counts.
3. LCMI and TCMI services can not be initiated during an active call.
4. Last call meter count and last feature count of MOG Subscribers are preserved during warm, cold and reload restarts, since these counts are saved in DSPROT memory. But these counts are not survived during office reboot. But please note that last call meter count and last feature count of FPS subscribers are preserved during WARM restarts only.
5. State of SVBI0033 SOC can not be changed to IDLE state from ON state, while one of DUMP, METERING RESTORE, or LINE RECOVERY processes are running.

## Interactions

Please note that only the features that CMI service has interaction with are explained below.

### Call Diversion

Call diversion to LCMI and TCMI services is allowed. But, in case a subscriber diverts his phone to LCMI/TCMI service, others calling the diverting DN hears the BUSY tone. However, diverting subscriber himself will be able to call LCMI/TCMI service.

### Hunt Groups

CMI services are supported for DNH, DLH and MLH Hunt Groups. In the last meter count announce for MLH and DLH members, meter counts of the last call made by “any member” (i.e subscriber himself or anybody else) is included.

In the total meter count announce, total of all meters assigned to the hunt group is included.

### MSN on ETSI BRI

CMI and MSN on ETSI BRI interaction behavior is just like the behavior of CMI and Hunt groups.

### Reverse Charging

LCMI service is compatible with reverse charging. In case originating agent initiates LCMI service after a reverse charged call, “last call meter count =0” is announced to the subscriber. In case LCMI service is initiated by the terminating agent (i.e charged party), subscriber is announced the actual value of the meter count, consumed during the last call.

## FNT (Free Number Terminating)

CMI services are compatible with FNT option. Last call/feature meter counts of IBN/ETSI BRI agent are updated as zero after answered free call (i.e. If IBN/ETSI BRI agent initiates LCMI service after a free call, last call meter count of the agent is announced as zero). Please note that feature meter count increments (due to usage or activation of any metered feature) during FNT call are not reflected to the last call meter count.

## HOLD

LCMI announcement is released when LCMI announcement is held, in order not to cause any troubles during complex call scenarios in ETSI BRI lines (i.e. 3PTY etc.).

## Basic Call & Complex Call CMI Interaction

- Consider the following scenario:

| Action                               | Last Call Meter Count | Last Feature Meter Count | Announcement                                              |
|--------------------------------------|-----------------------|--------------------------|-----------------------------------------------------------|
| 1. Any Call                          | 4                     | 3                        | -                                                         |
| 2. Subscriber initiates LCMI Service | 4                     | 2                        | Last Call Meter Count = 4<br>last feature meter Count = 3 |
| 3. Subscriber initiates LCMI Service | 0                     | 2                        | Last Call Meter Count = 4<br>last feature meter Count = 2 |

In the subscriber's first initiation of LCMI service, meter counts of the last call is announced to the subscriber. After the announcement, last feature meter count is incremented due to the usage of LCMI service.

In the second initiation of LCMI service, last call meter count of the previous call is preserved, and last feature meter count was two. And again last feature meter count is incremented due to usage of LCMI service.

- In complex call scenarios that contain more than one leg (i.e. Call Transfer, Three Way Call and Six Way Call), meter count of the latest disconnected leg is announced to the charged agent. Consider the following scenario of 3WC:
  - Agent A has 3WC option.
  - Agent A calls Agent B.
  - Agent B answers the call.
  - Agent A flashes, and calls Agent C. (A-B call on hold)

### 5. Agent C answers. (A-C call active)

For possible scenarios after this step, lately disconnected leg's meter count is reflected to the announcement provided to Agent A (i.e. charged agent), since last call meter count is updated when all of the connected calls are released.

## Applicable customer facing sections

### Fault Management

Logs ☐ \_N/A\_

Alarms ☐ \_N/A\_

### Configuration

Data Schema ☐ \_X\_

User Interface ☐ \_N/A\_

Element Management ☐ \_N/A\_

Security ☐ \_N/A\_

Service Order ☐ \_X\_

Office Parameters ☐ \_N/A\_

Accounting (includes AMA billing) ☐ \_N/A\_

Performance (includes operational measurements) ☐ \_X\_

## Glossary

| Term        | Description                                    |
|-------------|------------------------------------------------|
| <b>BRI</b>  | Basic Rate Interface                           |
| <b>CMI</b>  | Call Meter Inquiry                             |
| <b>DLH</b>  | Distributed Line Hunting                       |
| <b>ETSI</b> | European Telecommunications Standard Institute |
| <b>FNAL</b> | Feature Not Allowed                            |
| <b>FPS</b>  | Fixed Price Service                            |
| <b>LCMI</b> | Last Call Meter Inquiry                        |
| <b>MLH</b>  | Multi-line Hunting                             |
| <b>MOG</b>  | Metering Origination Group                     |

| Term        | Description                  |
|-------------|------------------------------|
| <b>MSN</b>  | Multiple Subscriber Number   |
| <b>OM</b>   | Operational Measurement      |
| <b>SO</b>   | Service Order                |
| <b>SOC</b>  | Software Optionality Control |
| <b>SPM</b>  | Subscriber's Private Meter   |
| <b>TCMI</b> | Total Call Meter Inquiry     |

## APPENDIX A for A00001930: Assigning EDRAM Phrases Using DRAMREC CI Command

This section explains the command required to assign an internal recording on EDRAM to an external phrase name (up to 16 alpha numerics) in order to datafill table ANNPHLST. The internal recordings in the corresponding voice files are downloaded already to the EDRAM. *RECORD* is a subcommand under DRAMREC utility. For complete information, refer to NTP-297-1001-527 *Digital Recorded Announcement Machine DRAM and EDRAM Guide*.

### ASSIGN Phrase Names to Internal EDRAM Recordings

| Command Name | EXTERNAL PHRASE NAME | LENGTH | PAD | DRAM | CARD | INTERNAL PHRASE # | Force |
|--------------|----------------------|--------|-----|------|------|-------------------|-------|
| record       | cmieng1              | 1      | pad | 1    | 4    | 9                 | force |
| record       | cmieng2              | 1      | pad | 1    | 4    | 10                | force |
| record       | cmieng3              | 1      | pad | 1    | 4    | 11                | force |
| record       | cmieng4              | 2      | pad | 1    | 4    | 12                | force |
| record       | cmieng5              | 2      | pad | 1    | 4    | 14                | force |
| record       | cmieng6              | 1      | pad | 1    | 4    | 16                | force |
| record       | cmieng7              | 1      | pad | 1    | 4    | 17                | force |
| record       | cmieng8              | 1      | pad | 1    | 4    | 18                | force |
| record       | cmieng9              | 1      | pad | 1    | 4    | 19                | force |
| record       | cmieng10             | 1      | pad | 1    | 4    | 20                | force |
| record       | cmieng11             | 1      | pad | 1    | 4    | 21                | force |
| record       | cmieng12             | 1      | pad | 1    | 4    | 22                | force |
| record       | cmieng13             | 1      | pad | 1    | 4    | 23                | force |
| record       | cmieng14             | 1      | pad | 1    | 4    | 24                | force |
| record       | cmieng15             | 1      | pad | 1    | 4    | 25                | force |

**ASSIGN Phrase Names to Internal EDRAM Recordings**

| Command Name | EXTERNAL PHRASE NAME | LENGTH | PAD | DRAM | CARD | INTERNAL PHRASE # | Force |
|--------------|----------------------|--------|-----|------|------|-------------------|-------|
| record       | cmieng16             | 1      | pad | 1    | 4    | 26                | force |
| record       | cmieng17             | 1      | pad | 1    | 4    | 27                | force |
| record       | cmieng18             | 1      | pad | 1    | 4    | 28                | force |
| record       | cmieng19             | 1      | pad | 1    | 4    | 29                | force |
| record       | cmieng20             | 1      | pad | 1    | 4    | 30                | force |
| record       | cmieng21             | 1      | pad | 1    | 4    | 31                | force |
| record       | cmieng22             | 1      | pad | 1    | 4    | 32                | force |
| record       | cmieng23             | 1      | pad | 1    | 4    | 33                | force |
| record       | cmieng24             | 1      | pad | 1    | 4    | 34                | force |
| record       | cmieng25             | 1      | pad | 1    | 4    | 35                | force |
| record       | cmieng26             | 1      | pad | 1    | 4    | 36                | force |
| record       | cmieng27             | 1      | pad | 1    | 4    | 37                | force |
| record       | cmieng28             | 1      | pad | 1    | 4    | 38                | force |
| record       | cmieng29             | 1      | pad | 1    | 4    | 39                | force |
| record       | cmieng30             | 1      | pad | 1    | 4    | 13                | force |
| record       | cmieng31             | 1      | pad | 1    | 6    | 14                | force |
| record       | cmieng32             | 1      | pad | 1    | 6    | 15                | force |
| record       | cmieng33             | 1      | pad | 1    | 6    | 16                | force |
| record       | cmieng34             | 1      | pad | 1    | 6    | 17                | force |
| record       | cmieng35             | 1      | pad | 1    | 6    | 18                | force |
| record       | cmieng36             | 1      | pad | 1    | 6    | 19                | force |
| record       | cmieng37             | 2      | pad | 1    | 6    | 20                | force |
| record       | cmieng38             | 1      | pad | 1    | 6    | 22                | force |
| record       | cmieng39             | 2      | pad | 1    | 6    | 23                | force |

**APPENDIX B for A00001930: Datafill for CMI Announcements**

This appendix describes changed datafill required for CMI announcements on an EDRAM card. For complete information, refer to NTP-297-1001-527 *Digital Recorded Announcement Machine DRAM and EDRAM Guide*.

The sequence to datafill EDRAM and CMI related tables are shown below.

**Table TMINV**

This table defines the location of two EDRAM hardware cards within the Maintenance Trunk Module (MTM).

**Table DTMINV - Sample Datafil**

| TMNM     | FRTYPE | FRNO | SHPOS       | FLOOR | ROW | FRPOS | LKDATA  | EQPEC   |   |        |  |
|----------|--------|------|-------------|-------|-----|-------|---------|---------|---|--------|--|
| LOAD     | EXEC   |      |             |       |     |       | SCTMLOC |         |   |        |  |
| DTM      | 0      | TME  | 0           | 51    | 1   | B     | 3       | 0 10 12 | 0 | 1X80AA |  |
| EDRMAE47 | MTMEX  |      | SINGLE_CARD |       |     | MTM   | 2 12    |         |   |        |  |

**Table DRAMS**

This table contains the information about two physical EDRAM cards and the arrangement of speech memory. Each physical card can be divided into 8 single-density virtual cards or 4 double-density virtual cards. The datafill below divides one physical card into 4 double-density virtual cards.

**Table DRAMS - Sample Datafil**

| DRAMCARD | TMTYPE | TMNO | TMCKT | CARDCODE |          |       |
|----------|--------|------|-------|----------|----------|-------|
|          |        |      |       |          | CARDINFO |       |
| 1        | 0      | DTM  | 0     | 0        | 1X80AA   |       |
|          |        |      |       |          | CTLR     | DRAM1 |
| 1        | 2      | DTM  | 0     | 2        | 1X80AA   |       |
| RAM (1)  | \$     |      |       |          |          |       |
| 1        | 4      | DTM  | 0     | 4        | 1X80AA   |       |
| RAM (2)  | \$     |      |       |          |          |       |
| 1        | 6      | DTM  | 0     | 6        | 1X80AA   |       |
| RAM (3)  | \$     |      |       |          |          |       |

**Table EDRAMINV**

This table contains the voice file information for the EDRAM. Voice files contain internal recordings for simple phrases. Up to 8 single-density voice files or 4 double-density voice files can be downloaded to a specific EDRAM card.

**Table EDRAMINV - Sample Datafill**

| EDRAMNM | TUPINFO |         |
|---------|---------|---------|
| DTM 0 3 | ANN     | CMIANN1 |
| DTM 0 4 | ANN     | CMIANN2 |

Four voice files, CMIANN1 to CMIANN2 contain English phrases.

After datafilling table EDRAINV, DTM must be reloaded with announce files. Then the phrases must be assigned.

### Table CLLI

This table is used to define new CLLIs for two announcement groups. Field TRKGRSIZE defines the total number of members in each group.

**Table CLLI - Define Announcement CLLI**

| CLLI   | ADNUM | TRKGRSIZE | ADMININFO                  |
|--------|-------|-----------|----------------------------|
| CMIENG | 800   | 10        | CALL_METER_INQUIRY_ENGLISH |

### Table ANNS

This table assigns the CLLI name defined in table CLLI to an announcement type. Field CLLI contains the CLLI name. For CMI service, field ANTTYPE must be datafilled with *CMI*. The value in field MAXCONN has no impact to custom announcements such as CMI since for a custom announcement, the maximum number of simultaneous connections that can be made to one announcement is hard-coded to 1. CMI Announcement is repeated for number of times defined by MAXCYC field. But please note that once you datafill this tuple, it is very hard to change it.

**Table ANNS - Sample Datafill**

| CLLI   | ANTTYPE    | TRAFSNO | MAXCONN | CYTIME | MAXCYC |
|--------|------------|---------|---------|--------|--------|
| CMIENG | <i>CMI</i> | 25      | 1       | 0      | 2      |

### Table ANNMEMS

This table contains the assignments for each announcement member in the announcement group defined in table ANNS. Each tuple here corresponds to one trunk member in its group at MAP TTP level. For custom announcement such as CMI, hardware type must be DRAM, only one track can be datafilled in field TRACKLIST and the track number must be 0. For each EDRA card, e.g. DTM 2, only up to 29 members (1 to 29 at the last column) can be datafilled.

**Table ANNMEMS - Sample Datafill**

| ANNMEM |   | HDWTYPE | CARD | TRACKLIST |     |   |    |
|--------|---|---------|------|-----------|-----|---|----|
| CMIENG | 0 | DRAM    | DRA  | 0         | DTM | 0 | 14 |

### Table ANNPHLST

Each tuple in this table defines one custom announcement. For CMI service, the announcement number (the second field of USERANN) must be unique.

Phrase list to be announced is generated dynamically at runtime. Advised datafill for CMI announcement is like the following if feature meter count will be announced in the LCMi announcement:

**Sample Datafill For CMI Announcement, Announcing Last feature also meter count\**

```

ANNPHKEY      PHSLIST
-----
CMIENG      1 CMIENG CMIENG1 CMIENGLSTOT CMIENG_MTR_CREDIT CMIENG_CNT_LSTOT
CMIFTRANN_START CMIENG1 CMIENG37 CMIENG_MTR_CREDIT CMIENG_CNT_LSTFTR CMIFTRANN_STOP
CMIENG5 $

```

**TCMI announcement** with the above datafill will be like the following for **MOG subscriber**:

*“Your total meter count is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”*

For **FPS subscribers** it will be:

*“Your remaining credit is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”*

**LCMI Announcement**

For **MOG subscribers** (feature meter count is not equal to 0) will be:

*“Your last call meter count is three hundred forty five thousand one hundred twenty one. Your last feature meter count is five. Thank you for your calling.”*

For **FPS subscribers** (feature meter count is not equal to 0) will be:

*“Your last call credit is three hundred forty five thousand one hundred twenty one. Your last feature meter credit is five. Thank you for your calling.”*

If last feature meter count of the subscriber is equal to zero, feature meter is not announced.

Advised datafill for CMI announcement is like the following if feature meter count will be announced in the LCMi announcement:

**Sample Datafill For CMI Announcement, without last feature meter count announcing**

```

ANNPHKEY      PHSLIST
-----
CMIENG      1 CMIENG CMIENG1 CMIENGLSTOT CMIENG_MTR_CREDIT CMIENG_CNT_LSTOT
CMIENG5 $

```



Last feature meter count is not announced in LCMI announcement (even if last feature meter count is different than zero), while TCMI announcement remains the same. This time,

**LCMI Announcement** for **MOG subscribers** will be:

“Your last call meter count is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”

For **FPS subscribers** it will be:

“Your last call credit is three hundred forty five thousand one hundred twenty one. Thank you for your calling.”

If more than one tuple is datafilled for CMI service in this table, only the first, decided by the unique announcement numbers (e.g. 1 in the above table), is used for announcement playing on each cycle.

The announcement number in this table can be from 1 to 255. For better real time performance, it's recommended to assign the announcement number from 1 up.

## ***Configuration for A00001930***

### **Hardware and Software Requirements**

This feature uses the Enhanced Digital Recorded Announcement Machine (EDRAM) to provide the announcement for CMI service. The CMI simple phrases are loaded into EDRAM as voice files.

### **Initial Configuration**

N/A

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

N/A

### **Data schema (DS) (CM)**

#### **New/modified tables, MIBs, or Database Schema**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/OLD/UNCHANGED)</b> |
|-----------------------|---------------------------------|------------------------------------------|
| CUSTSTN               | CHANGED                         | UNCHANGED                                |
| IBNXLA                | CHANGED                         | UNCHANGED                                |

## Table Information

### Table Name: CUSTSTN

Customer Station Table

### Functional description

The function of the table is unchanged.

### Datafill sequence and implications

Current datafill order is unchanged.

### Size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory         |
|------------------------|----------------|----------------|-------------------------------|
| CUSTSTN                | Same           | Same           | Current limits are maintained |

### Table Fields

The following table lists fields of the CMI option of table CUSTSTN.

### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Entry                    | Explanation and action                           |
|---------|----------------|------------------------|--------------------------|--------------------------------------------------|
| OPTNAME | Changed        | None                   | CMI                      | The new CUSTSTN option, CMI, is datafilled here. |
| OPTION  | Changed        | CMI_OPTION             | {CMI LCMI}<br>{CMI TCMI} | LCMI and TCMI options datafilled here            |

### Datafill example

The following example shows sample datafill for table CUSTSTN for the CMI Customer Group Option.

**Assigning CMI Options to a Customer Group**

```

>table CUSTSTN
>add CUST111 CMI CMI (TCMI) (LCMI) $
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
TUPLE TO BE ADDED:
      CUST111          CMI CMI (TCMI) (LCMI) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
JOURNAL FILE INACTIVE
>lis
CUSTNAME          OPTNAME OPTION
-----
CUST111          CMI CMI (TCMI) (LCMI) $

```

**Deassigning LCMI Option from a Customer Group**

```

>table CUSTSTN
>lis CUST111 CMI
CUSTNAME          OPTNAME OPTION
-----
CUST111          CMI CMI (TCMI) (LCMI) $
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
OPTION: CMI
>
CMIOPT: TCMI
>
CMIOPT: LCMI
>$
TUPLE TO BE CHANGED:
      CUST111          CMI CMI (TCMI) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
JOURNAL FILE INACTIVE
>lis
CUSTNAME          OPTNAME OPTION
-----
CUST111          CMI CMI (TCMI) $

```

**Deassigning CMI Option completely from a Customer Group**

```

>table CUSTSTN
>lis CUST111 CMI
CUSTNAME          OPTNAME OPTION
-----
CUST111           CMI CMI (TCMI) (LCMI) $

>del
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
TUPLE TO BE DELETED:
      CUST111           CMI CMI (TCMI) (LCMI)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE DELETED
JOURNAL FILE INACTIVE
WARNING:  CURRENTLY NOT POSITIONED

```

**Table release history update**

A new customer group option, CMI, is added to be datafilled in table CUSTSTN.

**Supplementary information**

N/A

**Translation verification other tools**

CUSTSTN table does not use translation verification tools.

**Table Name: IBNXLA**

IBN Translation

**Functional description**

The function of the table is unchanged.

**Datafill sequence and implications**

Current datafill order is unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory         |
|------------------------|----------------|----------------|-------------------------------|
| IBNXLA                 | Same           | Same           | Current limits are maintained |

**Table Fields**

The following table lists fields for IBNXLA table.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry | Explanation and action           |
|---------|----------------|------------------------|-------|----------------------------------|
| FEATURE | Changed        | None                   | TCMI  | Total Call Meter Inquiry Feature |
|         |                |                        | LCMI  | Last Cal Meter Inquiry Feature   |

**Datafill example**

The following example shows sample datafill for table IBNXLA.

**Sample IBNXLA datafill for LCMI and TCMI services**

```
TABLE: IBNXLA
KEY RESULT
-----
NETXLA 117 FEAT N N LCMI
NETXLA 118 FEAT N N TCMI
```

**Table release history update**

Two new features, LCMI and TCMI, are added to be datafilled in table IBNXLA.

**Supplementary information**

N/A

**Translation verification other tools**

**Traver Example**

```
>traver 1 7835410 118 b
TABLE IBNLINES
HOST 00 0 10 09 0 DT STN IBN 7835410 CUST783 0 0 102 (TCMI) (LCMI) $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
Originator is not an EIN agent, therefore EIN info is not processed.
Originator is not an EIN agent, therefore EIN info is not processed.
TABLE NCOS
CUST783 0 0 0 $ ( XLAS NETXLA STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
CUST783 NXLA NETXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME NETXLA
NETXLA 118 FEAT N N LCMI

+++ TRAVER: SUCCESSFUL CALL TRACE +++

Feature CMI          not supported by TRAVER

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

## Service Orders (SO) (CM & SESM)

### Service order change details

#### LCC and options

Two new line options, LCMI and TCMI, are introduced by this feature. LCMI and TCMI line options are not DN based.

#### LCMI and TCMI Line Options

Two new line options TCMI and LCMI are introduced. CMI line options are boolean options, which means it has no subfields. For ETSI BRI lines, they are compatible with point to point and point to multi point mode.

CMI line options can be assigned/deassigned to subscriber via SERVORD software. When TCMI/LCMI line options are assigned to a line, datafill will be added into one of tables IBNLINES (for IBN lines) or KSETLINE (for ETSI BRI lines) depending on the line type.

- **Administrator Assignment**

CMI line options can be assigned to IBN lines and ETSI BRI lines through SERVORD software via ADO (Add Option) and NEW commands. TCMI and LCMI line options can be assigned to IBN and ETSI BRI subscribers only. In order to assign TCMI or LCMI option to a line, line should have a MOG or FPS option. Please note that FPS option is supported for IBN lines only.

```
ado $ <DN> TCMI $
```

```
ado $ <DN> LCMI $
```

If line has none of MOG or FPS options, new CMI option can not be assigned to the subscriber. In this case system will reply with one of the following error messages.

“Cannot add LCMI since line does not have MOG or FPS option”

“Cannot add TCMI since line does not have MOG or FPS option”

If MOG and CMI options are intended to be assigned at the same time, MOG option should be given first so that the feature metering of administrative assignment is done correctly. Please refer to section 2.2.5 Feature Metering for more information on feature metering.

- **Administrator Deassignment**

The administrator may deassign CMI option by using the DEO (Delete Option) and OUT commands through SERVORD software.

```
deo $ <DN> TCMI $
```

```
deo $ <DN> LCMI $
```

- **Deassignment of MOG Option**

If both MOG and CMI options are intended to be deassigned from a line at the same time, CMI option must be deassigned first, so that feature metering of administrator deassignment is done correctly. Please refer to section 2.2.5 Feature Metering for more information on feature metering.

```
deo $ <DN> LCMI MOG $
```

```
deo $ <DN> TCMI MOG $
```

MOG option deletion is prohibited if line has TCMI and/or LCMI option. The following error message is generated:

“Error: Cannot delete MOG since TCMI requires MOG option.”

“Error: Cannot delete MOG since LCMI requires MOG option.”

- **Deassignment of FPS Option**

FPS option deletion is prohibited if line has LCMI and/or TCMI line options. The following error message is generated FPS option is attempted to be deassigned from a line which has LCMI/TCMI line option.

“Error: Cannot delete FPS since TCMI requires FPS option.”

“Error: Cannot delete FPS since LCMI requires FPS option.”

- **Example**

**Assigning LCMI and TCMI Options to an IBN line**

```
>qdn 7835411
-----
DN: 7835411
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER: HOST 00 0 10 10
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP: CUST783 SUBGRP: 0 NCOS: 0
CARDCODE: 6X93AA GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER : 43
PM TERMINAL NUMBER : 331
OPTIONS:
DGT MOG MOG_2
-----
>SERVORD
SO:
>ado $ 7835411
OPTION:
>TCMI
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 5 25 AM 7835411 ( TCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```



**Assigning LCMI and TCMI Options to an IBN line (Cont)**

```
>qdn 7835411
-----
DN: 7835411
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER: HOST 00 0 10 10
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP: CUST783 SUBGRP: 0 NCOS: 0
CARDCODE: 6X93AA GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER : 43
PM TERMINAL NUMBER : 331
OPTIONS:
TCMI DGT MOG MOG_2
-----

>ado $ 7835411
OPTION:
>LCMI
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 3 5 25 AM 7835411 ( LCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7835411
-----
DN: 7835411
TYPE: SINGLE PARTY LINE
SNPA: 102 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER: HOST 00 0 10 10
LINE CLASS CODE: IBN
IBN TYPE: STATION
CUSTGRP: CUST783 SUBGRP: 0 NCOS: 0
CARDCODE: 6X93AA GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER : 43
PM TERMINAL NUMBER : 331
OPTIONS:
TCMI LCMI DGT MOG MOG_2
-----
```

**Deassigning TCMI Option From an IBN Line**

```
>qdn 7835411
-----
DN:          7835411
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE: 6X93AA    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      331
OPTIONS:
TCMI LCMI DGT MOG MOG_2
-----
>deo $ 7835411
OPTION:
>TCMI
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 3 5 25 AM 7835411 ( TCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Deassigning TCMI Option from an IBN Line (Cont)**

```
>qdn 7835411
-----
DN:          7835411
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE: 6X93AA    GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      331
OPTIONS:
LCMI DGT MOG MOG_2
-----
>
```

**Assigning LCMI Option to an ISDN Line**

```
>qdn 7831018
-----
DN:          7831018
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG:  N/A   LNATTIDX: N/A
LTID: ISDN4      2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP:          CUST783A  SUBGRP: 0  NCOS: 2  RING: Y
OPTIONS:
SFC
MOG MOG_2 MLPP NIL_DOMAIN FLASH N $

----->ado $ 7831018 1
LCMI $
COMMAND AS ENTERED:
ADO NOW 3 6 2 AM 7831018 ( 1 LCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Assigning LCMI Option to an ISDN Line**

```
>qdn 7831018
-----
DN:          7831018
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG:  N/A   LNATTIDX: N/A
LTID: ISDN4      2
LTCLASS: BRAFS
LINE CLASS CODE: ISDNKSET
KEY: 1
CUSTGRP:          CUST783A  SUBGRP: 0  NCOS: 2  RING: Y
OPTIONS:
SFC LCMI
MOG MOG_2 MLPP NIL_DOMAIN FLASH N $

-----
```

**Deassigning MOG Option from a line**

```
>qdn 7835411
-----
DN:          7835411
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARD CODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER :      331
OPTIONS:
LCMI DGT MOG MOG_2
-----
>SERVORD
SO:
>deo $ 7835411 MOG $
COMMAND AS ENTERED:
DEO NOW 3 5 27 PM 7835411 ( MOG ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
Error: Cannot delete MOG since LCMI requires MOG Option
MOG DID NOT PASS CHECKING
***  ERROR - INCONSISTENT DATA  ***
COMMAND AS ENTERED:
DEO NOW 3 5 27 PM 7835411 ( MOG ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>N
>deo $ 7835411 LCMI $
COMMAND AS ENTERED:
DEO NOW 3 5 25 AM 7835411 ( LCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>deo $ 7835411 MOG $
COMMAND AS ENTERED:
DEO NOW 3 5 27 PM 7835410 ( MOG ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
```

**Deassigning MOG Option from a line (Cont)**

```
>qdn 7835411
-----
DN:          7835411
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER :      331
OPTIONS:
DGT
-----
```

**Deassigning LCMI and MOG Option from a line at the same time**

```
>qdn 7835410
-----
DN:          7835410
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:          CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      331
OPTIONS:
LCMI DGT MOG MOG_2
-----
>SERVORD
SO:
>deo $ 7835410 LCMI MOG $
COMMAND AS ENTERED:
DEO NOW 3 5 27 PM 7835411 ( LCMI ) ( MOG ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7835410
-----
DN:          7835410
TYPE: SINGLE PARTY LINE
SNPA: 102   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 10 10
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:          CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      331
OPTIONS:
DGT
-----
```

**Assinging LCMI Line Option to an IBN Line with FPS Option**

```
>qdn 7835401
-----
DN:          7835401
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 00 03
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      4
OPTIONS:
DGT FPS MOG_2 FPS1 176
-----

>SERVORD
SO:
>ado $ 7835401 LCMI $
COMMAND AS ENTERED:
ADO NOW 3 5 25 AM 7835401 ( LCMI ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
MACHINES ARE OUT OF SYNC, SERVICE ORDERS NOT ALLOWED
JOURNAL FILE IS INACTIVE, SERVICE ORDERS NOT ALLOWED
SHOULD ORDER BE DONE ANYWAY? (Y OR N)
>y
>qdn 7835401
-----
DN:          7835401
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 00 03
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      4
OPTIONS:
DGT LCMI FPS MOG_2 FPS1 176
-----
```

**Deassigning FPS Option from a line**

```

>qdn 7835401
-----
DN:          7835401
TYPE: SINGLE PARTY LINE
SNPA: 102    SIG: DT    LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 00 03
LINE CLASS CODE:  IBN
IBN TYPE: STATION
CUSTGRP:      CUST783      SUBGRP: 0  NCOS: 0
CARDCODE:  6X93AA      GND: N  PADGRP: STDLN  BNV: NL  MNO: N
PM NODE NUMBER      :      43
PM TERMINAL NUMBER  :      4
OPTIONS:
DGT LCMI FPS MOG_2 FPS1 176
-----

>servord
SO:
>deo $ 7835401 fps
OPTION:
>$
COMMAND AS ENTERED:
DEO NOW 3 6 5 AM 7835401 ( FPS ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
>y
Error: Cannot delete FPS since LCMI requires FPS Option
***  ERROR - INCONSISTENT DATA  ***

```

**Line class code compatibility**

LCMI and TCMi Line options are compatible with IBN and ISDNKSET LCCs.

**Option prerequisites**

LCMI and TCMi line options require MOG or FPS option on the subscriber.

**Interaction with EST command**

LCMI and TCMi line options cannot be added via EST (Establish hunt group) command, since addition of MOG and FPS by EST is not allowed and LCMI and TCMi line options require MOG or FPS previously assigned (section “Option prerequisites”).

**Interaction with SWAP and CLN Commands**

Last call and last feature meter counts of FPS and MOG agents are preserved during SWAP and CLN operations. In other words, last call and last feature meter counts of old len will be moved to new len during SWAP and CLN.

Behavior of SWAP and CLN commands were not like this before this activity, since idea of keeping last call and last feature meter counts was being introduced by this activity. But please note that this enhancement does not change the general behavior of CLN and SWAP commands when SVBI0033



SOC in IDLE, or applied to agents that does not have MOG or FPS assigned when SVBI0033 SOC is ON.

The following example shows the behavior of CMI service when SWAP command is applied to FPS agent (Behavior of MOG agent is the same). Please note that CMI SOC is ON.

#### SWAP Example (FPS Subscriber)

```
Before SWAP
FPS:
>qfps all
WARNING: Query of all FPS counters may take a significant amount of
time
Please confirm ("YES", "Y", "NO", or "N"):
>Y
DN:          1027835401  MOG_ID: MOG_1                      FPS1    160
Last Call Credit   : 10
Last Feature Credit : 3

DN:          1027835402  MOG_ID: MOG_2                      FPS2    203
Last Call Credit   : 12
Last Feature Credit : 5

=====
TOTAL: 2 FPS subscriber(s) found
>
>swap $ 7835401 7835402 $ loop y y
>
After SWAP
>qfps all
WARNING: Query of all FPS counters may take a significant amount of
time
Please confirm ("YES", "Y", "NO", or "N"):
>Y
DN:          1027835402  MOG_ID: MOG_2                      FPS2    203
Last Call Credit   : 12
Last Feature Credit : 5

DN:          1027835401  MOG_ID: MOG_1                      FPS1    160
Last Call Credit   : 10
Last Feature Credit : 3

=====
TOTAL: 2 FPS subscriber(s) found
```

#### New commands

N/A

## Software optionality control (SOC)

A new state SOC, SVBI0033 SOC, is introduced by this feature.

### SVBI0033 SOC

In order to control the office wide functionality of the TCMI and LCMI services, one state SOC is designed, which is given the name SVBI0033 SOC. SVBI0033 SOC has two states: SOC\_ON and SOC\_IDLE. In the SOC\_ON state, SVBI0033 SOC is fully functional. In the IDLE state, the LCMI and TCMI features can be provisioned, but the usage of the service is not enabled.

#### SVBI0033 SOC

|                         |                    |
|-------------------------|--------------------|
| SOC Group               | SVBI               |
| SOC Option Name         | SVBI0033           |
| SOC Option Title        | Call Meter Inquiry |
| SOC Option Control Type | State              |
| New SOC Option?         | Yes                |
| Option defined in DRU   | WT20               |
| Affected Products       | DMS100 - MMP       |

Default state of SOC is IDLE.

Activation/Deactivation of SOC is done by password control. The password is unique for each office.

However, datafilling tables (i.e. IBNXLA, IBNLINES, CUSTSTN, etc.) does not depend on the state of the SOC. This means that datafills could be done even if SVBI0033 SOC is not ON. But note that CMI services can not be activated if SVBI0033 SOC is not ON.

For all MOG and FPS subscribers, last call and last feature meter counts are initialized when state of SVBI0033 SOC is changed to IDLE.

State of SVBI0033 SOC can not be changed from ON to IDLE while one of DUMP, METERING RESTORE, or METERING LINE RECOVERY processes. One of following error messages are displayed:

“DUMP is in progress“

“METER LINE RECOVERY process is in progress“

“METER RESTORE is in progress“

and change state is aborted.

## Element Management

N/A

## Command interface changes

### Directory:

N/A

### Command: MTRCOUNT

MTRCOUNT command, which displays the software meter counts of the subscriber having MOG, is enhanced in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON.

When MTRCOUNT command is used with TRUNK/LMG (Line Meter Group) option, when SVBI0033 SOC is ON, TOTAL of assigned meter counts of trunk/lmg is displayed.

But general structure and operation of the command remains the same.

### Command type: NON-MENU

### Command target:

BRISC, XACORE.

### Command availability:

RES

## Example

### Map Display for MTRCOUNT LINE command

```
>mtrcount LINE 7835406
*****

DN      : 1027835406
DATE    : 03/07/18
MTR NAME: FEATURE      MTR COUNT: 00000000 WRAP: N
MTR NAME: LOCAL        MTR COUNT: 00000000 WRAP: N
MTR NAME: TOLL          MTR COUNT: 00000000 WRAP: N

                TOTAL      MTR COUNT: 00000000
                LAST CALL   MTR COUNT: 00000000
                LAST FEATURE MTR COUNT: 00000000
*****
```

**Map Display for MTRCOUNT TRUNK command**

```
>mtrcount trunk 2WBDISP2AB
*****

TRUNK GROUP: 2WBDISP2AB
DATE      : 04/03/05

INCOMING CALLS
-----
MTR NAME: METER1           MTR COUNT: 000000000000 WRAP:Y
MTR NAME: METER2           MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER3           MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER4           MTR COUNT: 999999999999 WRAP:Y

                        TOTAL           MTR COUNT: 699999999997

OUTGOING CALLS
-----
MTR NAME: METER1           MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER2           MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER3           MTR COUNT: 999999999999 WRAP:Y
MTR NAME: METER4           MTR COUNT: 999999999999 WRAP:Y

                        TOTAL           MTR COUNT: 799999999996
*****
```

**Map Display for MTRCOUNT LMG command**

```
>mtrcount lmg 533
*****

LOGICAL METERING GROUP: 533
DATE      : 04/03/05

INCOMING CALLS
-----
MTR NAME: TLOCAL           MTR COUNT: 999999999999 WRAP:N
MTR NAME: TTOLL            MTR COUNT: 000000000134 WRAP:Y

                        TOTAL           MTR COUNT: 200000000133

OUTGOING CALLS
-----
MTR NAME: TLOCAL           MTR COUNT: 000000000145 WRAP:N
MTR NAME: TTOLL            MTR COUNT: 000000000125 WRAP:Y

                        TOTAL           MTR COUNT: 100000000270
*****
```

**Command: QFPS**

QFPS FPS CI command, which displays the FPS credit of the subscriber having FPS, is enhanced in order to display the last call meter count, last feature meter count, and the total of all meter counts assigned to the subscriber when SVBI0033 SOC is ON. QFPS command with ZERO, UNUSEDFOR, DN and ALL options are enhanced by this activity. Map display is as follows:

**Command type: NON-MENU****Command target:**

BRISC, XACORE.

**Command availability:**

RES

**Example****Map Display for QFPS command**

```
>qfps all
WARNING: Query of all FPS counters may take a significant amount of time
Please confirm ("YES", "Y", "NO", or "N"):
>Y
DN:      1027835401  MOG_ID: MOG_2          FPS1    154
Last Call Meter Count      : 0
Last Call Feature Meter Count : 0
=====
TOTAL: 1 FPS subscriber(s) found
>
>qfps dn 7835401
-----
DN: 7835401      MOG_ID: MOG_2          FPS1    154

Last Call Meter Count      : 0
Last Call Feature Meter Count : 0
>
```

**Security**

N/A

**Configuration Walkthrough**

N/A

***Performance for A00001930*****Performance management strategy**

No change

## Performance management tools and utilities

No change

## Performance Measurements (PM), Operational Measurements (OM), and stats

### CMI OM GROUP

#### CMI OM description

CMI OM Group provides information about the successful and unsuccessful usage and performance of CMI features (SVBI0033 SOC must be ON). CMI OM group has four registers with names CMIATT, CMIUSG, CMIOVFL, and CMICERR. These OM registers are pegged by LCMI and TCMI features. CMI OM group is multi-tuple, which includes LCMI and TCMI tuples.

#### Release history update

The CMI OM group is being introduced by this feature, and implemented in ISN07.

#### Registers

OM group registers display on the MAP terminal as follows:

```
>omformat CMI
CMI
KEY (CMI_OPTION)

          CMIATT    CMIUSG    CMIOVFL    CMICERR
```

#### Group structure

OM group provides one tuple for each CMI functionality.

Key field: CMI\_OPTION {TCMI, LCMI}

Info field: None

```
>omshow CMI active
CMI

CLASS:    ACTIVE
START:2003/05/25 12:00:00 SUN; STOP: 2003/05/25 12:01:47 SUN;
SLOWSAMPLES:      2 ; FASTSAMPLES:      11 ;
KEY (CMI_OPTION)

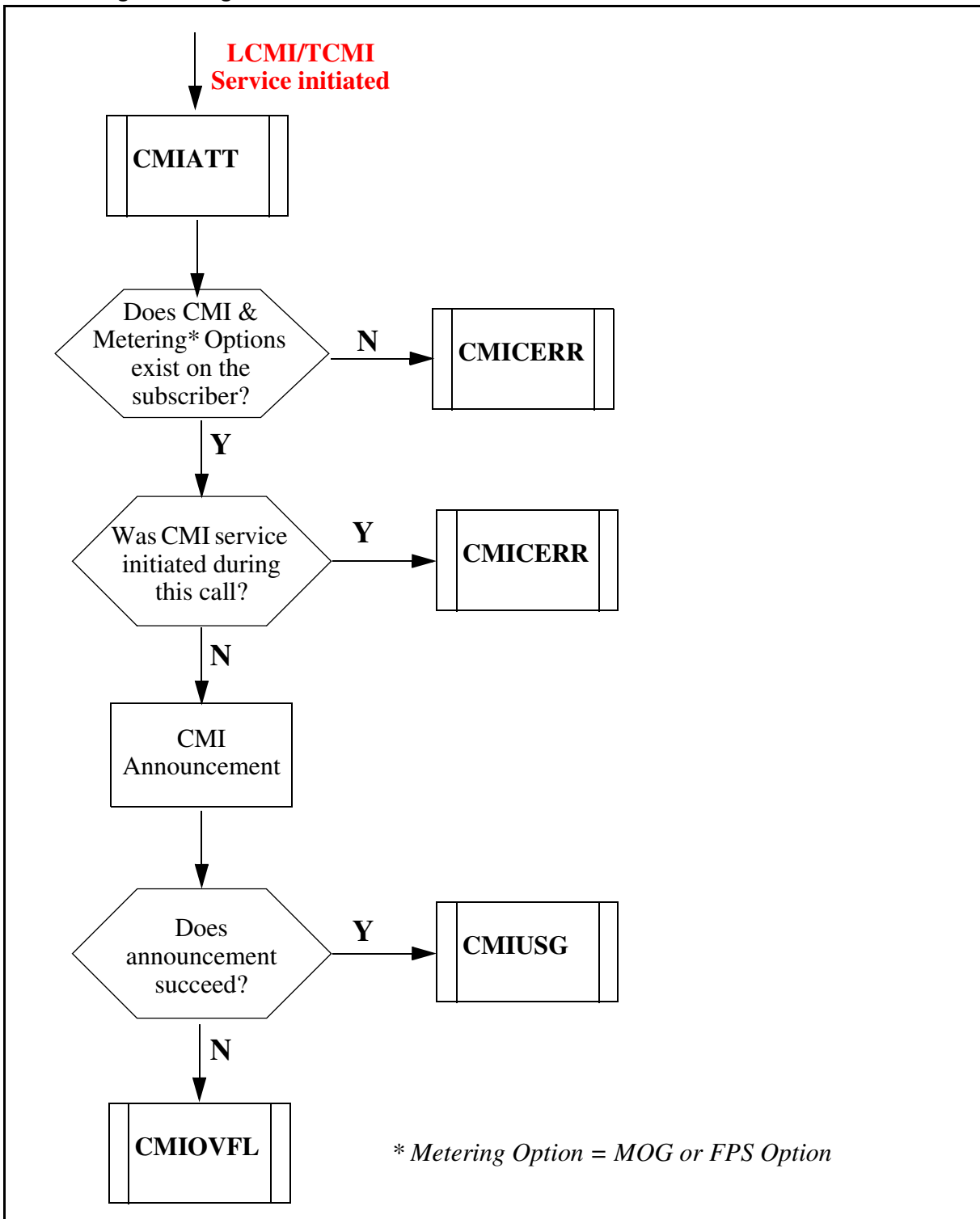
          CMIATT CMIUSG CMIOVFL  CMICERR
TCMI      4      2      1         1
LCMI     10      9      1         0
```

**Associated OM groups**

None

**Associated functional groups**

None

**OM group registers logic flow chart****CMI OM Registers Logic Flowchart**



## Register CMIATT

### Register description

This register counts the number of attempts for TCMI/LCMI service to be invoked. Generally this register is incremented each time LCMI or TCMI service is initiated. This means, LCMI/TCMI service is successfully translated through translation table IBNXLA and successfully activated.

### Register release history update

None

### Associated registers

None

### Associated logs

None

## Register CMIUSG

### Register description

This register counts the number of times LCMI/TCMI service is successfully completed. This register is incremented just after the announcement is successfully played

### Register release history update

None

### Associated registers

None

### Associated logs

None

## Register CMIOVFL

### Register description

This register counts the number of times LCMI/TCMI service can not be successfully completed due to insufficient system resources. It is incremented when the announcement can not be provided to the subscriber.

### Register release history update

None

### Associated registers

None

**Associated logs**

None

**Register CMICERR****Register description**

This register counts the number of times CMI service is not provided to the subscriber, due to illegal initiation of the service (i.e. initiation of the CMI service during active call) or subscriber is not allowed to use the service.

**Register release history update**

None

**Associated registers**

None

**Associated logs**

None

## ***Product = World Trade***

### **A00002053 -- AMA Records for Metered features (Succession on DMS)**

#### ***Functional Description***

The purpose of this activity is to provide detailed information for feature subscriber's metered functions by generating an AMA record and an optional AMA log.

This feature developed in ISN07 (MMP20) release is an enhancement of the MMP15 activity AT.59022215 'Log For Cept Subscriber Functions' which generates MTR156 log when the feature metering is done successfully due to usage of the feature actions such as assign, usage, deassign, activation, deactivation or interrogation etc. In this feature, generation of the MTR156 log is made dependent on the SOC option RBIL0014. (For detailed information about this option, please refer to the activity A59013592). When the RBIL0014 is ON, the MTR156 log is not generated and the same information is supplied by a new AMA record (FTR) and its AMA log (AMAB156).

The new FTR record enables to keep the feature usage information by using DIRP (Device Independent Recording Package) and to use them in the downstream billing process. Thus, it allows telco personnel to give detailed information about feature meter count in the customer's detailed bill.

The AMAB156 log is optionally generated depending on the existing AMA parameter LOGAMA in table AMAOPTS. If this parameter is set to ON, then this log is printed whenever the FTR record is generated.

The generation of the FTR record for the metered actions of ICR feature option depends on the new office parameter FTR\_RECORD\_FOR\_ICR\_OPT in table OFCVAR. This parameter is created in this feature to make the generation of FTR record optional when the subscriber is charged for the ICR operations assignment / deassignment / usage.

This feature applies to meterable IBN lines only.

## Background

### Existing MTR156 log

When feature metering is done successfully due to usage of the feature actions, then the existing MTR156 log is generated in the log system with the following information:

- Calling number (10 digits)
- Date (6 digits)
- Time (6 digits)
- Feature code(2 digits)
- Action type (2 digits)
- Feature Metering Count (2 digits)

Calling Number represents the IBN line agent which is metered for feature actions.

Feature Code is datafilled in table MTRFEAT by Telco Personnel and each meterable feature is represented by a feature code.

Action Code is used for the feature activation types which are Assign, Deassign, Usage, Interrog, Admact, Admdeact, Admproc, Subact, Subdeact, Subproc and datafilled in the table ISERVOPT.

For more detailed information, please refer to FN and DS documents of the activity A59022215 in the FMDOC library.

An example for the MTR156 log can be seen in the following figure.

**MTR156 Log Example**

```
MTR156 MAR12 10:42:36 6704 INFO LOG
CALLING NUMBER: 1027835489    FEATURE CODE: 21
ACTION: 45                      COUNT: 32
TIME: 10:42:36                DATE: 03/03/12
```

In this activity, MTR156 log generation is made dependent on the SOC option RBIL0014. If this option is set to ON, instead of MTR156, FTR record and its optional AMAB156 log are generated with the same information as MTR156.

**Existing AMA record components used in this feature**

An AMA record consists of a base Structure Code and optional Module Codes containing specific information relevant to the call. (In this feature, an existing structure code SCI\_00514 with call code CCI\_006 and the existing module code MCI\_612 with context\_id 80040 are used to generate the new record.)

Structure code SCI\_00514 with call code CCI\_006 has already been present in DMS MMP software with the following fields:

| Structure code 00514 fields information | Field number |
|-----------------------------------------|--------------|
| Record descriptor word                  | 000          |
| Hexadecimal identifier                  | 00           |
| Structure code                          | 0            |
| Call type codes                         | 1            |
| Sensor type                             | 2            |
| Sensor identification                   | 3            |
| Recording office type                   | 4            |
| Recording office identification         | 5            |
| Date                                    | 6            |
| Timing indicator                        | 7            |
| Study indicator                         | 8            |
| Called party off-hook                   | 9            |
| Service observed, traffic sampled       | 10           |
| Operator action                         | 11           |
| Service feature                         | 12           |
| Significant digits in next field        | 55           |
| Originating open digits 1               | 500          |
| Originating open digits 2               | 501          |
| Originating charge information          | 504          |
| Domestic/international indicator        | 505          |
| Significant digits in next field        | 55           |
| Ext terminating open digits 1           | 126          |
| Ext terminating open digits 2           | 126          |
| Connect time                            | 18           |
| Elapsed time                            | 19           |
| Completion indicator                    | 280          |
| Module code                             | 88           |

For detailed information about the SCI\_00514 fields, please refer to the NTP documents 297-1001-830 and 297-9051-800. For the new FTR record, only the following fields of SCI\_00514 are taken into consideration:

- **Hex ID:** Hex ID field indicates whether the record is successfully populated. “AA” indicates complete record while “AB” indicates resource failure.
- **Structure Code:** In EBAF environment more than one structure codes exist which means different base fields for AMA recording. This field is filled by 40514 for this structure code. The ‘4’ digit in the field indicates that module codes are attached to the base structure code.
- **Call Type Code:** This field is used to differentiate call types. The default AMA record contains the value 006.
- **Date:** Please refer to the following table for field mapping.

**Date field explanation**

| BCD Char | Meaning            |
|----------|--------------------|
| 1        | Last Digit of Year |
| 2-3      | Month              |
| 4-5      | Day                |
| 8        | Sign (hex C)       |

- **Originating Open Digits 1:** This field contains the first 11 digits of the calling number. If there are less than 11 digits, the number is right-justified and padded with 0s.
- **Connect Time:** Please refer to the following table for field mapping:

**Connect Time field explanation**

| BCD Char | Meaning           |
|----------|-------------------|
| 1-2      | Hours             |
| 3-4      | Minutes           |
| 5-6      | Seconds           |
| 7        | Tenths of Seconds |
| 8        | Sign (hex C)      |

Currently, the structure code SCI\_00514 is used with the module code MCI\_612 (with context\_id 80040) for the ICAMA, IAA and ICR records when SOC option RBIL0014 is ON. (Please refer to the activity A59013592 for the ICAMA and IAA records, and the activity A59021950 for ICR record.)

By this activity, the new record type FTR is added to these records for the metered feature actions.

MCI\_612 has already been present in MMP software as a Generic Module Code and contains two strings of 15 BCD positions each. Field description of this module code is given in the following table:

**MCI\_612 field description**

| Information                | Number of BCD Chars |
|----------------------------|---------------------|
| Module code 612            | 4                   |
| Generic Context Identifier | 8                   |
| Generic Digit String 1     | 16                  |
| Generic Digit String 2     | 16                  |

When the SOC option RBIL0014 is ON, the context identifier 80040 is used with the fields shown in the following two tables

**Generic Digits String 1 explanations**

| BCD Char | Meaning                                |
|----------|----------------------------------------|
| 1-2      | Record Code 00 ICAMA / 01 IAA / 02 ICR |
| 3-4      | Call Class                             |
| 5-6      | Call Info                              |
| 7        | Unused                                 |
| 8-15     | Pulse Count                            |
| 16       | Sign (hex C)                           |

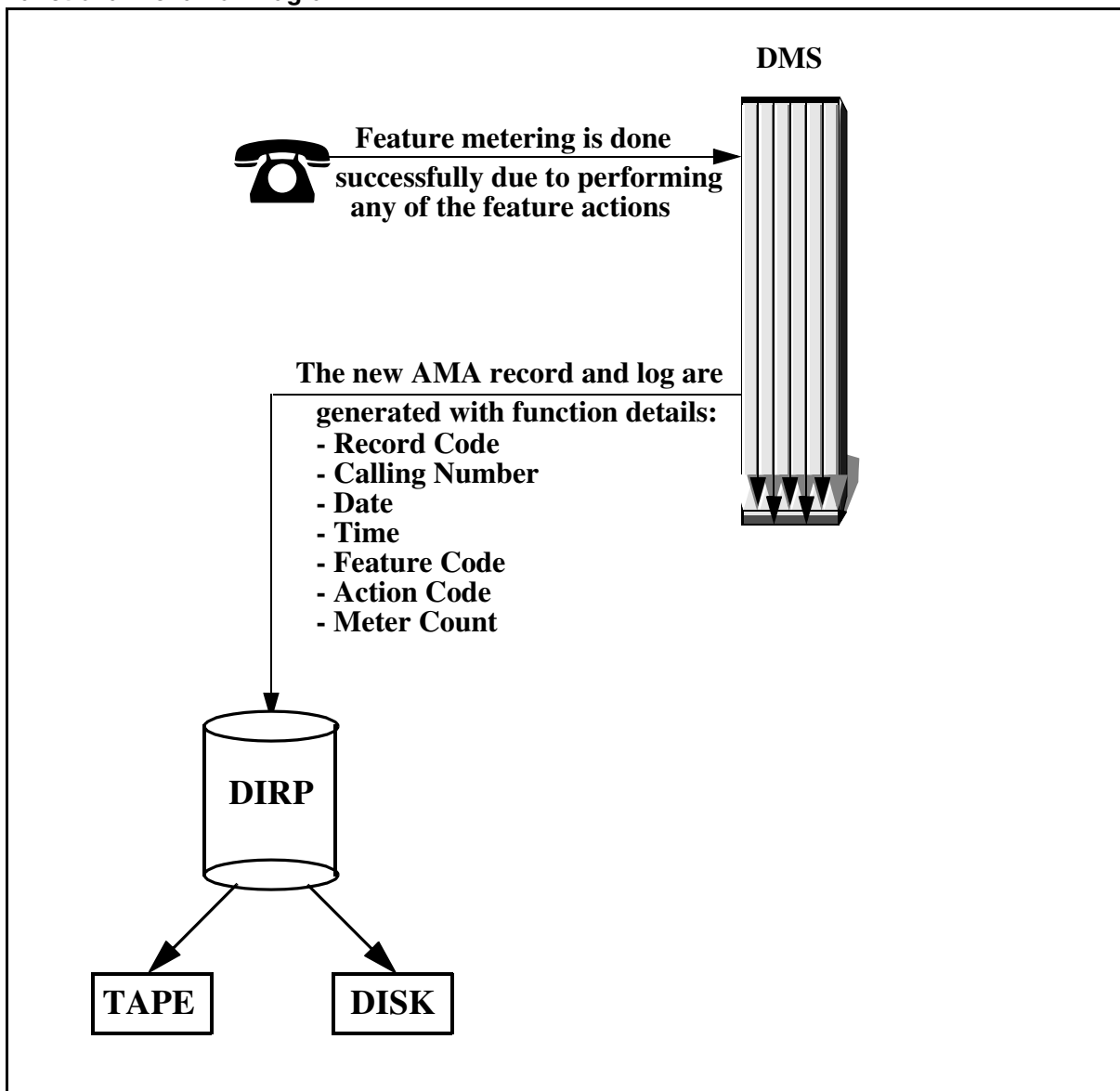
**Generic Digits String 2 explanations**

| BCD Char | Meaning      |
|----------|--------------|
| 1-6      | Start Date   |
| 7-13     | End Time     |
| 14       | Unused       |
| 16       | Sign (hex C) |

This context\_id was created by the activity A59013592 'AMA Billing Enhancements for Turkey'. For detailed information, please refer to the documents of this activity in the FMDOC library. The new AMA record, FTR

The new FTR record is generated in the cases that the MTR156 log is generated (i.e, whenever a feature action is metered) as in the following figure, and contains the same information as MTR156 log.

#### Functional Behavior Diagram



This record consists of the structure code SCI\_00514 with call code CCI\_006 and module code MCI\_612 with context identifier 80040. Since this record generated when the SOC option RBIL0014 is ON, it does not affect the other markets.



In the FTR record, Calling number, Date and Time information for metered feature actions are put in the SCI\_00514 fields Originating Open Digits 1, Date and Connect Time respectively, as shown in below:

Calling Number -> ORIGINATING OPEN DIGITS 1

Date -> DATE

Time -> CONNECT TIME

ORIGINATING OPEN DIGITS 1 field in SCI\_00514 contains 11 digits. But the Calling Number data of the IBN agent metered for feature actions has 10 digits. So, this data is put in this field as right-justified and the first digit filled by 0.

DATE field of SCI\_00514 is filled by the Date data of the metered feature action in the following format:

**Date field explanation in SCI\_00514**

| BCD Char | Meaning            |
|----------|--------------------|
| 1        | Last Digit of Year |
| 2-3      | Month              |
| 4-5      | Day                |
| 8        | Sign (hex C)       |

CONNECT TIME field of SCI\_00514 is used to place the Time at which the feature action is metered, as in below:

**Connect Time field explanation in SCI\_00514**

| BCD Char | Meaning           |
|----------|-------------------|
| 1-2      | Hours             |
| 3-4      | Minutes           |
| 5-6      | Seconds           |
| 7        | Tenths of Seconds |
| 8        | Sign (hex C)      |

**Note:** Date and Time information are also displayed in the Generic Digits String 2 fields of the appended module code MCI\_612 (80040). Please refer to Table “Existing Generic Digits String 2 fields” on page 1239.

In this feature, EXT TERM OPEN DIGITS 1 field of the SCI\_00514 is filled by zeros for the Called DN.

Then the remaining information which are Record Code, Feature Code, Action Code and Feature Meter Count, are put in the Generic Digits String 1 fields of the MCI\_612 (80040) as in the following table. In this table the usage changes are given in the bold format.

**Generic Digits String 1 usage for new FTR record**

| BCD Char | Content                                                                                                                                                                                      |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-2      | Record Code <b>is filled as 03 for the new FTR record.</b>                                                                                                                                   |
| 3-4      | Call Class <b>is not used and filled as 00 in the new FTR record.</b>                                                                                                                        |
| 5-6      | Call Info <b>is not used and filled as 00 in the new FTR record.</b>                                                                                                                         |
| 7        | Unused field (0).                                                                                                                                                                            |
| 8-15     | Pulse Count <b>is used to hold the following information:</b><br><br><b>8-9 Feature Code</b><br><br><b>10-11 Action Code</b><br><br><b>12-13 Unused (00)</b><br><br><b>14-15 Meter Count</b> |
| 16       | Sign (hex C)                                                                                                                                                                                 |

The Record Code field contains 2 digits Record Code data which uniquely identifies the type of the record to distinguish it from the other record types generated when SOC option RBIL0014 is ON. It is set to '03' for the new FTR record since the existing record codes are '00' for Turkish CAMA, '01' for IAA and '02' for ICR.

The Call Class (2 digits, from 3 to 4) and Call Info (2 digits, from 5 to 6) fields are not used in the new FTR record. So, these are filled by zero. Also the seventh digit is already unused and 0.

The Pulse Count field has 8 digits from 8 to 15, and for FTR record it is filled by the Feature Code, Action Code and Feature Meter Count information in the following order:

Feature Code (2 digits) -> Pulse Count (the first 2 digits)

Action Code (2 digits) -> Pulse Count (3 and 4th digits)

Space, 00 -> Pulse Count (5 and 6th digits)

## Feature Meter Count (2 digits) -&gt; Pulse Count (7 and 8th digits)

In the fields of the Generic Digits String 2 of 80040, the Date and Time values have already existed and they are continued to display in this FTR record with the same format as before (additional to Date and Time information put in the SCI\_00514 fields DATE and CONNECT TIME). The explanations for the existing fields of the Generic Digits String 2 are given in the following table.

Existing Generic Digits String 2 fields

| BCD Char | Meaning      |
|----------|--------------|
| 1-6      | Date         |
| 7-13     | Time         |
| 14-15    | Unused       |
| 16       | Sign (hex C) |

The example views of this record can be given as in the following figure and figure “The example view of the FTR record for the calldump full command” on page 1240.

## The example view of the FTR record for the calldump command

```
> calldump

*HEX ID:AA  STRUCTURE CODE:40514C  CALL CODE:006C  SENSOR TYPE:036C
SENSOR ID:0000000C  REC OFFICE TYPE:036C  REC OFFICE ID:0000000C
DATE:30326C  TIMING IND:00000C  STUDY IND:0200000C  CLD PTY OFF-HK:0C
SERVICE OBSERVED:0C  OPER ACTION:0C  SERVICE FEATURE:000C
SIG DIGITS NEXT FIELD:010C  ORIG OPEN DIGITS 1: 01027835406C
ORIG OPEN DIGITS 2:FFFFFFFFF  ORIGINATING CHARGE INFO:FFFF
DOMESTIC/INTL INDICATOR:9C  SIG DIGITS NEXT FIELD:000C
EXT TERM OPEN DIGITS 1:0000000000000000C
EXT TERM OPEN DIGITS 2:FFFFFFFFFFFFFFF  CONNECT TIME:0923355C
ELAPSED TIME:000000000C  COMPLETION INDICATOR:001C  MODULE CODE:612C
GENERIC CONTEXT ID:8004000C  GENERIC DIGIT STRING ONE:030000021450002C
GENERIC DIGIT STRING TWO: 030326092335500C  MODULE CODE:000C
```

## The example view of the FTR record for the calldump full command

```

> calldump full
*
HEX ID: AA
STRUCTURE CODE: 40514C
CALL CODE: 006C STATION PAID
SENSOR TYPE: 036C DMS 100F
SENSOR ID: 0000000C
REC OFFICE TYPE: 036C DMS 100F
REC OFFICE ID: 0000000C
DATE: 30326C MARCH 26, 2003
TIMING IND:
  TIMING GUARD FLAG 0 UNUSED
  SHORT CLD PARTY OFF-HOOK IND 0 UNUSED
  LONG DUR/SERV PTY CAPABILITY IND 0 UNUSED
  UNUSED 0
  UNUSED 0C
STUDY IND:
  STUDY TYPE A 0 UNUSED
  STUDY TYPE B 2 NETWORK COMPLETION
  STUDY TYPE C 0 UNUSED
  TEST CALL IND 0 UNUSED
  UNUSED 0
  ORIG/TERM NANP NUM IND 0 UNUSED
  OPERATOR SERV IND 0C UNUSED
CLD PTY OFF-HK: 0C CLD OFF-HOOK DETECTED
SERVICE OBSERVED: 0C NONE
OPER ACTION: 0C ANI, CUSTOMER DIALED CALL
SERVICE FEATURE: 000C OTHER
SIG DIGITS NEXT FIELD: 010C
ORIG OPEN DIGITS 1: 01027835406C
ORIG OPEN DIGITS 2: FFFFFFFF
ORIGINATING CHARGE INFO: FFFF
DOMESTIC/INTL INDICATOR: 9C UNKNOWN
SIG DIGITS NEXT FIELD: 000C
EXT TERM OPEN DIGITS 1: 0000000000000000C
EXT TERM OPEN DIGITS 2: FFFFFFFFFFFFFFFF
CONNECT TIME: 0923355C 09:23:35.5
ELAPSED TIME: 000000000C 000000:00.0
COMPLETION INDICATOR: 001C COMPLETED: ANSWERED
MODULE CODE: 612C GENERIC MOD: TWO DGT STR FMT
GENERIC CONTEXT ID:
  PARSE RULES 80040 ICAMA FIELDS
  SIGNIFICANT DIGITS 00C NIL
GENERIC DIGIT STRING ONE: 030000021450002C
  ICAMA-IAA DATA
GENERIC DIGIT STRING TWO: 030326092335500C
MODULE CODE: 000C FINAL MODULE

```

In these figures, Generic Digits String 1 fields are interpreted as follows:

**030000021450002C**

**03:** Record Code is FTR (first 2 digits)

**00000:** Unused space (5 digits after record code)

**21:** Feature Code (2 digits as 8th and 9th)

**45:** Action Code (2 digits as 10th and 11th)

**00:** Two space between Action Code and Meter Count (12th and 13th digits)

**02:** Meter Count (last 2 digits)

For the metered actions of ICR option (assignment / deassignment / usage), the generation of the FTR record is optional by the newly created office parameter FTR\_RECORD\_FOR\_ICR\_OPT in table OFCVAR. When the subscriber having ICR feature option is charged for the ICR operations in MTRFEAT table, the FTR record is generated if the FTR\_RECORD\_FOR\_ICR\_OPT is Y, not generated if the FTR\_RECORD\_FOR\_ICR\_OPT is N.

When the parameter FTR\_RECORD\_FOR\_ICR\_OPT is changed from “N” to “Y”, the following message is displayed;

“WARNING: FTR record generation for ICR feature is activated”

Opposite when FTR\_RECORD\_FOR\_ICR\_OPT is changed from “Y” to “N” the following message is displayed;

“WARNING: FTR record generation for ICR feature is deactivated”

### The new AMA log, AMAB156

By this activity, the MTR156 log is generated only when the SOC option RBIL0014 is IDLE. If this option is set to ON, an FTR record is generated with an optional AMAB156 log, instead of MTR156. The AMAB156 log contains the same data as FTR record (i.e, MTR 156 data) and it is optionally generated depending on the existing AMA parameter LOGAMA in table AMAOPTS. If the LOGAMA option is ON, AMAB156 log is printed whenever the FTR record is generated.

Record Code is ‘BE’ in AMAB156 in spite of ‘03’ in FTR Record. Because the Record Code values BB, B8, BD are currently used in the AMA logs of the ICR, ICAMA, IAA records.

Please refer to the following figure for the example view of AMAB156 log.

#### AMAB156 LOG Format Example

|                             |                                                  |
|-----------------------------|--------------------------------------------------|
| RSNW4E06BK                  | AMAB156 MAR26 09:23:36 7216 INFO AMA RECORD DATA |
| RECORD CODE = BE            |                                                  |
| CALLING NUMBER = 1027835406 | FEATURE CODE = 21                                |
| ACTION = 45                 | COUNT = 02                                       |
| TIME = 0923355              | DATE = 030326                                    |

## The provisioning for the new FTR record

For the generation of the FTR record and AMAB156 log on MMP load, the following datafills are required:

### Office Wide Parameters:

1. The below presented datafill is already available in DMS MMP and is not a result of this activity. You can refer to NTP 297-9051-800, DMS 100 MMP AMA Reference Guide, for more information on provisioning of EBAF AMA Recording.
  - In table OFCOPT, LAMA\_OFFICE parameter is set to 'Y'.
  - In table OFCENG, UNIVERSAL\_AMA\_BILLING tuple is set to 'Y'
  - In table DIRPSSYS a tuple is required to enable DIRP subsystem to receive AMA records and transfer them onto a recording device.

Sample entry:

AMA, Y, 2, 1, AMAPOOL, \$, CR, NA, NA, NA, 30, 30, \$, N, NA,  
OPENED, NNNNNNN, 0, NOROTATE, NONE, NONE, N, 64, Y

- In table CRSFMT, the AMA Format is determined.

Sample Entry:

AMA, BCFMT, N, NIL\_FM, N, N, 0

- In table CRSMAP, the stream associated with the format is defined.

Sample Entry:

LAMA AMA  
CAMA AMA

**Note:** Other streams have to be associated with other formats instead of AMA. E.g SMDR SMDR.

- In table OFCENG, number of Recording Units to be allocated is determined by use of the following entries. Each entry has a default value of 100. It is possible to allocate memory for recording units automatically by using table OFCAUT. Please refer to NTP documents 297-9051-855 (Office Parameters Volume 1 of 3 (OFCENG)) and 297-9051-351 (Data schema Reference Manual Volume 8 of 12) for information on provisioning of recording unit pools and auto-provisioning.

The difference between pools are the method of usage and the memory space allocated out of the pool for each recording unit. Different structure codes and module codes require different memory and therefore, they consume memory out of different memory pools.

Pool size default values in table OFCENG are as below:

|                      |     |
|----------------------|-----|
| CRS_PRU_POOL1_SIZE   | 100 |
| CRS_PRU_POOL2_SIZE   | 100 |
| CRS_PRU_POOL3_SIZE   | 100 |
| CRS_SUBRU_POOL1_SIZE | 100 |
| CRS_SUBRU_POOL2_SIZE | 100 |
| CRS_SUBRU_POOL3_SIZE | 100 |
| CRS_SUBRU_POOL4_SIZE | 100 |
| CRS_SUBRU_POOL5_SIZE | 100 |

2. To generate the FTR record, the existing SOC option RBIL0014 is set to ON.
3. To generate the AMAB156 log beside the FTR record, the existing LOGAMA parameter in table AMAOPTS is set to ON.
4. To deactivate generation of the FTR record and AMAB156 log, and to activate the MTR156 log generation, the SOC option RBIL0014 is set to IDLE.
5. The new office parameter FTR\_RECORD\_FOR\_ICR\_OPT is created in table OFCVAR by this activity to make optional the FTR record generation for metered actions of the ICR feature. It is set to Y to generate FTR record for the charged ICR operations of subscribers (assign / deassign / usage).

#### The new OFCVAR parameter

```
> Table OFCVAR
PARMNAME  PARMVAL
-----
FTR_RECORD_FOR_ICR_OPT      Y
```

### Provisioning for metering and record generation

The below presented datafill is already available in DMS MMP and is not a result of this activity. Please refer to the FN and DS documents of the activity A59022215 in the FMDOC library.

1. Only the feature functions of the subscribers having IBN lines and MOG option are metered. MOG option is assigned to the subscriber by SERVORD.
2. The Action Codes are datafilled in the ISERVOPT table. An example for the action codes are shown in Figure “Action Codes in the table ISERVOPT” on page 1244. In this example, the action codes ‘03 45 57 04 49 07 98 42 23 46’ represent ‘Assign DeAssign AdmAct AdmDeact AdmProg SubAct SubDeact SubProg Usage Interrog’ respectively.

3. The Feature Codes and Charges for the feature actions are datafilled in the table MTRFEAT as in the example shown in Figure “Feature Codes in the table MTRFEAT”. In this example, 54 and 21 are feature codes for ICWT and CLF respectively. The numbers, next to the action codes, are the charge values or meter counts for that action.

**Note:** Although the FTR\_RECORD\_FOR\_ICR\_OPT is Y in table OFCVAR to generate FTR record for metered actions of ICR feature option, the record is not generated unless a tuple exists for the ICR in table MTRFEAT.

#### Action Codes in the table ISERVOPT

```
> Table ISERVOPT
SOPTSKEY SOPTSVAR
-----
FTRACT FTRACT 03 45 57 04 49 07 98 42 23 46
```

#### Feature Codes in the table MTRFEAT

```
TABLE MTRFEAT
KEY FTRCOD OPTIONS
-----
ICWT MOG_3 54 (ASSIGN 1) (DEASSIGN 2) (ADMACT 3) (ADMDEACT 4) (SUBACT 6)
(SUBDEACT 7) (USAGE 9) (INTERROG 10) $
CLF MOG_2 21 (ASSIGN 1) (DEASSIGN 2) (USAGE 5) $
```

### Software Optionality Control

There is no new created Software Optionality Control by this feature. The existing SOC option RBIL0014 is used for this record. It was created by the feature AT.59013592 in MMP13 release. In this activity, for the metered feature actions, the FTR record and AMAB156 log are generated instead of the MTR156 log if the SOC option RBIL0014 is set to ON. When the SOC option RBIL0014 is IDLE, MTR156 log is generated as before.

### Hardware Requirements or Dependencies

No new customer hardware requirements or dependencies are introduced in this feature.

### Software Requirements or Dependencies

This feature uses the existing AMA/Billing framework and the existing components of this framework.



## Limitations and restrictions

- This feature applies to IBN lines only.
- This record is generated for only meterable (having MOG option) feature actions.
- In order to generate the FTR record and AMAB156 log,
  - the all datafills given in Section on page 1242 have to be done,
  - feature metering should be performed successfully.
- Feature Meter Count information is displayed by 2 digits in the FTR record and AMAB156 log. The data shown in this field reflects the value datafilled in the CHARGE field of table MTRFEAT and the range for the charge value has been defined as 0 to 255 in this table. Although 3 digits data is datafilled in the charge field of MTRFEAT table, the last 2 digits will be displayed in the FTR record and AMAB156 log, as in MTR156 log.
- The FTR record for metered actions (assign / deassign / usage) of ICR feature option is not generated unless the office parameter FTR\_RECORD\_FOR\_ICR\_OPT is set to Y in table OFCVAR.
- The AMAB156 log is not generated unless the parameter LOGAMA is set to ON in table AMAOPTS, although the FTR record is generated.
- The FTR Records are routed to ICR volume.
- The FTR Records are stored in disks/tapes by using Bellcore AMA Format.
- NT AMA Format is not supported on the MMP.

## Interactions

- If the feature metering according to action type is done successfully then this record is generated.
- AMA in MMP is based on Bellcore AMA Format. This feature uses the existing AMA/Billing framework components with no change in their existing structures to realize customer's requirements. So, there is no effect on the existing AMA subsystem in the MMP load.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|             |     |
|-------------|-----|
| Data Schema | N/A |
|-------------|-----|

|                                                 |     |
|-------------------------------------------------|-----|
| User Interface                                  | N/A |
| Element Management                              | N/A |
| Security                                        | N/A |
| Service Order                                   | N/A |
| Office Parameters                               | Y   |
| Accounting (includes AMA billing)               | Y   |
| Performance (includes operational measurements) | N/A |

## Glossary

| Term  | Description                                            |
|-------|--------------------------------------------------------|
| AMA   | Automatic Message Accounting                           |
| CCI   | Call Code Index                                        |
| DIRP  | Device Independent Recording Package                   |
| DMS   | Digital Multiplex System                               |
| FTR   | FeaTuRe                                                |
| IAA   | Inter Administration Accounting                        |
| ICAMA | International Centralized Automatic Message Accounting |
| ICR   | International Charge Recording                         |
| MCI   | Module Code Index                                      |
| MMP   | Multi Market Product                                   |
| SCI   | Structure Code Index                                   |
| SOC   | Software Optionality Control                           |
| Telco | Telecom Company                                        |

## Recommended Reading/References

- a. A59022215 - Log For Cept Subscriber Functions
- b. A59013592 - AMA Billing Enhancements for Turkey
- c. A59021950 - Meter Count Support in Billing Records (International Charge Recording)
- d. NTP 297-9051-800 'DMS100 MMP AMA Reference Guide'
- e. NTP 297-1001-830 'Bellcore Format AMA Reference Guide'

## Configuration for A00002053

### Hardware and Software Requirements

None.

### Initial Configuration

For the software initialization, the datafills given in the FN document are required for this feature.

### Office/Subnet parameters (OP/SP) (CM & SESM)

#### New/modified office/subnet parameters

New or modified parameter

| Parm table | Parameter name         | NEW/<br>CHANGED/<br>DELETED/<br>RELOCATED | Domain (CM<br>or Subnet<br>Management) |
|------------|------------------------|-------------------------------------------|----------------------------------------|
| OFCVAR     | FTR_RECORD_FOR_ICR_OPT | NEW                                       | CM                                     |

#### Parameter information

##### FTR\_RECORD\_FOR\_ICR\_OPT

Feature Record for ICR Option

##### Functional description

The parameter FTR\_RECORD\_FOR\_ICR\_OPT is newly created by this activity to make the FTR record generation optional for metered actions of ICR feature option. When the subscriber having ICR option is charged for the ICR operations (assignment / deassignment / usage), the FTR record is generated only if the FTR\_RECORD\_FOR\_ICR\_OPT is Y in table OFCVAR.

##### Provisioning rules

The parameter FTR\_RECORD\_FOR\_ICR\_OPT is set to Y to generate FTR record for the charged ICR operations of subscribers (as shown in Figure “The new OFCVAR parameter”). But, beside of this parameter setting, all required datafill should exist for the generation of the FTR record. Please refer to the Section on page 1242 for FTR record provisioning.

##### The new OFCVAR parameter

```
> Table OFCVAR
PARMNAME  PARMVAL
-----
FTR_RECORD_FOR_ICR_OPT      Y
```

When the parameter FTR\_RECORD\_FOR\_ICR\_OPT is changed from “N” to “Y”, the following message is displayed:

“WARNING: FTR record generation for ICR feature is activated”

Opposite when FTR\_RECORD\_FOR\_ICR\_OPT is changed from “Y” to “N” the following message is displayed:

“WARNING: FTR record generation for ICR feature is deactivated”

### **Range information**

#### **Range Information**

| Minimum  | Maximum   | Default   |
|----------|-----------|-----------|
| TRUE (Y) | FALSE (N) | FALSE (N) |

### **Activation**

Change activation is immediate. No additional action is necessary.

### **Dependencies**

None.

### **Verification**

After changing this parameter, it is enough to check it by ‘pos’ command in the table OFCVAR.

### **Memory requirements**

No memory impact.

### **Parameter release history update**

A new parameter addition.

## ***Product = World Trade***

### **A00002101 -- Allow ITX Only SSUTR2 (Succession on DMS)**

#### ***Functional Description***

This activity, ‘A00002101-Allow ITX only SSUTR2\*’ in MMP20, provides a new IC/2W trunk option which allows the DMS Tandem Exchange :

- To transmit and report the received ITX messages.

- To block TAX and CHT messages.
- To allow ITX generation for indirect access calls, if NETAOCD datafill exists at DMS Indirect Access Node.

Regarding to SSUTR2 (reference-[a]); Backward Call Charging Scenarios has to be one of the three below:

- A) No Backward charging message will be received
- B) TAX (possibly CHT) message(s) will be received
- C) One or several ITX message(s) will be received

Any other backward charging scenarios are not supported by this activity.

In order to:

- block TAX/CHT and not report
- let the ITX(s) pass and report

to the originator side of the call the incoming (IC) FTUP trunk must hold the new option TELETAX\_ITX\_SIG.

This activity also enhances the DMS-XPM ITX generation mechanism to prevent zero count ITX generation, this individual behavior is submitted under case:030801-33578.

### **Background information:**

SSUTR2 defines three backward charging procedures using a combination of charging messages (TAX, CHT, ITX, TXA) to indicate the charging requirements to the billing switch. Please refer to Appendix, “Backward Charging Message Formats” on page 1281 for message formats.

At EUR010, TELETAXE\_NOSIG option in table TRKOPTS has been provided by the activity AU3283-SSUTR2 SUPPORT FOR BACKWARD CHARGING to control sending of backwards charging messages at DMS Indirect Access Node.

For SSUTR2-SSUTR2 and SSUTR2-SPIROU tandem calls from an incoming trunk marked with the TELETAX\_NOSIG option; backward charging messages received on the outgoing SSUTR2 trunk will not be tandemed. Instead, CHT and ITX messages acknowledged with a TXA. Besides, ITX generation is not allowed although NETAOCD datafill exists at DMS Indirect Access Node. Please refer to the section “TELETAXE\_NOSIG is datafilled when no NETAOCD datafill exists:” on page 1257 and “Both TELETAXE\_NOSIG and NETAOCD are datafilled:” on page 1259 for the behavior when TELETAXE\_NOSIG option is datafilled.

**Note:** SSUTR2 is the French national variant of the ITU-T Q.723 specification (TUP), commonly referred to as French Telephony User Part (FTUP). It is used for interconnection of France Telecom and other licensed domestic operators.

## Backward Charging Functionality

### Backward Charging Functionality

| OPTION<br>datafilled for<br>IC/2W trk in the<br>TABLE TRKOPTS                                           | No NETAOCD datafilled at DMS<br>Tandem Exchange                                                                                                                                                                                                                  | NETAOCD datafilled at DMS<br>Tandem Exchange                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No option data-filled</b><br>(i.e. None of the options<br>TELETAXE_NOSIG<br>and TELETAXE_ITX<br>SIG) | <p><i>ITX, TAX and CHT messages are tandemmed and reported to CM.</i></p> <p><i>Please refer to Figure “ITX received by tandem with no NETAOCD datafill” on page 1253 and Figure “TAX and CHT received by tandem with no NETAOCD datafill” on page 1254.</i></p> | <p><i>The ITX, TAX and CHT messages received are not tandemmed, but reported to CM.</i></p> <p><i>ITX generation is allowed regarding existing tariff for NETAOCD datafills.</i></p> <p><i>Please refer to Figure “ITX received by tandem with NETAOCD datafill” on page 1255 and Figure “TAX and CHT received by tandem with NETAOCD datafill” on page 1256.</i></p>  |
| <b>TELETAXE</b>                                                                                         | <p><i>ITX, TAX and CHT messages are tandemmed and reported to CM.</i></p> <p><i>Please refer to Figure “ITX received by tandem with no NETAOCD datafill” on page 1253 and Figure “TAX and CHT received by tandem with no NETAOCD datafill” on page 1254.</i></p> | <p><i>The ITX, TAX and CHT messages received are not tandemmed, but reported to CM .</i></p> <p><i>ITX generation is allowed regarding existing tariff for NETAOCD datafills.</i></p> <p><i>Please refer to Figure “ITX received by tandem with NETAOCD datafill” on page 1255 and Figure “TAX and CHT received by tandem with NETAOCD datafill” on page 1256.</i></p> |

**Backward Charging Functionality**

| <b>OPTION<br/>datafilled for<br/>IC/2W trk in the<br/>TABLE TRKOPTS</b> | <b>No NETAOCD datafilled at DMS<br/>Tandem Exchange</b>                                                                                                                                                                                                                                                                                  | <b>NETAOCD datafilled at DMS<br/>Tandem Exchange</b>                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TELETAXE_NOSIG</b>                                                   | <p><i>The ITX, TAX and CHT messages received are not tandemed, but reported to CM. ITX and CHT messages are acknowledged by TXA messages.</i></p> <p><i>Please refer to Figure “ITX received by tandem with no NETAOCD datafill” on page 1257 and Figure “TAX and CHT received by tandem with no NETAOCD datafill” on page 1258.</i></p> | <p><i>The ITX, TAX and CHT messages received are not tandemed, but reported to CM. ITX and CHT messages are acknowledged by TXA messages.</i></p> <p><i>Although NETAOCD datafill exists at tandem exchange, ITX generation is not allowed.</i></p> <p><i>Please refer to Figure “ITX received by tandem with NETAOCD datafill” on page 1259 and Figure “TAX and CHT received by tandem with NETAOCD datafill” on page 1260.</i></p> |

**Backward Charging Functionality**

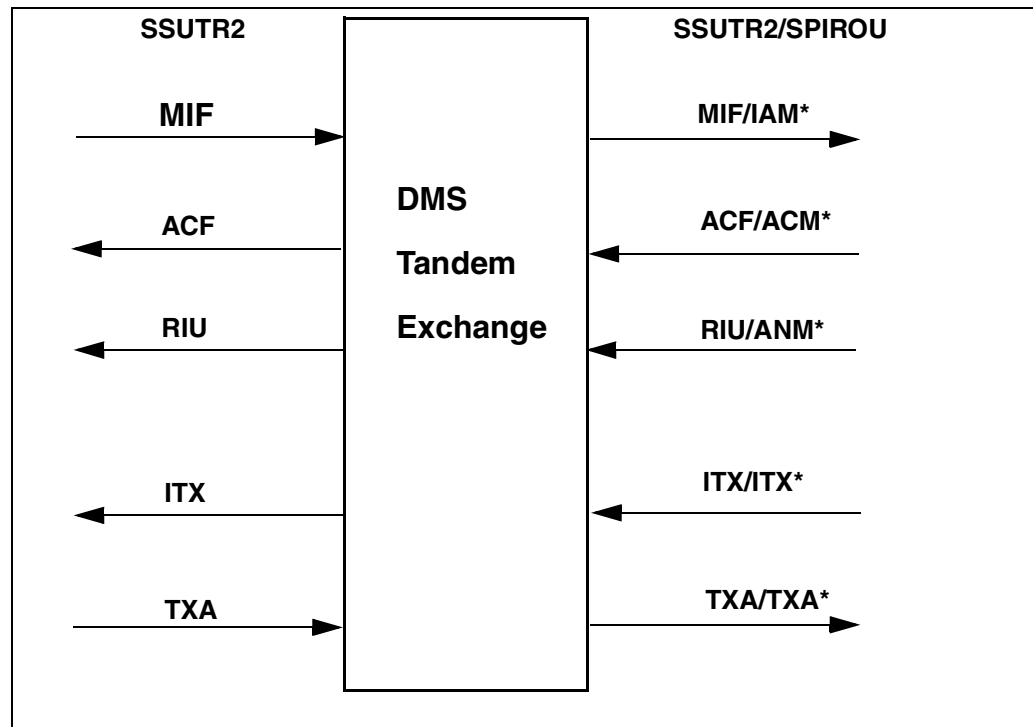
| <b>OPTION<br/>datafilled for<br/>IC/2W trk in the<br/>TABLE TRKOPTS</b> | <b>No NETAOCD datafilled at DMS<br/>Tandem Exchange</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>NETAOCD datafilled at DMS<br/>Tandem Exchange</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TELETAXE_ITX_SIG</b>                                                 | <p>The ITX messages received at tandem are tandemmed and reported to the CM.</p> <p>The TAX and CHT messages received at tandem are not tandemmed and not reported to CM, but CHT messages are acknowledged by TXA.</p> <p>Please refer to Figure “ITX received by tandem with no NETAOCD datafill” on page 1261 and Figure “TAX and CHT received by tandem with no NETAOCD datafill” on page 1262.</p> <p>Handling of Charge Message(s) in rare-seen scenarios, under provision of TELETAX_ITX_SIG, is defined in Figure “TAX received by tandem in pre-ACF state” on page 1265, Figure “CHT received by tandem with in pre-RIU state with TAX” on page 1266, Figure “CHT received by tandem in pre-ACF state” on page 1267 and Figure “TAX received by tandem in post-RIU state” on page 1268.</p> | <p>The ITX messages received are not tandemmed, but reported to CM.</p> <p>The TAX and CHT messages received are not tandemmed, but reported to CM.<br/>ITX and CHT messages are acknowledged by TXA messages.</p> <p>ITX generation is allowed regarding existing tariff for NETAOCD datafills.</p> <p>Please refer to Figure “ITX received by tandem with NETAOCD datafill” on page 1263 and Figure “TAX and CHT received by tandem with NETAOCD datafill” on page 1264.</p> <p>Handling of Charge Message(s) in rare-seen scenarios, under provision of TELETAX_ITX_SIG, is defined in Figure “TAX received by tandem in pre-ACF state” on page 1265, Figure “CHT received by tandem with in pre-RIU state with TAX” on page 1266, Figure “CHT received by tandem in pre-ACF state” on page 1267 and Figure “TAX received by tandem in post-RIU state” on page 1268.</p> |



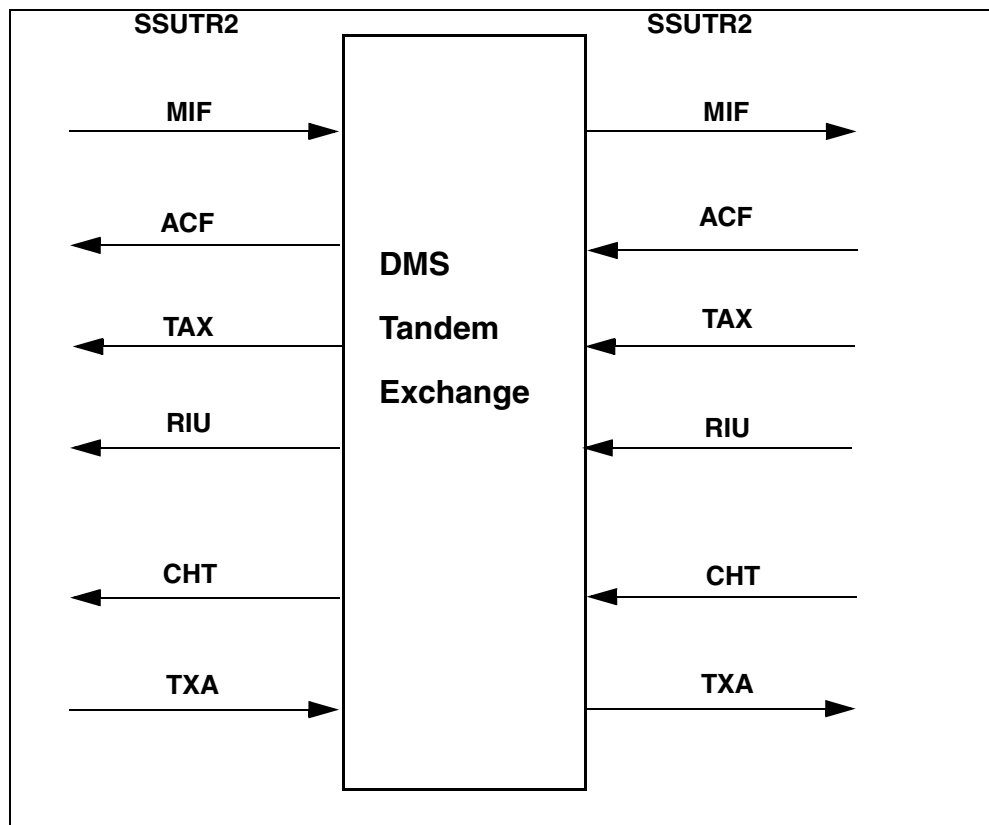
**Note:** The parts in *italic* in the above table represent the existing behavior. The parts in **bold** in the above table represent the new functionality.

Any of the options (TELETAXE\_NOSIG or TELETAXE\_ITX\_SIG) is not datafilled when NETAOCD datafill does not exist\*\*:

ITX received by tandem with no NETAOCD datafill



TAX and CHT received by tandem with no NETAOCD datafill



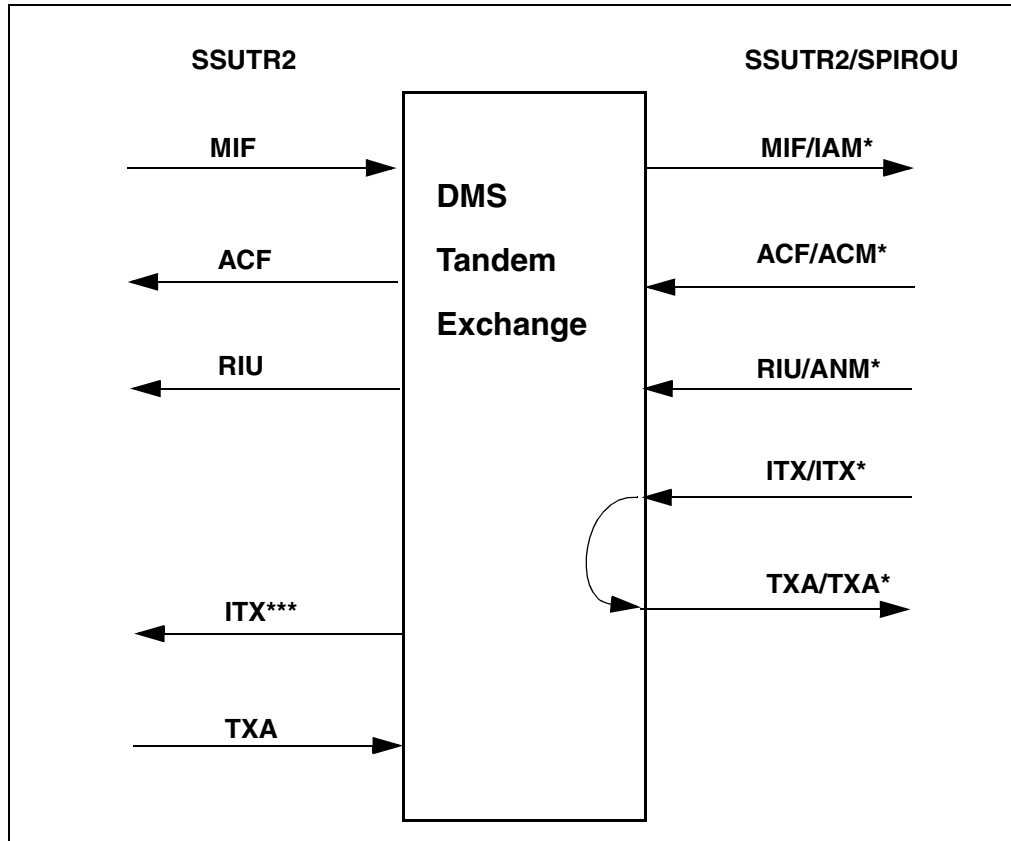
The ITX, TAX and CHT messages received at tandem will be tandemmed and will be reported to the CM.

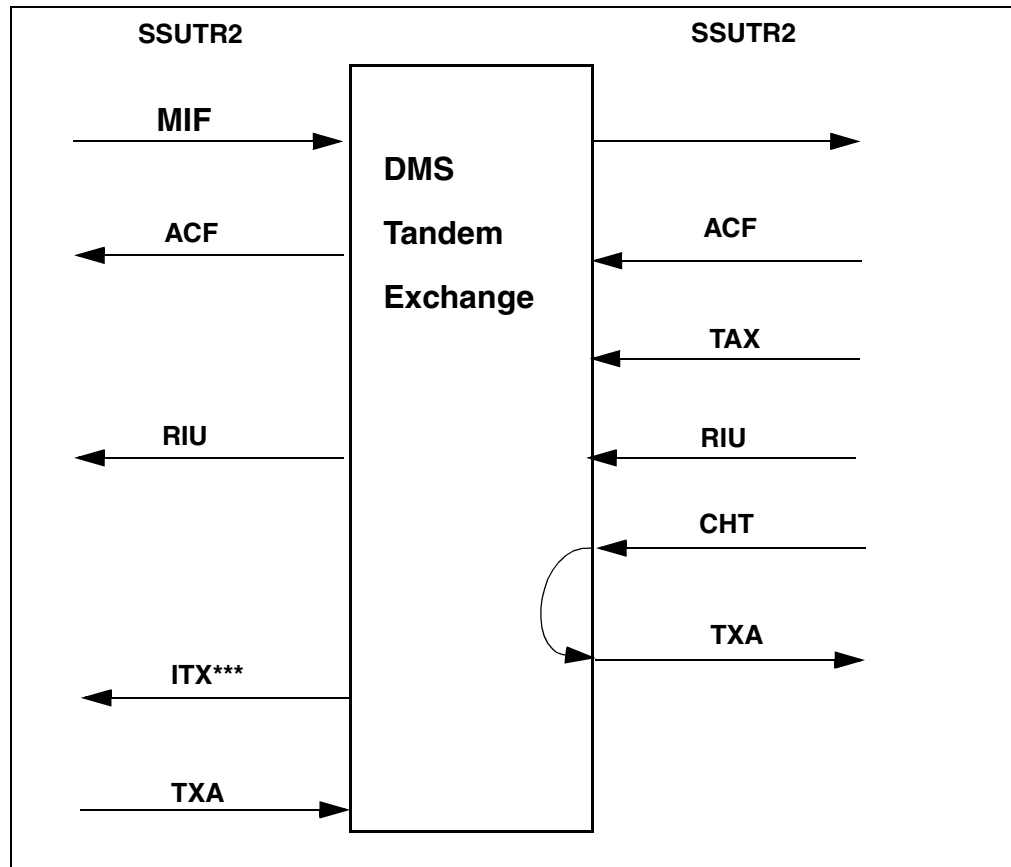
\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.

**Note:** Figure “ITX received by tandem with no NETAOCD datafill” on page 1253 and Figure “TAX and CHT received by tandem with no NETAOCD datafill” on page 1254. Figure “ITX received by tandem with NETAOCD datafill” on page 1255 also represents the case where TELETAXE option is datafilled in Table “Backward Charging Functionality” on page 1250.

**Any of the options (TELETAXE\_NOSIG or TELETAXE\_ITX\_SIG) is not datafilled when NETAOCD datafill exists\*\*:**

**ITX received by tandem with NETAOCD datafill**



**TAX and CHT received by tandem with NETAOCD datafill**

The ITX, TAX and CHT messages received are not tandemed, but reported to CM.

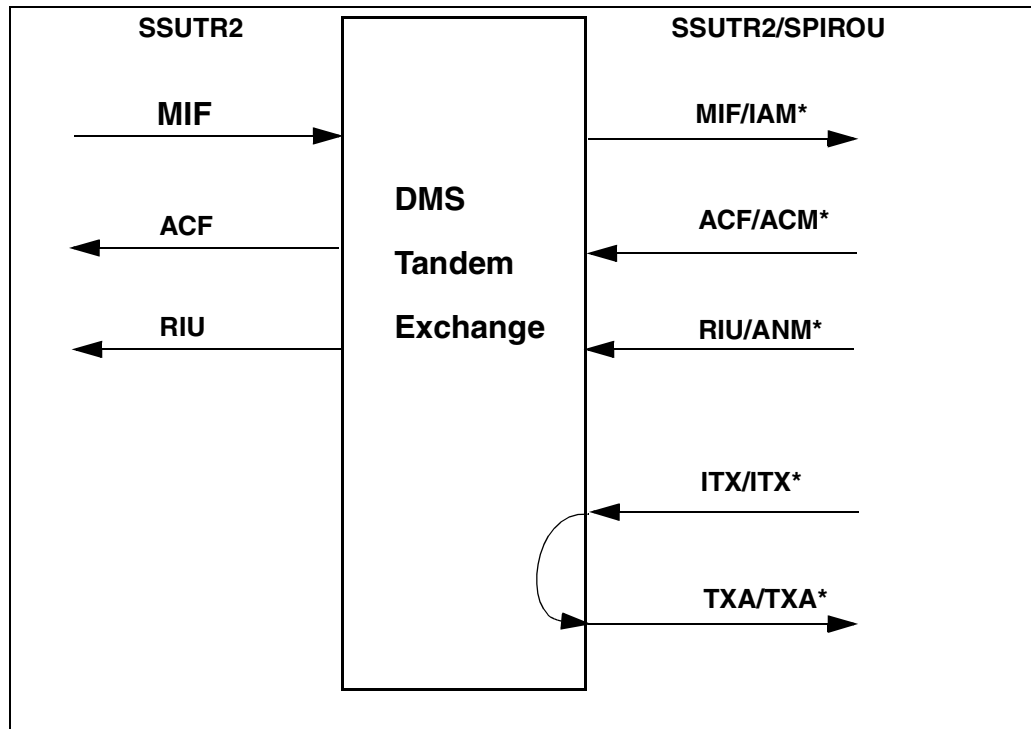
\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.

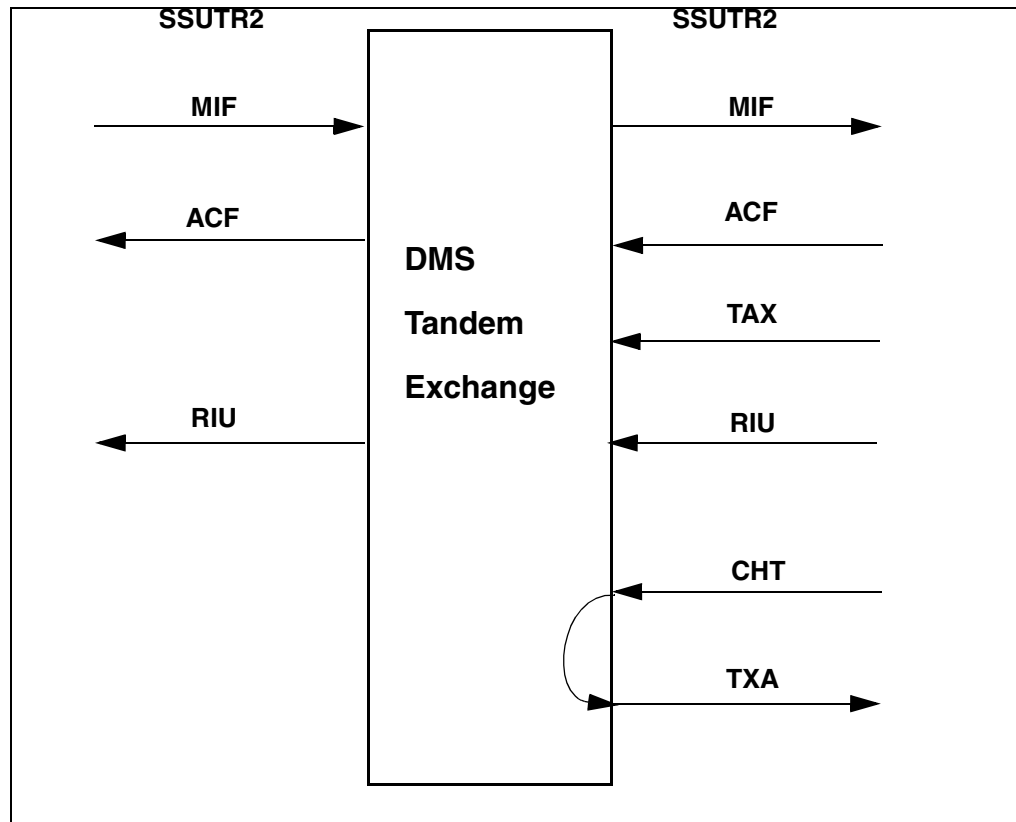
**\*\*Note:** Figure “ITX received by tandem with NETAOCD datafill” on page 1255 and Figure “TAX and CHT received by tandem with NETAOCD datafill” on page 1256 also represent the case where TELETAXE option is datafilled in Table “Backward Charging Functionality” on page 1250.

\*\*\*ITX generation is allowed regarding existing tariff for NETAOCD datafills

**TELETAXE\_NOSIG is datafilled when no NETAOCD datafill exists:**

**ITX received by tandem with no NETAOCD datafill**



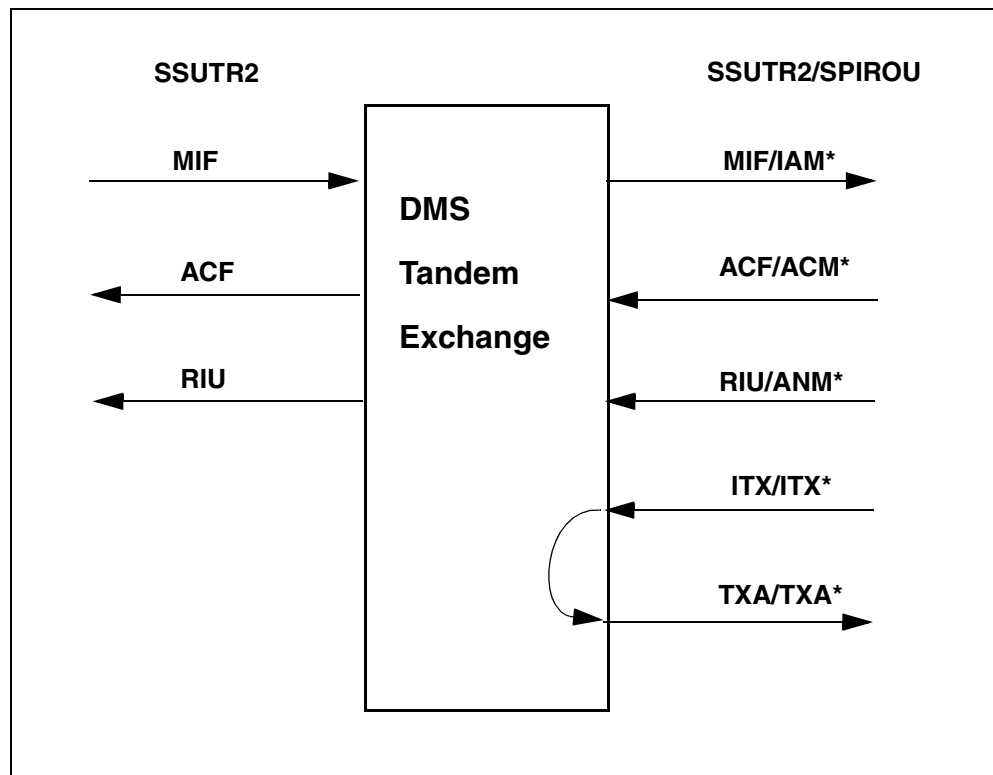
**TAX and CHT received by tandem with no NETAOCD datafill**

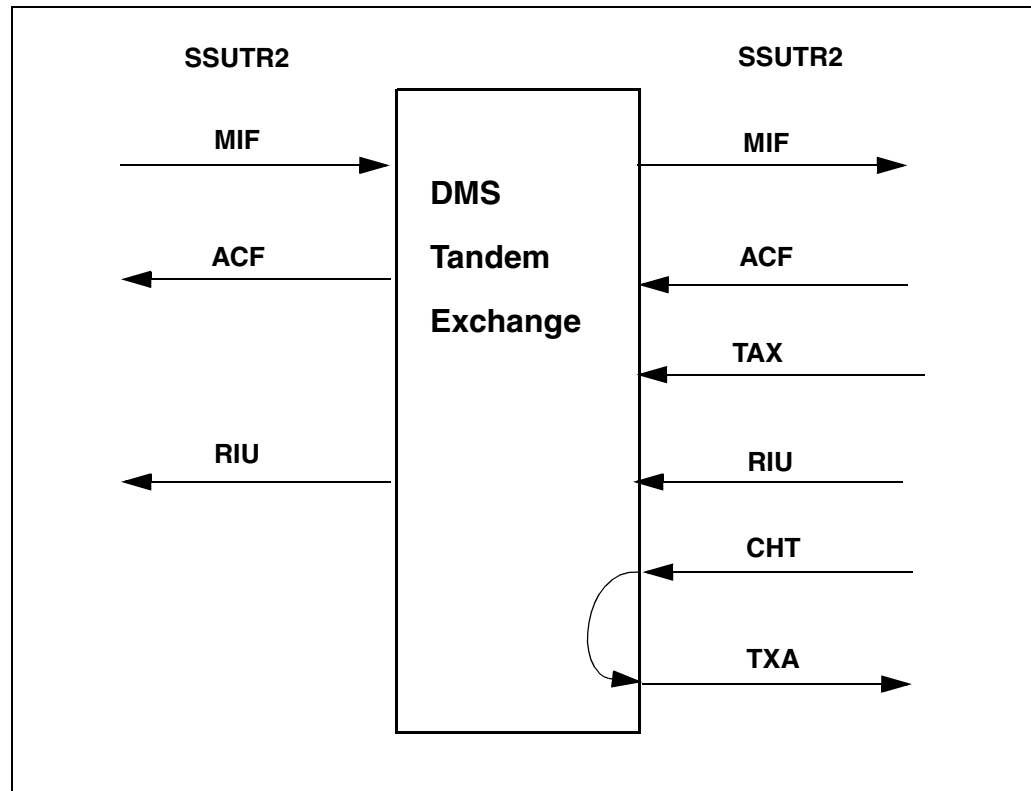
The ITX, TAX and CHT messages received are not tandemed, but reported to CM.

\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.

**Both TELETAXE\_NOSIG and NETAOCD are datafilled:**

**ITX received by tandem with NETAOCD datafill**

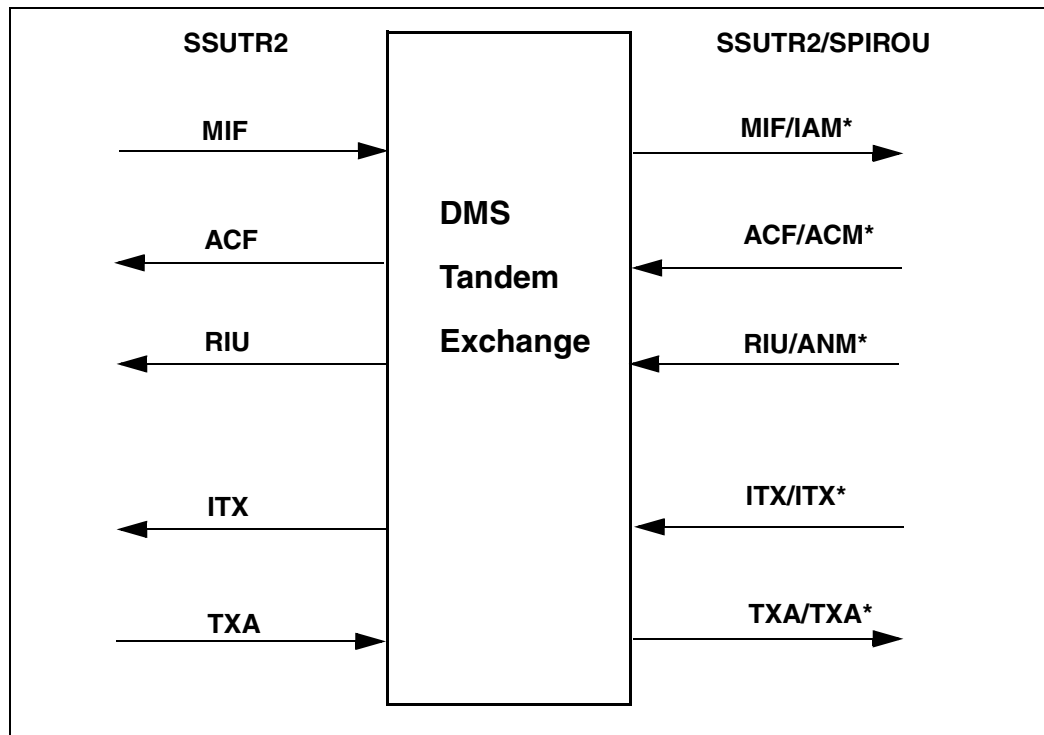


**TAX and CHT received by tandem with NETAOCD datafill**

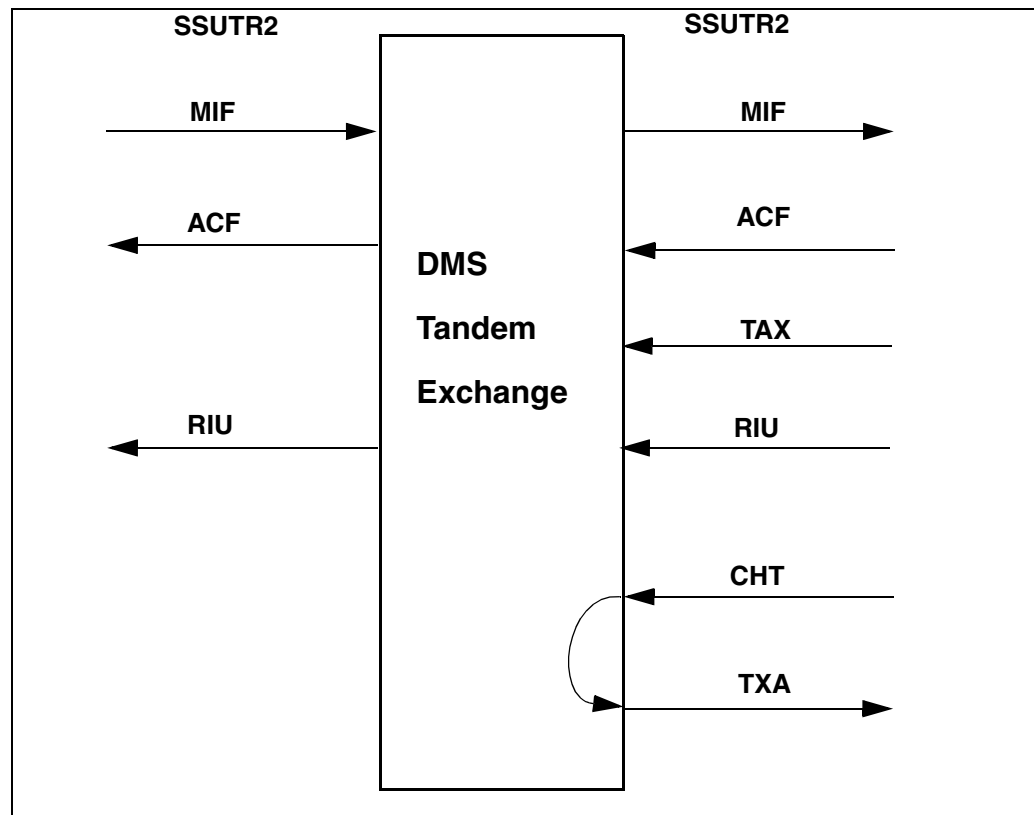
The ITX, TAX and CHT messages received are not tandemed, but reported to CM. ITX and CHT messages are acknowledged by TXA messages. Even if NETAOCD datafill exists at tandem exchange, ITX generation is not allowed.

\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.



**TELETAXE\_ITX\_SIG is datafilled when no NETAOCD datafill exists:****ITX received by tandem with no NETAOCD datafill**

The ITX messages received at tandem will be tandemed and will be reported to the CM.

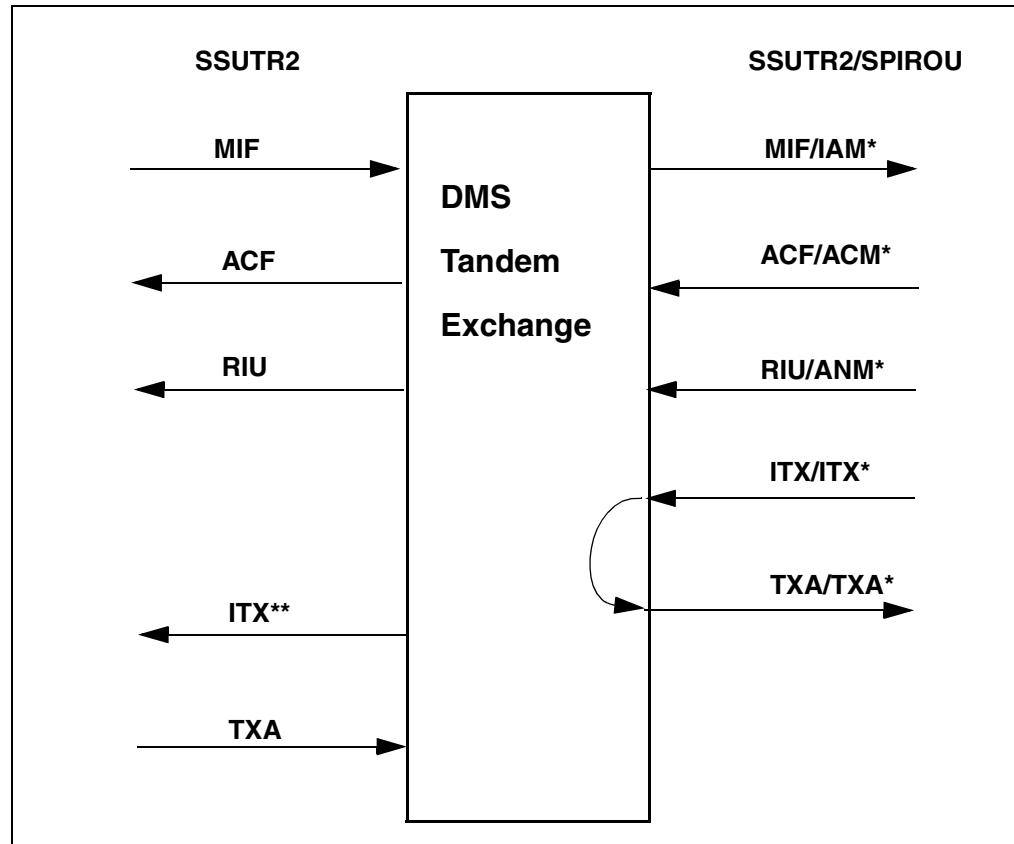
**TAX and CHT received by tandem with no NETAOCD datafill**

The TAX and CHT messages received at tandem will still not be tandemmed and not reported to CM, but CHT messages are acknowledged by TXA.

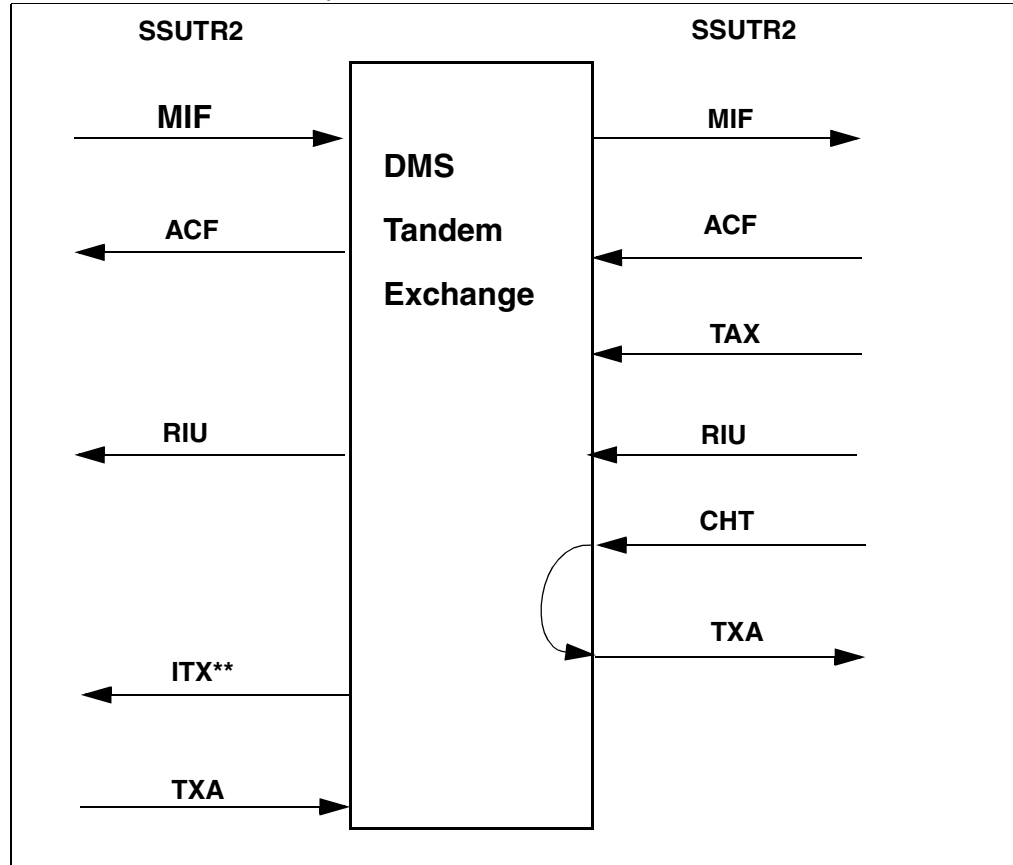
\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.

**TELETAXE\_ITX\_SIG is datafilled when NETAOCD datafill exists:**

This activity has no impact on existing NETAOCD behavior.

**ITX received by tandem with NETAOCD datafill**

The ITX messages received are not tandemed, but reported to CM.

**TAX and CHT received by tandem with NETAOCD datafill**

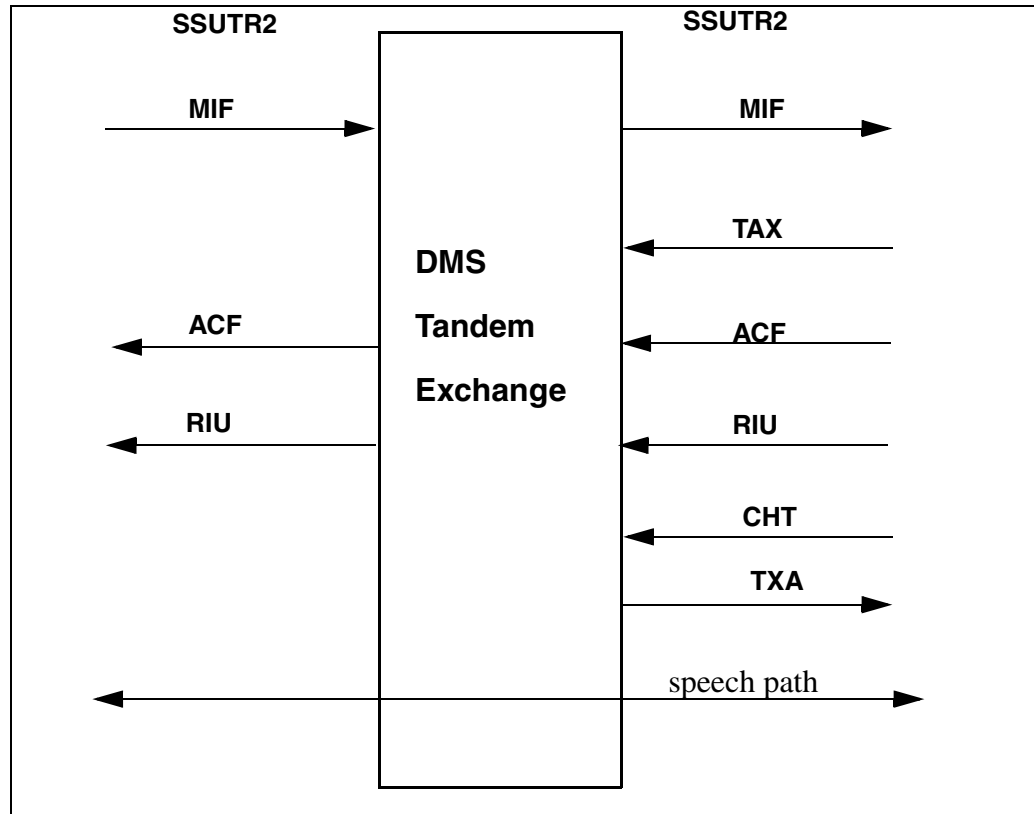
The TAX and CHT messages received are not tandemmed, but reported to CM.

\*These messages are SPIROU messages sent from/to DMS Tandem Exchange. For SPIROU, TAX and CHT messages are not supported.

\*\*ITX is generated by tandem regarding existing tariff for NETAOCD datafills.

**Handling of TAX in pre-ACF condition with Teletax\_ITX\_SIG Datafilled**

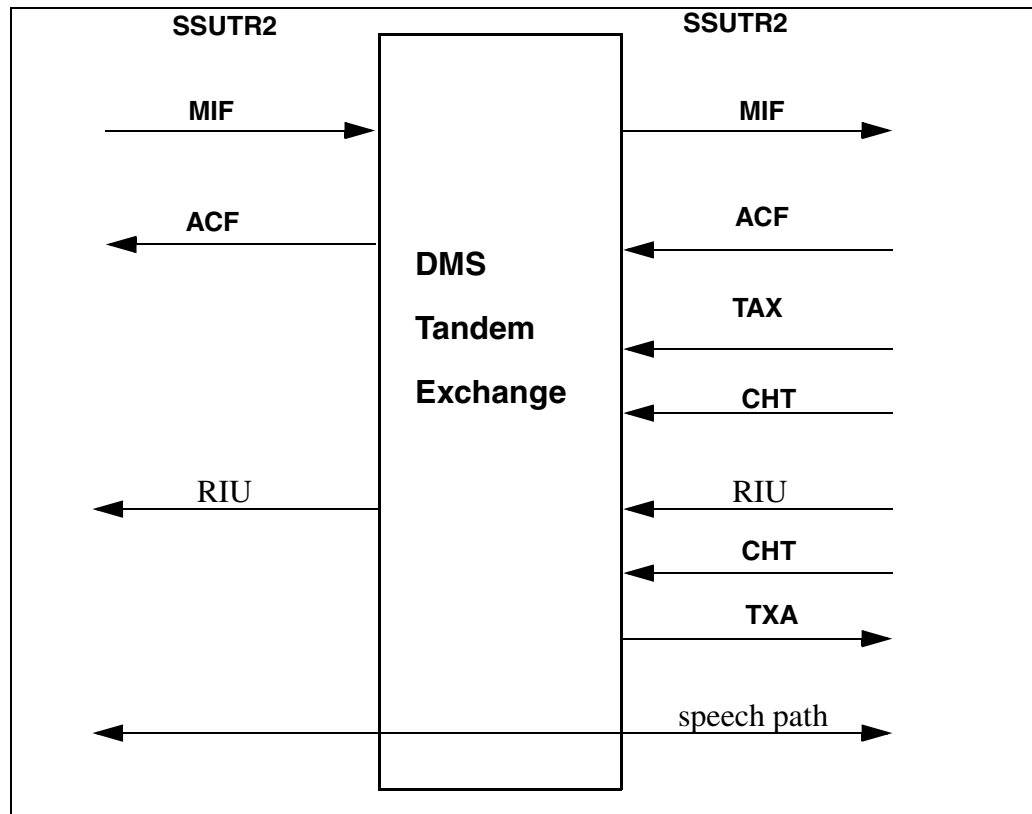
TAX received by tandem in pre-ACF state



The TAX message received at tandem will not be tandemmed and not reported to CM.

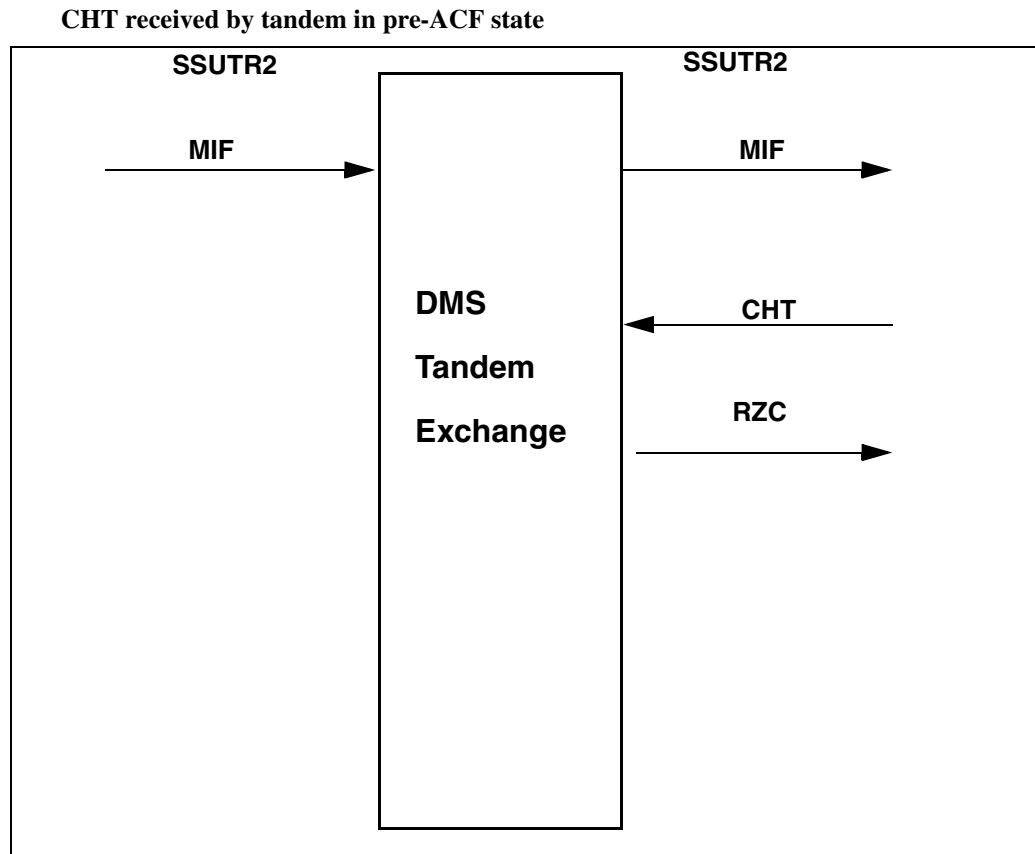
**Handling of CHT in pre-RIU condition with Teletax\_ITX\_SIG Datafilled**

CHT received by tandem with in pre-RIU state with TAX



The CHT messages received at tandem will not be tandemed, not reported to CM and not acknowledged.

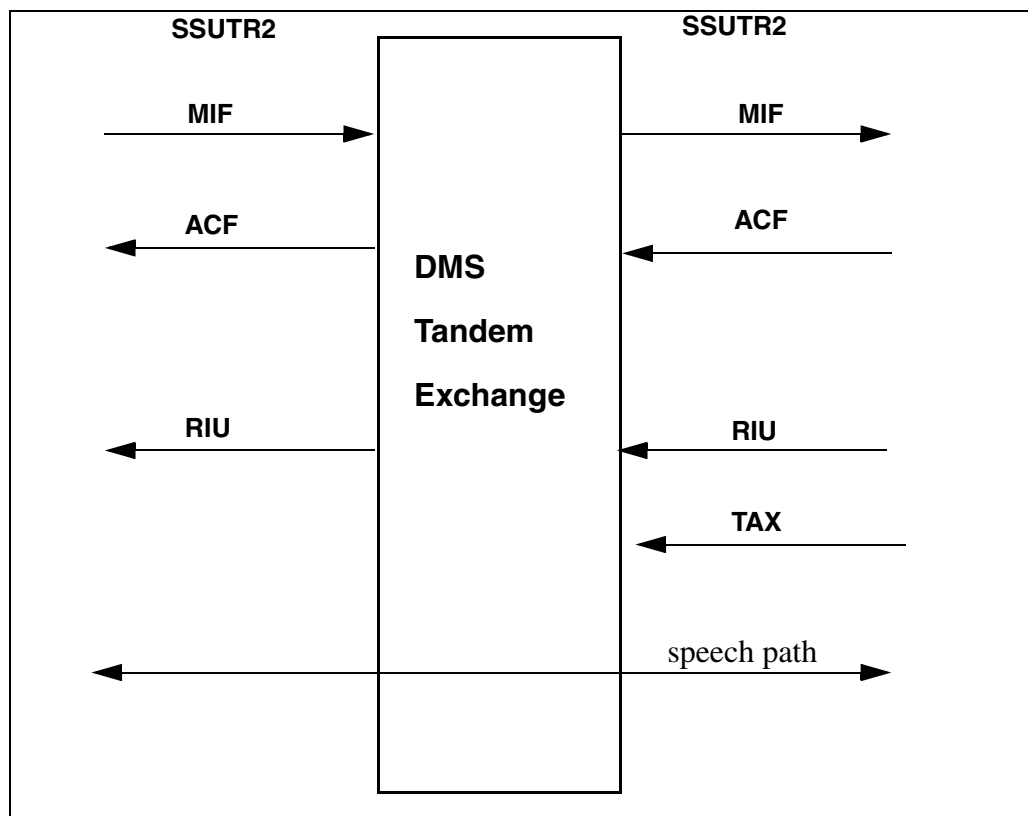
## Handling of CHT in pre-ACF condition with TELETAX\_ITX\_SIG datafilled



The CHT messages received at tandem will not be tandemed, not reported to CM and not acknowledged, regarding to SSUTR2 specification (Reference-[A]) call will be dropped with RZC message (reset circuit message).

## Handling of TAX in post-RIU condition with TELETAX\_ITX\_SIG datafilled

TAX received by tandem in post-RIU state



The TAX messages received at tandem will not be tandemed and not reported to CM.

### Datafill Requirements

#### Table TRKSGRP Datafill

- **SSUTR2 trunk datafill:**

```
2WFTUPAB 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0
DMS_NODE N N FRANCE 100_BLUE $ FTUP2W CIC
```

- **SPIROU trunk datafill:**

```
SPIROUAB 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0
DMS N N SPIROU 100_EIV3 $ 2WN7 CIC
```



**Table TRKOPTS Datafill**

TELETAXE\_ITX\_SIG option is datafilled for IC/2W trunks as seen in Table “Sample Datafill for TELETAXE\_ITX\_SIG option in Table TRKOPTS” on page 1269 below.

If TELETAXE\_ITX\_SIG option is assigned to an IC/2W SSUTR2 trunk which is datafilled on peripheral not equipped with an SX05, a warning message is generated. Please refer Figure “ITX received by tandem with no NETAOCD datafill” on page 1261 in CN section of this document.

Additionally, just one of the options TELETAXE\_NOSIG and TELETAXE\_ITX\_SIG will be datafillable for the same trunk at a time.

**Sample Datafill for TELETAXE\_ITX\_SIG option in Table TRKOPTS**

| TABLE TRKOPTS |                                   |
|---------------|-----------------------------------|
| -----         |                                   |
| OPTKEY        | OPTINFO                           |
| -----         |                                   |
| 2WFTUPBA      | TELETAXE_ITX_SIG TELETAXE_ITX_SIG |

**Metering Datafill**

The existing DMS “metering” system which is used to drive ISDN Advice of Charge will be used to determine the number of charge units accrued for ITX generation on SSUTR2. This system must be activated per PDTC by the METER option in the table LTCINV.

Please refer to [“Metering datafill example” on page 1271](#).

**Traver for ITX generating call**

Please refer to [“Traver example for SSUTR2-SSUTR2 call when NETAOCD is datafilled:” on page 1273](#) to find an traver example for SSUTR2-SSUTR2 call when NETAOCD datafill exists.

**Hardware Requirements or Dependencies**

This feature is supported only on SX05 DTCO/DTCO2 processor.

**Software Requirements or Dependencies**

No changes due to this feature. Existing SOC options for backward charging functionality are used.

**Limitations and restrictions**

- This feature is supported only on SX05 DTCO/DTCO2 processor.

- All restrictions and limitations in AU3283-SSUTR2 SUPPORT FOR BACKWARD CHARGING, PLS DOC will be valid for this activity as well.

## Interactions

No changes due to this feature.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|                    |     |
|--------------------|-----|
| Data Schema        | X   |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term       | Description                                                |
|------------|------------------------------------------------------------|
| <b>ACF</b> | ISDN address complete message with user to user facilities |
| <b>ACM</b> | Address Complete Message                                   |
| <b>AMA</b> | Automatic Message Accounting                               |
| <b>ANM</b> | Answer Message                                             |
| <b>CHT</b> | Change of Charge Rate Message                              |
| <b>CM</b>  | Computing Module                                           |
| <b>DMS</b> | Digital Multiplex System                                   |
| <b>FN</b>  | Functional Description                                     |
| <b>IAM</b> | Initial Address Message                                    |

| Term   | Description                                                                        |
|--------|------------------------------------------------------------------------------------|
| ITX    | Charge Unit message                                                                |
| ITU-T  | International Telecommunication Union-<br>Telecommunication Standardization Sector |
| MIF    | ISDN initial address message with user to user<br>facilities                       |
| MMP    | Multi-Market Product                                                               |
| RIU    | Answer message with user to user information                                       |
| SPIROU | Signalisation Pour l'Interconnexion des Réseaux<br>Ouverts                         |
| SSUTR2 | Sous Systeme Utilisateur                                                           |
| TAX    | Charging Message                                                                   |
| TUP    | Telephony User Part                                                                |
| TXA    | Charging Acknowledgement message                                                   |

## References

V 11-T 1998 Recommendation, Specification of the SSUTR2 user subsystem on the interface between the France Telecom fixed network and the third party networks at the VN6 functional phase.

AU3283-SSUTR2 SUPPORT FOR BACKWARD CHARGING, PLS DOC.

AU3284-SSUTR2 SUPPORT FOR BACKWARD CHARGING, PLS DOC.

## Appendix for A00002101

### Metering datafill example

#### TABLE OFCENG

-----  
SSUTR2\_ITX\_RATE 20

#### TABLE AMAOPTS

-----  
BACK\_CHARGE ON

#### TABLE LTCINV

-----  
PDTC 1 1 IDTE 1 18 1 C 8 6X02UI ODT17AY (ABTRK DTCEX) \$ (2 48)  
(2 49) (2 50) (2 51) (2 52) (2 53) (2 54) (2 55) (2 56) (2 57) (2 58) (2 59) (2 60)

(2 61) (2 62) (2 63) \$ (UTR9 ) (RAM6X69 ) (NT6X28 ) \$ TURKR1R2  
SX05AA SX05AA 0 UPFWQM01 (CCS7) (FSTR2) (METER) \$ 6X40AC N

**TABLE MTRLNET**

-----  
LOC

**TABLE MTRTARIF**

-----  
15 SEC N 1 1 1 1 1 1 1 0 0 1 1 1

**TABLE MTRTTS**

-----  
LOC 7 N 15 16 \$ \$ \$ \$ \$ \$ \$ \$

**TABLE MTRMOTS**

-----  
MOTS\_2 LOC 4 7

**TABLE MTRMOG**

-----  
MDI4 MOTS\_2 \$

**TABLE DAYTYPES**

-----  
NORMAL  
SATDAY  
SUNDAY  
HOLIDAY

**TABLE TODHEAD**

-----  
LOC MTR LOC 0 NORMAL SATDAY SUNDAY \$

**TABLE DAYOWEEK**

-----  
LOC MON NORMAL

**TABLE AOCBASIC**

-----  
LOC 4 0 30

**TABLE AOCOPT**

-----  
LOC 30 4 0 \$

**TABLE CLISERV**

METERING 1 SERVSCRN \$

### TABLE CLISRVPF

-----  
1 METERING \$ \$

### TABLE DNSCRN

-----  
1027835480 NETAOCD 30 CLISERV 1 \$

## Traver example for SSUTR2-SSUTR2 call when NETAOCD is datafilled:

```
>traver 1 7835480 3953967835479 tariff b
TABLE IBNLINES
HOST 03 0 00 10 0 DT STN IBN 7835480 CUST783 0 0 102 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
Originator is not an EIN agent, therefore EIN info is not processed.
Originator is not an EIN agent, therefore EIN info is not processed.
TABLE NCOS
CUST783 0 0 0 $ ( XLAS NETXLA STARCEPT NDGT) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,
AND DIGCOL
CUST783 NXLA NETXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME NETXLA
TUPLE NOT FOUND
Default from table XLANAME:
NETXLA
      (NET N Y 0 N NDGT N Y DOD N 1 102_NPRT_1 NLCA_NILLA_1 NONE $) $ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
1 IBN NONE NT 0 0 NILSFC 0 PX NETXLA NIL 00 102_NPRT_1 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
```

TABLE RATEAREA

NLCA\_NILLA\_1 NLCA NIL NILLATA \$

TABLE PXHEAD

NETXLA SDFLT NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:

3953967835479

TABLE PXCODE

NETXLA 395 395 RTE ( PF 3) ( MM 9 15) ( DEST 396) ( CLASS NATL) ( LNET LOC) ( MZONE 4)\$

TABLE: PXRTE

KEY: NETXLA 396

. S MFTUPAB

EXIT TABLE PXRTE

Originator is not an EIN agent, therefore EIN info is not processed.

TABLE MTRMOG

TUPLE NOT FOUND

TABLE MTRLNET

LOC

TABLE MTRMOTS

TUPLE NOT FOUND

TABLE MTRNETIF

TUPLE NOT FOUND

TABLE MTRMOTS

TUPLE NOT FOUND

TABLE MTRNAMES

TUPLE NOT FOUND

TABLE TODHEAD

LOC MTR LOC 0 (NORMAL) (SATDAY) (SUNDAY) \$

TABLE DAYOYEAR

TUPLE NOT FOUND

TABLE DAYOWEEK

LOC MON NORMAL

TABLE TIMEODAY

TUPLE NOT FOUND

WARNING: TIMEODAY datafill missing

The default TNT in table TODHEAD will be used

TABLE MTRTTS

TUPLE NOT FOUND

TABLE MTRTARIF

4 MIN N 1 1 5 1 1 5 1 0 0 1 1 5

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 MFTUPAB 3967835479 ST

TREATMENT ROUTES. TREATMENT IS: GNCT

1 MESA2

2 OFL

3 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

>traver tr mftupba 3967835479 tariff b

TABLE TRKGRP

MFTUPBA IBNT2 0 NPDGP NCRT SERKAN 0 LIDL 0 N ANSDISC 0 Y N N N N N N 0

0 N 0 1 0 1 N N N N N N N N NATL \$

TABLE CUSTSTN

TUPLE NOT FOUND

TABLE OFCVAR

AIN\_OFFICE\_TRIGGRP NIL

INAP Origination Attempt TDP: no subscribed trigger.

TABLE NCOS

SERKAN 0 0 0 \$ ( XLAS NETXLA1 NETXLA1 NDGT)\$

TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,

AND DIGCOL

SERKAN NXLA NETXLA NXLA 0 NDGT

TABLE DIGCOL

NDGT specified: digits collected individually

INAP Info Collected TDP: no subscribed trigger.

TABLE IBNXLA: XLANAME NETXLA1

TUPLE NOT FOUND

Default from table XLANAME:

NETXLA1

(NET N Y 0 N NDGT N Y DOD N 2 102\_NPRT\_1 NLCA\_NILLA\_1 NONE \$) \$ 9

TABLE DIGCOL

NDGT specified: digits collected individually

TABLE LINEATTR

2 IBN NONE NT 0 0 NILSFC 4 PX NETXLA1 NIL 00 102\_NPRT\_1 NLCA\_NILLA\_1 \$

LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE

TABLE XLAPLAN

102\_NPRT\_1 NSCR 102 NPRT NONE N \$ GG

TABLE RATEAREA

NLCA\_NILLA\_1 NLCA NIL NILLATA \$

TABLE PXHEAD

NETXLA1 DFLT FEATINFO VALIDATE ( SUBSCRN ( GENERAL N N N N)\$) ( CLISERV

METERING)\$ 0 1 20 PX NETXLA NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 3967835479

TABLE PXCODE

TUPLE NOT FOUND

DEFAULT FROM HEAD TABLE USED

**PLEASE ENTER CLI DIGITS:**

**>1027835480**

**TABLE CLISERV**

**. METERING 1 (SERVSCRN )\$**

**TABLE DNSCRN**

**. 1027835480 (NETAOCN 30) (CLISERV 1) \$**

**TABLE CLISRVPF**

**. 1 (METERING \$ )\$**

**. Matched on METERING**

**. Service screening succeeded**

TABLE PXHEAD

NETXLA SDFLT NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 3967835479

TABLE PXCODE

NETXLA 396 396 RTE ( PF 3) ( MM 9 15) ( DEST 394) ( CLASS NATL) ( LNET LOC) ( MZONE 4)\$

TABLE: PXRTE

KEY: NETXLA 394

**. S 2WFTUPAB**

EXIT TABLE PXRTE

INAP Info Analyzed TDP: no subscribed trigger.

TABLE MTRMOG



```
MDI4 MOTS_2 $
TABLE MTRLNET
LOC
TABLE MTRMOTS
MOTS_2 LOC 4 7
TABLE MTRNETIF
TUPLE NOT FOUND
TABLE MTRMOTS
MOTS_2 LOC 4 7
TABLE MTRNAMES
TUPLE NOT FOUND
TABLE TODHEAD
LOC MTR LOC 0 (NORMAL) (SATDAY) (SUNDAY) $
TABLE DAYOYEAR
TUPLE NOT FOUND
TABLE DAYOWEEK
LOC MON NORMAL
TABLE TIMEODAY
TUPLE NOT FOUND
WARNING: TIMEODAY datafill missing
The default TNT in table TODHEAD will be used
TABLE MTRTTS
LOC 7 N 15 16 $ $ $ $ $ $ $ $
TABLE MTRTARIF
15 SEC N 1 1 1 1 1 1 1 0 0 1 1 1

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 2WFTUPAB          7835479          ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

```
>traver tr 2wftupba 7835479 tariff b
TABLE TRKGRP
2WFTUPBA IBNT2 0 NPDGP NCRT SERKAN 0 LIDL 0 N ANSDISC 0 Y N N N N N N 0
0 N 0 1 0 1 N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
INAP Origination Attempt TDP: no subscribed trigger.
TABLE NCOS
SERKAN 0 0 0 $ ( XLAS NETXLA1 NETXLA1 NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,
AND DIGCOL
SERKAN NXLA NETXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME NETXLA1
TUPLE NOT FOUND
Default from table XLANAME:
NETXLA1
      (NET N Y 0 N NDGT N Y DOD N 2 102_NPRT_1 NLCA_NILLA_1 NONE $) $ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
2 IBN NONE NT 0 0 NILSFC 4 PX NETXLA1 NIL 00 102_NPRT_1 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
NETXLA1 DFLT FEATINFO VALIDATE ( SUBSCRN ( GENERAL N N N N)$) ( CLISERV
METERING)$ 0 1 20 PX NETXLA NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7835479
TABLE PXCODE
TUPLE NOT FOUND
DEFAULT FROM HEAD TABLE USED
```

PLEASE ENTER CLI DIGITS:

>1027835480

TABLE CLISERV

. METERING 1 (SERVSCRN )\$

TABLE DNSCRN

. 1027835480 (NETAOCN 30) (CLISERV 1) \$

TABLE CLISRVPF

. 1 (METERING \$ )\$

. Matched on METERING

. Service screening succeeded

TABLE PXHEAD

NETXLA SDFLT NODFOP NOCON F

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:

7835479

TABLE PXCODE

NETXLA 783 783 CONT ( PF 3) ( MM 7 7) ( CLASS LCL) ( XLT OFC OFC783) ( LNET  
LOC) ( MZONE 4)\$

TABLE OFCHEAD

OFC783 DFLT TRMT ( OFC VACT)\$ NODFOP NOCON STD

THE DIGITS USED TO INDEX THE NEXT TABLE ARE:

5479

TABLE OFCCODE

OFC783 5 5 RTE ( DEST 1)\$

TABLE: OFCRTE

KEY: OFC783 1

. T OFRT 783

. . TABLE OFRT

. . 783 DN 102 783 4

. . . TABLE TOFCNAME

. . . 102 783 \$

. . . TABLE DNINV

. . . 102 783 5479 L HOST 03 0 00 09

TABLE DNFEAT

TUPLE NOT FOUND

. . . TABLE DNATTRS

. . . TUPLE NOT FOUND

. . . TABLE DNGRPS

. . . TUPLE NOT FOUND

. . EXIT TABLE OFRT

EXIT TABLE OFCRTE

```
INAP Info Analyzed TDP:  no subscribed trigger.
INAP Termination Attempt TDP:  no subscribed trigger.
TABLE MTRMOG
MDI4 MOTS_2 $
TABLE MTRLNET
LOC
TABLE MTRMOTS
MOTS_2 LOC 4 7
TABLE MTRNETIF
TUPLE NOT FOUND
TABLE MTRMOTS
MOTS_2 LOC 4 7
TABLE MTRNAMES
TUPLE NOT FOUND
TABLE TODHEAD
LOC MTR LOC 0 (NORMAL) (SATDAY) (SUNDAY) $
TABLE DAYOYEAR
TUPLE NOT FOUND
TABLE DAYOWEEK
LOC MON NORMAL
TABLE TIMEODAY
TUPLE NOT FOUND
WARNING: TIMEODAY datafill missing
The default TNT in table TODHEAD will be used
TABLE MTRTTS
LOC 7 N 15 16 $ $ $ $ $ $ $ $
TABLE MTRTARIF
15 SEC N 1 1 1 1 1 1 1 0 0 1 1 1

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

## DIGIT TRANSLATION ROUTES

```
1 LINE                1027835479          ST
```

TREATMENT ROUTES. TREATMENT IS: GNCT

1 OFL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

## Backward Charging Message Formats

### ITX-Call Charge Allocation Message

#### ITX message fields

| Field                         | value                                                                                                        | no. bits |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|----------|
| Message Header Code           | #40                                                                                                          | 8        |
| Call Charge Allocation Domain | <i>Number of call charges to be allocated to the subscriber's counter when the message is received.</i>      | 8        |
| Message Number                | <i>Number of call charge allocation message sent for a given call (the value 0 is not used as a number.)</i> | 8        |

### TXA-Call Charge Acknowledgement Message

#### TXA message fields

| Field               | value | no. bits |
|---------------------|-------|----------|
| Message Header Code | #80   | 8        |

### CHT-Change of Charge Rate Message

#### CHT message fields

| Field | value | no. bits |
|-------|-------|----------|
|-------|-------|----------|

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Message Header Code</b>  | #30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8 |
| <b>Message Indicators</b>   | <p><b>bit A: Next Charge rate factor indicator</b><br/> 0: Next Charge rate factor field missing<br/> 1: Next Charge rate factor field present</p> <p><b>bits B to D: For future use (set to '000').</b></p>                                                                                                                                                                                                                                                                                                                           | 4 |
| <b>Call Rate Indicators</b> | <p><b>bits DCBA:</b><br/> 0000: Call charge coefficient 0:Charge rate independent of duration<br/> 0001: Call charge coefficient I(reserved)<br/> 0010: Call charge coefficient II(0.1 second)<br/> 0011: Call charge coefficient III(0.2 seconds)<br/> 0100: Call charge coefficient IV(0.5 seconds)<br/> 0101: Call charge coefficient V(1 second)<br/> 0110: Call charge coefficient VI(2 seconds)<br/> 0111: Call charge coefficient VI(4 seconds)<br/> 1000<br/> : Call charge coefficients VIII to XV (future use)<br/> 1111</p> | 4 |
| <b>Charge Rate Factor</b>   | Number from 1 to 255 which, when multiplied by the call charge coefficient of the charge rate indicators, gives the call charging period (in seconds) for charging for the call.                                                                                                                                                                                                                                                                                                                                                       | 8 |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Time Indicator</b> | <p><i>This indicator gives the time at which the next change of charge rate will take place.</i></p> <p><b>bit A:</b> <i>For future use (set to '0').</i></p> <p><b>bits HGFEDCB:</b></p> <p><i>0000000: Immediate change of charge rate</i></p> <p><i>0000001: 00 hours 15</i></p> <p><i>0000010: 00 hours 30</i></p> <p><i>0000011: 00 hours 45</i></p> <p><i>0000100: 01 hours 00</i></p> <p><i>0000101: 01 hours 15</i></p> <p><i>0000110: 01 hours 30</i></p> <p><i>.</i></p> <p><i>.</i></p> <p><i>.</i></p> <p><i>1011111: 23 hours 45</i></p> <p><i>1100000: 24 hours 00</i></p> <p><i>1100001</i></p> <p><i>For future use</i></p> <p><i>1111111</i></p> | 8 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|

### TAX-Call Charge Message

#### TAX message fields

| Field               | value | no. bits |
|---------------------|-------|----------|
| Message Header Code | #24   | 8        |

|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Message Indicators</b>                                            | <b>bit A: Current Charge Rate Indicator</b><br>0: Call charge quantum (A) and charge rate indicators (A) fields missing<br>1: Call charge quantum (A) and charge rate indicators (A) fields present<br><b>bit B: Current Charge Rate Factor Indicator</b><br>0: Charge rate factor (A) field missing<br>1: Charge rate factor (A) field present<br><b>bit C: Next Charge Rate Indicator</b><br>0: Call charge quantum (B) and charge rate indicator (B) fields missing<br>1: Call charge quantum (B) and charge rate indicator (B) fields present<br><b>bit D: Next Charge Rate Factor Indicator</b><br>0: Charge rate factor (B) field missing<br>1: Charge rate factor (B) field present<br><b>bit E to H: For future use (set to '0000')</b> | 8 |
| <b>Call Charge Quantum</b>                                           | Number (from 0 to 15) of Telecom units to be recorded when the called subscriber answers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4 |
| <b>Charge rate indicators, charge rate factor and time indicator</b> | The values of these fields are same as for the CHT message in the section 2.2.5.3 ,Table 4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |

## Configuration for A00002101

### Hardware and Software Requirements

This feature is supported only on SX05 DTCO/DTCO2 processor.

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

### Upgrade Impact

N/A



## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| TABLE TRKOPTS  | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

#### Name: TRKOPTS

Trunk Options Table

#### Functional description

Table TRKOPTS is used to assign a trunk option which is supported for a certain trunk type.

#### Usage sequence and implications (CM Only)

No change due to this feature.

#### Size

No change due to this feature.

#### Fields/OIDs

Below you can find the field information related to the new option, TELETAXE\_ITX\_SIG, in the table TRKOPTS.

#### Table field descriptions

| Field   | New or Changed | Subfield or refinement        | Entry                     | Explanation and action                                                                  |
|---------|----------------|-------------------------------|---------------------------|-----------------------------------------------------------------------------------------|
| OPTKEY  | Changed        | Multiple with CLLI and OPTION | CLLI and TELETAXE_ITX_SIG | TELETAXE_ITX_SIG is datafilled with CLLI to which assigned this option at OPTKEY field. |
| OPTINFO | Changed        | OPTION                        | TELETAXE_ITX_SIG          | TELETAXE_ITX_SIG is datafilled at OPTION field after entry of the OPTKEY field.         |

#### Datafill example

The following example shows sample datafill for table TRKOPTS.

TABLE: TRKOPTS  
TOP  
OPTKEY OPTINFO  
-----

2WFTUPAB TELETAXE\_ITX\_SIG TELETAXE\_ITX\_SIG

### New Error Messages

Below you can find the error messages generated during making datafill verification related to the option TELETAXE\_ITX\_SIG.

**"TELETAXE option not supported for the ISUP variant assigned to this trunk group in table TRKSGRP.  
Error reported by option TELETAXE\_ITX\_SIG with VPROC operation defined in module FTUPDEF."**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to an ETSI ISUP trunk of which variant is other than France.

**"TELETAXE option not supported for the signalling data selector assigned to this trunk group in table TRKSGRP.  
Error reported by option TELETAXE\_ITX\_SIG with VPROC operation defined in module FTUPDEF."**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to a CAS trunk.

**"TELETAXE option is supported only on IBN incoming and two-way trunk types.  
Error reported by option TELETAXE\_ITX\_SIG with VPROC operation defined in module FTUPDEF."**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to an OG SSUTR2 trunk or a PRI trunk.

**"OPTIONS are not the same in key and optinfo fields"**

Generated when the operator tries to assign an option other than TELETAXE\_ITX\_SIG to a trunk datafilled with TELETAXE\_ITX\_SIG at OPTKEY field of the table TRKOPTS.

**"TELETAXE\_NOSIG option previously assigned to this trunk."**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to an IC/2W SSUTR2 trunk to which previously TELETAXE\_NOSIG assigned.

**"TELETAXE\_ITX\_SIG option previously assigned to this trunk."**

Generated when the operator tries to assign TELETAXE\_NOSIG option to an IC/2W SSUTR2 trunk to which previously TELETAXE\_ITX\_SIG assigned.

**"SSUTR2\_TAX\_GEN option previously assigned to this trunk."**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to an IC/2W SSUTR2 trunk to which previously SSUTR2\_TAX\_GEN assigned.

**"TELETAXE\_ITX\_SIG option previously assigned to this trunk."**

Generated when the operator tries to assign SSUTR2\_TAX\_GEN option to an IC/2W SSUTR2 trunk to which previously TELETAXE\_ITX\_SIG assigned.

**"WARNING - the peripheral must be equipped with an SX05 processor for this parameter to be functional"**

Generated when the operator tries to assign TELETAXE\_ITX\_SIG option to an IC/2W SSUTR2 trunk which is datafilled on peripheral is not equipped with an SX05 processor.

**Table release history update**

N/A.

**Supplementary information**

None.

**Translation verification other tools**

N/A.

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

No changes due to this feature. Existing SOC options for backward charging functionality are used.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

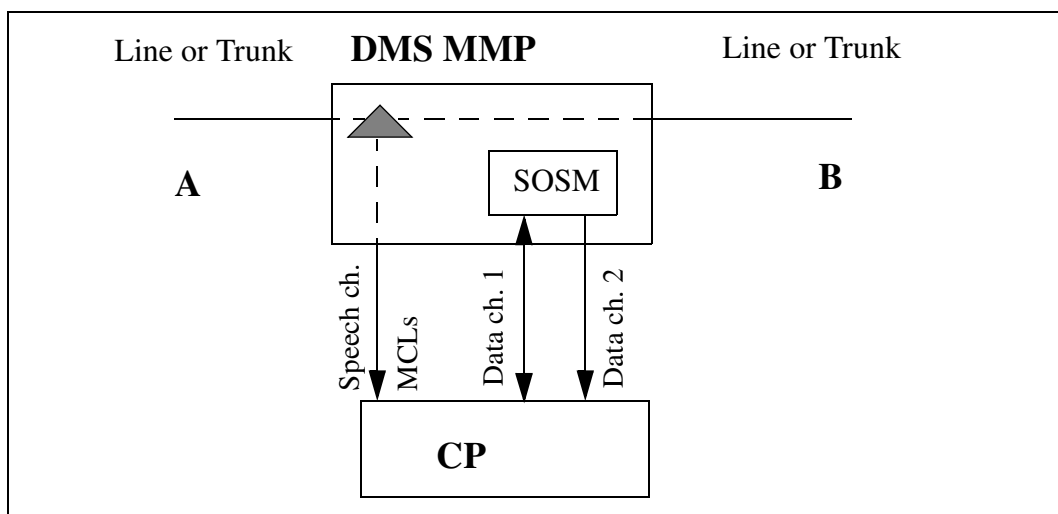
N/A.

**Configuration Walkthrough**

N/A.

***Product = World Trade*****A00002173 -- System of Operative-Searching Measures (SOSM) - X25 Messaging Interface & Speech Connection (Succession on DMS)*****Functional Description***

This feature implements supervision of outgoing/incoming calls from/to certain observed subscribers in the Russian telephone network.

**Functional Overview****Control Point (CP) - SOSM & DMS MMP Connection**

With this activity, voice information exchange between two parties, A and B in figure "Control Point (CP) - SOSM & DMS MMP Connection" on page 1289, is transmitted to CP over speech channel. Data channel 1 (X.25 protocol) is used for CP to SOSM control commands and SOSM to CP messages. Data channel 2 (X.25 protocol) is used for transmission of information messages from SOSM to CP about the supervised connections.

This feature will be available only for the markets where SOC SOSM0001 is ON. Please refer to Section “Software Optionality Control (SOC)” on page 1384.

## Background Information

This section provides information on other DMS MMP systems used by this feature.

### DMS MMP - MPC system

On DMS MMP, X.25 protocol support is implemented in the Multi-Protocol Controller (MPC) system. The system uses either an NT1X89 card on an Input-Output Controller (IOC) shelf or IOM card (NTFX30AA) on an ISME or CISM shelf. MPC system must be installed and configured in the office to allow SOSM system to communicate with the Control Point via X.25 links.

Each MPC card is equipped with three links (1 through 3). Each port can be sub-divided into channels. The datafill of the MPC card will determine the configuration of each link. When a link is configured with only one channel, the entire bandwidth of the link is available to that channel.

SOSM system uses links at the minimum 9600 bps. Both channel 1 and 2 of SOSM data interface can be provided on one MPC card, via links 2 and 3.

For datafill instructions of MPC system please refer to section “Provisioning” on page 1385.

Complete information regarding the X.25 and MPC system is available in “297-8991-500 Maintenance and Operations Manual”.

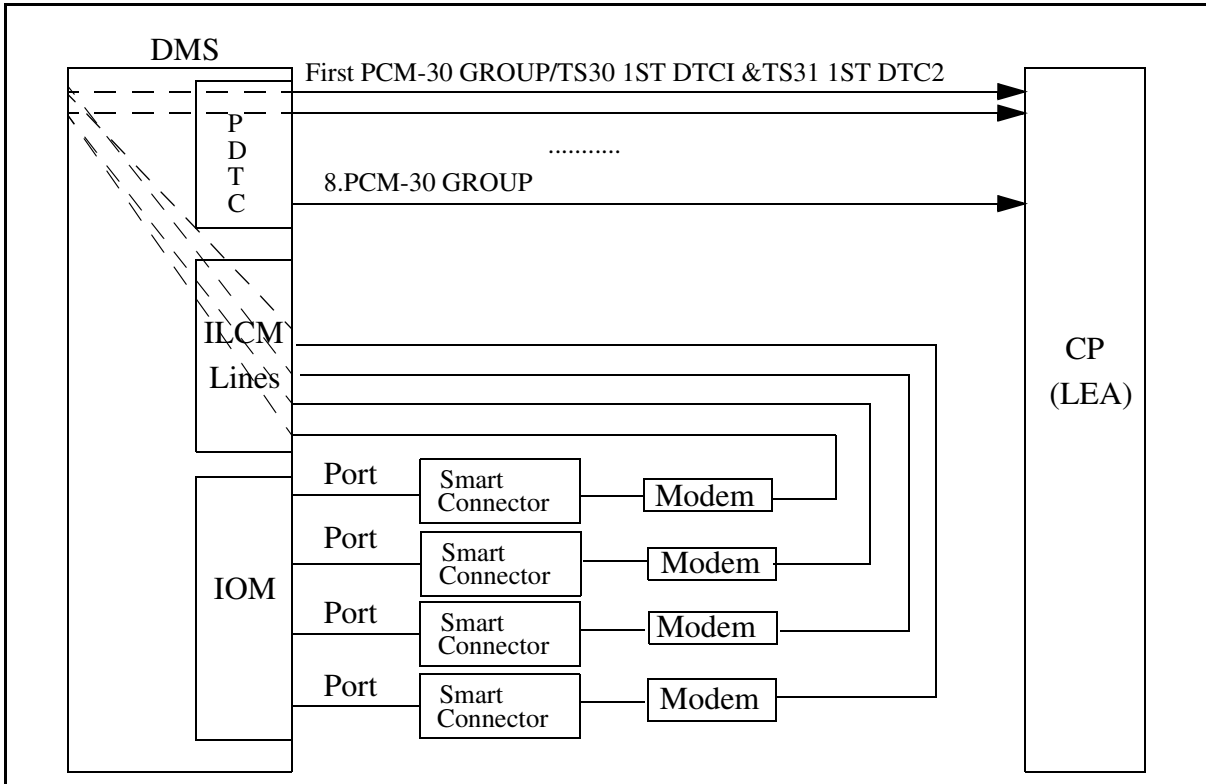
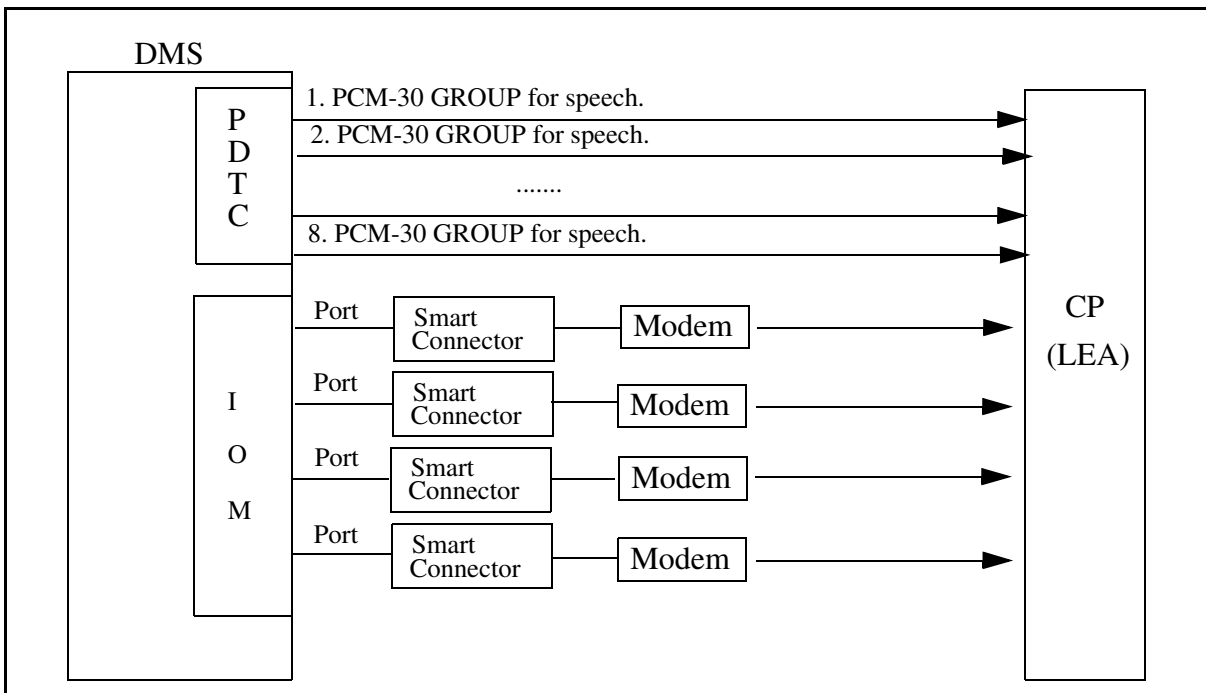
### SOSM monitoring hardware

SOSM system uses two types of hardware for speech path monitoring. When a call is under “**combined**” surveillance, the speech path information from both parties is transmitted to the CP in a single channel. When “**separate**” monitoring is used, each party’s speech path information is transmitted over its own channel.

Combined monitoring makes use of one Monitoring Connecting Line (MCL) and one Three-way Conference bridge.

Separate monitoring makes use of two Monitoring Connecting Lines, one per party.

**Note:** By design, analog line cards contain a bridge which causes an echo on the backward speech path. If a party in a monitored call is of an analog line card, the party’s MCL will contain a combination of his transmit and receive signals. The transmit signal predominates the other by approximately 20db.

**First Variant of connection from DMS to CP via PCM-30****Second Variant of connection from DMS to CP via PCM-30**

### MCL hardware

Monitoring Connecting Lines (MCL) - used by SOSM to transmit speech path information - are implemented by using Pulse Code Modulation 30 (PCM-30) trunks provisioned on a Digital Trunk Controller (DTC).

The system uses 8 trunk groups, and each group contains 28 time slots or channels available for speech path information. Each of these channels constitutes an MCL. Time slots 0, 16, 30 and 31 are not used by the DMS MMP - SOSM.

New trunk groups and members dedicated to the SOSM system must be provisioned in the office to allow the SOSM to transmit information to the CP.

For further information on provisioning SOSM trunks, please refer to section "Provisioning" on page 1385.

For information on Digital Trunk Controllers please refer to "297-1001-592 DMS-100 Family Peripheral Modules Maintenance Guide".

### Three way conference ports

When party A and B are to be monitored jointly, a three way conference bridge is used to connect A, B and the MCL onto one speech path. Three way conference ports are installed in the office for general use by multi-party calls.

Dedicated three way ports should be allocated for SOSM system to ensure proper operation of the SOSM system, and to minimize the impact of SOSM on the normal operations of the office.

Number of conference ports must be equal to the maximum number of simultaneous monitored calls. For example, 168 conference ports must be installed to be able to transmit call contents of 168 jointly monitored calls.

**Caution:** The SOSM system uses conference ports from a common pool in the DMS MMP. If **all** ports are used by SOSM, normal 3-way or 6-way calls will be denied. Similarly, if **all** ports are used by 3-way or 6-way calls, SOSM monitored calls will be unable to obtain an MCL connection.

For information on provisioning three way conference ports for SOSM, please refer to section "Provisioning" on page 1385.

Complete information regarding conference port circuits is available in "297-8991-500 Maintenance and Operations Manual".



## Feature Description

### General System Description

**R-1      Status: C**

SOSM system consists of hardware and software used to provide communication with the CP and transmit speech information from observed calls.

**R-2      Status: PC<sup>2</sup>**

The impact of SOSM system on normal exchange operations and quality of service are kept to a minimum.

**R-3      Status: C**

SOSM system provides the following capabilities:

- a. Supervision of all Outgoing (OG)/ Incoming (IC) calls from/to certain observed subscribers of an exchange, supervision of local, intrazonal, toll and international calls.
- b. Supervision of Outgoing (OG) local, intrazonal, toll and international calls to pre-determined numbers of telephone network originating from any subscriber of the exchange.
- c. Supervision of calls providing subscriber services; changing call direction or numbering information, and other services such as conference calls.
- d. Provide information -about subscriber categories and their subscribed services- to CP when requested.
- e. On redirected calls such as Call Forward Do Not Answer (CFD) or Call Forward Busy (CFB), provide supervision of the subscriber that originated the service as well as the subscriber to which calls are forwarded.

### Interworking between SOSM-DMS MMP and CP

**R-4      Status: C**

The following items must be provisioned in the exchange to allow interaction between SOSM system and Control Point:

- a. Trunks for transmission of speech information to CP, either separately for each party or combined (A & B party on one speech channel).
- b. Data transmission channel between CP and exchange for control commands via X.25 network protocol

---

2. Specification requires no impact, which is not possible to achieve.

- c. Data transmission channel between CP and exchange for transmission of call information via X.25 network protocol

**R-5      Status: C**

For any monitored call (statistical or complete) the following call phases are reported to the CP:

- a. Reception of the called party number
- b. Called party answer
- c. Call release
- d. Service usage

**R-6      Status: C**

For each call phase of a supervised call, the appropriate message is sent to the CP via data channel 2.

**R-7      Status: C**

Information about monitored calls is transmitted in real time.

**R-8      Status: C**

The communication link for transmitting speech path information is setup in parallel with the supervised call.

**Organization of supervision**

**R-9      Status: C**

The telephone numbers of present exchange and network supervised subscribers are specified by the CP via appropriate commands and stored on the DMS MMP.

**R-10      Status: C**

The maximum number of supervised subscribers on present exchange is 1024.

**R-11      Status: C**

The maximum number of network supervised subscribers is 1024.

**R-12      Status: C**

The number of trunks (MCLs) for call content transmission is provisioned as follows. The values given in Table , “SOSM capacity.” are valid for all DMS MMP exchanges of all sizes.

**SOSM capacity**

| <b>Max. Number of supervised subscribers</b>   | <b>Max. No. of simultaneous supervised calls</b> | <b>Max. No. of Channels (MCLs)</b> | <b>Number of PCM trunk groups</b> |
|------------------------------------------------|--------------------------------------------------|------------------------------------|-----------------------------------|
| 1024 (present exchange)<br>+<br>1024 (network) | 168                                              | 224                                | 8                                 |

**R-13 Status: C**

Supervision category is assigned to a supervised subscriber as follows:

- a. Full supervision
- b. Statistical supervision

**R-14 Status: C**

Under full supervision, data about the supervised call and information about call phases is transmitted to the CP in real time, as well as call content. Call content is transmitted to CP either over separate channels, or through a single channel by the use of a conference port.

**R-15 Status: C**

Under statistical supervision call content is not transmitted to CP. Call data and information regarding call phases are sent to the CP in real-time.

**R-16 Status: C**

When both parties in a call are monitored subscribers, a unique call number is assigned to each, and call monitoring is done as per each subscriber's information.

**R-17 Status: C**

The supervision category may be changed during an active call (i.e. statistically monitored call may be turned to complete via command from CP).

**R-18 Status: C**

Adding or removing subscriber from Supervised Subscribers Database is done via commands from CP.

**R-19 Status: C**

The time interval between the reception and execution of add/change supervised subscribers' data commands does not exceed 30 seconds.

**R-20 Status: C**

Access of supervised subscribers to previously assigned features is never restricted.

**R-21 Status: C**

Assignment of new services does not prevent the supervision of a subscriber.

**R-22 Status: C**

The response time of the SOSM system, from the time an event is registered to the time action is taken, does not exceed 200 ms.

**Supervision methods****R-23 Status: C<sup>3</sup>**

The calling subscriber number identification should be requested if not present. ANI request should be given before the answer phase.

**R-24 Status: NA**

The electrical parameters of transmitted and received frequency signal conform to requirements for ANI signalling in the network.

**Operational testing****R-25 Status: C**

SOSM system hardware and software functional testing is carried out by commands from CP without interrupting system operations.

**R-26 Status: C**

Information about any malfunctions affecting operations of the system is transmitted to the CP.

**System Security****R-27 Status: C**

Unauthorized access to the SOSM system is prevented.

**R-28 Status: C**

Unauthorized intervention with SOSM operational process and SOSM-CP interworking is prevented.

**R-29 Status: C**

Any unauthorized attempt to access or intervene with the SOSM system is reported to the CP.

**R-30 Status: C**

No SOSM operations or activity is recorded into DMS MMP system logs.

---

3. SOSM system does not request ANI independently. If ANI is required, the appropriate office configuration must be performed. (For example in ISUP-line interworkings, proper provisioning should exist in ISUPSVC table for the corresponding ISUP trunk.)

## System initialization and restarts

### **R-31      Status:   C**

In the case of emergency service disruptions and subsequent restart of the exchange, SOSM data is not restored, and the CP is informed of the event.

### **R-32      Status:   C**

Upon an exchange restart, SOSM is stopped and the appropriate message is sent to the CP.

### **R-33      Status:   C**

SOSM system initialization is included as a part of the exchange restart procedures. SOSM restart can be initiated by command from CP without disruption to exchange operations.

### **R-34      Status:   C**

Upon software upgrades from MMP to MMP, SOSM is stopped and an appropriate message is sent to CP. All dynamic data about MCLs and monitoring orders are cleared.

SOSM static data (data in SOSMMPC, SOSMTRK and SOSMPARM) is restored.

### **R-35      Status:   NA**

Acceptance of the SOSM functions will be agreed with the customer.

## SOSM and CP Interface

### Speech path information

### **R-36      Status:   C**

Call content is transmitted to CP via Monitoring Connecting Lines (MCL). Commands and Information messages are transmitted via X.25 links.

### **R-37      Status:   C**

MCLs are digital trunks provisioned for use only by the SOSM system, as shown in “SOSM capacity” on page 1295.

### **R-38      Status:   C**

The number of PCM groups can be from 1 to a maximum value as defined in “SOSM capacity” on page 1295.

### **R-39      Status:   C**

Digital trunks for speech path monitoring are PCM-30 trunks with transmission rate of 2048 Mbits/s as per ITU-T Recommendation G.732 with time slots of 64 kbps.

**R-40      Status:   C**

Time Slots (TS) 1 -15 and 17-29 are used for speech path information. TS 16 is not used by CP equipment.

**X.25 Communications****R-41      Status:   NA**

There are two acceptable variants for the X.25 communications interface. DMS MMP SOSM system supports both.

**R-42      Status:   C**

Variant 1: TS 30-31 of the zero PCM-30 group are used for data transmission channels 1 and 2 respectively. For other PCM-30 groups, TS 30-31 are reserved for redundancy in case group zero is out of service for any reason.

**R-43      Status:   C**

TS 30 is used for transmitting command from CP to SOSM, and responses to commands from SOSM to CP (Channel 1).

**R-44      Status:   C**

TS 31 is used for transmission of call phase information of monitored calls.

**R-45      Status:   C**

Variant 2: data transmission channels are formed of physical pairs of telephone cables, 0.7 mm in diameter with distance of up to 16 Km.

**R-46      Status:   C**

Information interchange over data channels is performed via modems with 2 or 4 wire terminations.

**R-47      Status:   C**

Information is transmitted in full duplex mode at a bit rate no less than 9600 bps.

**R-48      Status:   C**

Data Transmission Channel (DTC) provides bit error rate of no more than  $10^{-5}$  and no more than  $10^{-3}$  white noise impact within the frequency band 0.3 to 3.4 KHz and SNR +12dB.

**R-49      Status:   C**

Modem parameters and type should meet ITU-T recommendation for Data Transmission Equipment.

**R-50      Status:   C**

DTCs' working order can be tested by the CP. If a DTC goes out of service during transmission, transmission is stopped and some of the un-transmitted data may be lost. Transmission begins again after the DTC is back in service.

**R-51 Status: C**

If secondary transmission links are available, when a trouble occurs on the channel in use, SOSM system automatically switches to the next available pair of channels.

**Information exchange protocol in data transmission channel****R-52 Status: C**

Data interchange protocol between SOSM and CP is done based on ITU-T Recommendation X.25.

**R-53 Status: C**

X.25 protocol contains the network, channel and physical layers. ITU-T V.24 interface is used for the physical layer.

**R-54 Status: C**

The communications protocol variable parameters setting for second and third layers is done in the appropriate DMS MMP tables.

**R-55 Status: C**

Values of the variable parameters will be agreed upon with the customer.

**Agent Interactions**

SOSM supports line-to-line, trunk-to-line and line-to-trunk calls only. Trunk-to-trunk calls at switches will not be monitored. The following items describe the type of SOSM call triggering when different agents are involved in a call:

- **Line - to - line:**

In IBN/BRI/EBSV5.2(IBN) to/from IBN/BRI/EBS/V5.2(IBN) calls, only IBN/V5.2(IBN) lines can be supervised subscribers.

Calling and called party DNs (Office code + DN Digits, excluding area code) are searched in the SOSM database. If either is found, the call will be monitored by SOSM system.

**The DN of the terminating line (Office code + DN Digits, excluding area code) will be searched into the database instead of dialled digits.**

- **Trunk (ISUP)-to-line (IBN/V5.2(IBN)):**

Presence of calling party number is NOT checked in SOSM database.

Called line DN (Office code + DN digits, excluding Area Code) is searched in SOSM Database, and if found, SOSM system monitors the call.

**The DN of the terminating line (Office code + DN Digits, excluding area code) will be searched into the database instead of dialled digits.**

- **Line (IBN/V5.2(IBN))-to-trunk (ISUP):**

Calling party number is searched in SOSM database, and if found, the call is monitored.

The dialled digits (WITH exit codes) are searched in the database, and if found, the call is monitored. For more information about exit codes, please refer to “Provisioning of SOSM specific parameters” on page 1394.

- **Trunk-to-trunk:**

No database searching is done since SOSM is designed for use at end offices.

- **Trunk (ISUP)-to-line (IBN/V5.2(IBN)) with call diversion to either line (IBN/V5.2 (IBN)) or trunk (ISUP):**

- Call diversion to trunk: The forwarded digits (taken from CFX table) is searched. If found, SOSM will monitor the call.

- Call diversion to line: The forwarded subscriber’s DN (Office code + DN digits, excluding Area Code) is searched in SOSM database, and if found, SOSM system monitors the call

- **Line (IBN/V5.2 (IBN))-to-line with call diversion to either trunk (ISUP) or line (IBN/V5.2 (IBN)):**

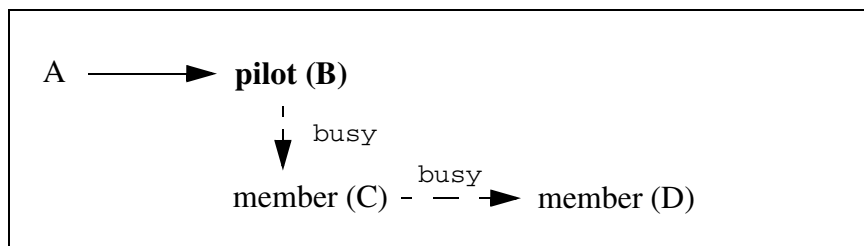
- Call diversion to trunk: The forwarded digits (taken from CFX table) are searched into the database. If found, SOSM will monitor the call.

- Call diversion to line: The forwarded subscriber’s DN (Office code + DN digits, excluding Area Code) is searched in SOSM database, and if found, SOSM system monitors the call.

- **Huntgroup:**

- *DNH configuration:* Since each member of huntgroup has its own DN, a member or the pilot can be assigned as target. Calls from the pilot/member are monitored if assigned as target.

If call is terminated to the pilot and the DN is busy, and the call is passed to another DN in the huntgroup, the call is monitored. Example scenario:





**Pilot is under surveillance**

|                             | <b>1.1</b> | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|------------|------------|
| Calling DN                  | A          | A          | A          |
| Called DN                   | B          | D          | D          |
| SOSM Call #                 | 1          | 1          | 1          |
| Attribute of choice         | 01         | 01         | 01         |
| Parameters of connection    | 1C         | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         | 00         |
| MCL #                       | 1          | 1          | 1          |
| Code of operation           | 00         | 00         | 05         |
| Feature Code                | FF         | FF         | FF         |

- *DLH/MLH configuration:* Since there is one DN, only the pilot DN can be assigned as target. Calls to/from any member or pilot of the huntgroup are monitored if the pilot DN of the huntgroup is target. Note that the pilot DN is sent to CP whether the call is originated or terminated by pilot/member.
- No usage message is sent to CP while hunting a member within the group.

Supervision of BRI and EBS lines are not supported by SOSM software.

CP-SOSM messaging and monitoring of calls that are originated from OR terminated to OR both, BRI/PRI/EBS agents are not guaranteed in SOSM. However, SOSM does not have any impact to normal call establishment/clearing. For example, if a supervised IBN line calls (or, is called by) a EBS line then call monitoring may not be established.

SOSM supports interactions with only CEPT features.

**Format of control commands and messages (Channel 1)**

Control commands and messages from CP to SOSM are transmitted using the data transmission link channel 1 (using direct connection or via modem).

The commands and response message (where applicable) are listed in the following table.

**Summary of Channel 1 commands and messages**

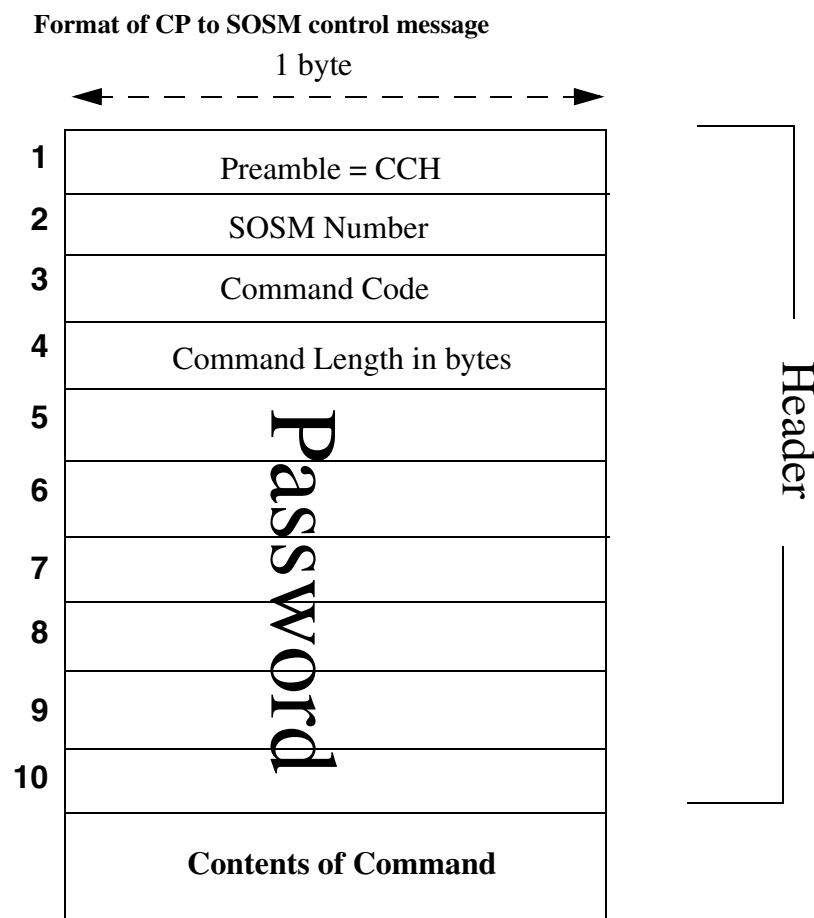
| <b>Command</b>                                                                       | <b>Response</b>                                                                                   | <b>Reference</b>                                                     |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Start of SOSM                                                                        | - Confirmation (received/executed)                                                                | section "Start of SOSM (Command N1)" on page 1307                    |
| Stop of SOSM                                                                         | - Confirmation (received/executed)                                                                | section "Stop of SOSM (Command N2)" on page 1308                     |
| Password setting                                                                     | - Confirmation (received/executed)                                                                | section "Password setting (Command N3)" on page 1310                 |
| Assignment of Monitoring Connecting Line (MCL) to group                              | - Confirmation (received/executed)                                                                | section "Assignment of MCL to group (Command N4)" on page 1311       |
| Setting of objects for monitoring                                                    | - Confirmation (received/executed)                                                                | section "Setting an object for monitoring (Command N5)" on page 1314 |
| Removal of the object of monitoring data.                                            | - Confirmation (received/executed)                                                                | section "Remove monitored object (Command N6)" on page 1323          |
| Connection to voice path                                                             | - Confirmation (received/executed)                                                                | section "Connect to voice path (Command N7)" on page 1326            |
| Clearing of Monitoring Connecting Line                                               | - Confirmation (received/executed)                                                                | section "Clearing of MCL (Command N8)" on page 1330                  |
| Excluding of Monitoring Connecting Line from group                                   | - Confirmation (received/executed)                                                                | section "Exclude MCL command (Command N9)" on page 1334              |
| Request for transmission of objects of monitoring data.                              | - Confirmation (received/executed),<br>- Data on objects of monitoring                            | section "Request object data (Command N10)" on page 1336             |
| Request for transmission of information about correspondence between MCLs and groups | - Confirmation (received/executed),<br>- Information about correspondence between MCLs and groups | section "Request MCL group information (Command N11)" on page 1339   |
| Request for transmission of the list of Supplementary Services (SS)                  | - Confirmation (received/executed),<br>- List of subscriber's supplementary services              | section "Request subscriber's SS list (Command N12)" on page 1342    |
| Interruption of messages sent upon the request for transmission of tables contents   | - Confirmation (received/executed)                                                                | section "Interrupt transmission command (Command N13)" on page 1344  |
| Testing of data transmission channels                                                | - Answering test message                                                                          | section "Testing DTC command (Command N14)" on page 1345             |
| Objects of monitoring parameters change                                              | - Confirmation (received/executed)                                                                | section "Change object of monitoring (Command N15)" on page 1346     |

| Command                                                                                                                         | Response                                                                                                                                        | Reference                                                               |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Request for transmission of information about correspondence between exchange incoming group's name and it's conditional number | - Confirmation (received/executed),<br>- Data about correspondence between conditional numbers of incoming groups and their real exchange names | section "Request incoming group information (Command N16)" on page 1348 |
| Request for exchange's SW version                                                                                               | - Confirmation (received/executed),<br>Version of exchange's software                                                                           | section "Request SW version command (Command N17)" on page 1349         |
|                                                                                                                                 | - Unauthorized access to the SOSM software                                                                                                      | section "Unauthorized access message (Msg.N6)" on page 1358             |
|                                                                                                                                 | - Failure                                                                                                                                       | section "Failure Message (Msg.N1)" on page 1351                         |
|                                                                                                                                 | - Exchange S/W restart.                                                                                                                         | section "Restart message (Msg.N2)" on page 1353                         |

### Format of CP to SOSM Control Messages

#### **R-56      Status: C**

The information field of control commands transmitted from CP to SOSM has the following format:



First byte is a preamble and has identical value for all commands.

Second byte specifies the SOSM number of the corresponding exchange where the message will be sent.

Third byte defines command code.

Fourth byte defines the length (quantity of bytes) of the command content.

Bytes from fifth to tenth contain SOSM password. The password prevents unauthorized access to the SOSM system. The commands are executed only if the password in the command header is valid.

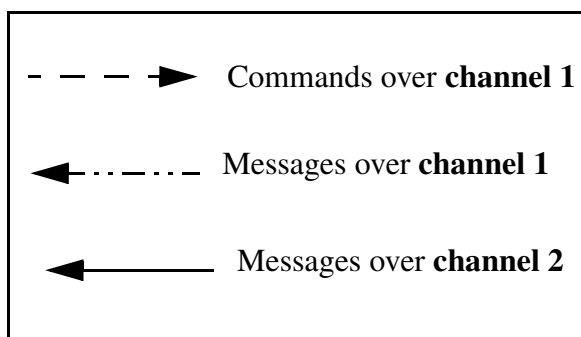
**Note:** Initial password is hard-coded by SOSM developers in the SOSM software and reported to the customer.

Command length and content is different for each command.

## CP to SOSM Command Processing

The following sections describe the interactions between the Control Point and the SOSM system. For each command or call phase, the actions taken are described in detail, as well as Message Sequence Charts (MSC). **This activity handles all scenarios within the tests given in section APPENDIX.**

The conventions used in the MSCs are as follows:



### Generic error handling

When a CP command is received, SOSM system first validates the command and then attempts to execute it.

If the command is properly validated a “confirmation of command reception” message is sent to the CP.

“code of command” field of the confirmation message contains the command code being handled, and the “attribute of command reception” field is set to **“command is received for execution - 00H”**.

If the command is properly executed, “confirmation of command execution” message is sent to the CP with “code of command” field including the code of the command being handled. The “attribute of command execution” field is set to **“command executed successfully- 00H”**.

### Command reception error handling

Validation of a command includes syntax checking of each and every parameter in the command, as well as combinations of parameters. Syntax checking is to ensure each parameter received is within the valid range and values. Combination checking ensures that all mandatory parameters within a given command are present.

On any received command, if the password received in command header is not valid, a negative acknowledgment is sent to CP in the form of a “confirmation of command reception” (No:7 NOK). The “Code of command” field is

populated with the code of the command that failed. The “attribute of command reception” field is populated with:

- “**invalid password character - 15H**” if the password includes unsupported characters.
- “**password mismatch -18H**” if the password does not match system password.

In cases where all characters of the received password are within the supported range, if the password does not match with the system password, “unauthorized access to SOSM”(No:6) message is sent to the CP after sending “confirmation of reception” (No:7 NOK). The “code of access field” in “unauthorized access to SOSM” message includes “**access with wrong password - 02H**”. The message also includes the time at which the access violation occurred in the format **dd:hh:mm:ss** (day, hour, minutes, seconds).

If a command fails validation, a negative acknowledgment is sent to CP in the form of a “confirmation of command reception”(No:7 NOK). The “Code of command” field is populated with the code of the command that failed. The “attribute of command reception” field is populated with an error code.

The following errors and corresponding codes are used for validation failures:

- Incorrect Preamble: When the preamble in the command does not match the preset system preamble (CCH), code “**incorrect preamble**” with value “**01H**” is set.
- Incorrect SOSM Number: When SOSM number in the command header does not match SOSM system number, code “**incorrect sosm number**” with value “**02H**” is set.
- When the command code does not match any of the command codes defined in the specification, code “**invalid message code**” with value “**03H**” is set.
- If the command length (including header) exceeds the maximum message length supported by the system (45 Bytes), code “**message too long**” with value “**04H**” is set.
- If the command length specified in the header does not match the pre-defined command length (as defined in the specification), code “**incorrect message length**” with value “**05H**” is set.
- If the command code is not within the range of supported CP commands as specified in this document, code “**unsupported command**” with value “**06H**” is set.
- If the password specified in the header includes a character which is outside of the printable ASCII range (20H to FFH), code “**invalid password character**” with value “**15H**” is set.

- If a command (except start SOSM) is received from CP while SOC SOSM0001 is in ON state, and SOSM system is inactive, code **“command out of sequence”** with value **“19H”** is set.
- If command is received during the DS dumping phase of image load of office or during TABXFR and persuade, **“dump restore in progress”** with value **“1BH”** is set.

Error codes specific to single commands are explained in more detail in the appropriate sections below. A complete list of command reception error codes is provided in “Command reception result codes” on page 1447.

If a command fails validation, a rejection message is sent and no further action will be taken by the SOSM system (i.e the command is ignored).

Any command received from CP is ignored while SOC SOSM0001 is IDLE. DMS MMP does not respond to CP messages in this state.

In PRESWACT step of ONP, SOSM is stopped. The commands received are rejected with the reason of **“dump restore in progress”** until SWACT is completed. When SWACT is completed, restart message is sent to CP (Control Point).

#### **Command execution error handling**

If command execution fails, a negative acknowledgment is sent to CP in the form of a “confirmation of command execution”. The “code of command” field is populated with the code of the command that failed to execute. The “attribute of command execution” field is populated with an appropriate error code.

For a complete list of error codes please refer to “Command execution result codes” on page 1448.

### **Start of SOSM (Command N1)**

#### **R-57      Status:    C**

Start of SOSM (command N1) is given by CP to initialize the SOSM system. The SOSM system validates the command, and activates SOSM.

The SOSM number provided in the command header is kept as the current SOSM number and is valid until the next system restart.

This command is expected to contain pre-defined SOSM Initial Password. The initial password begins to be valid again after:

- exchange’s failure with loss of data, associated with SOSM operation
- in case of SOSM software restart
- in case of total exchange restart.

The command format is shown in the following figure.

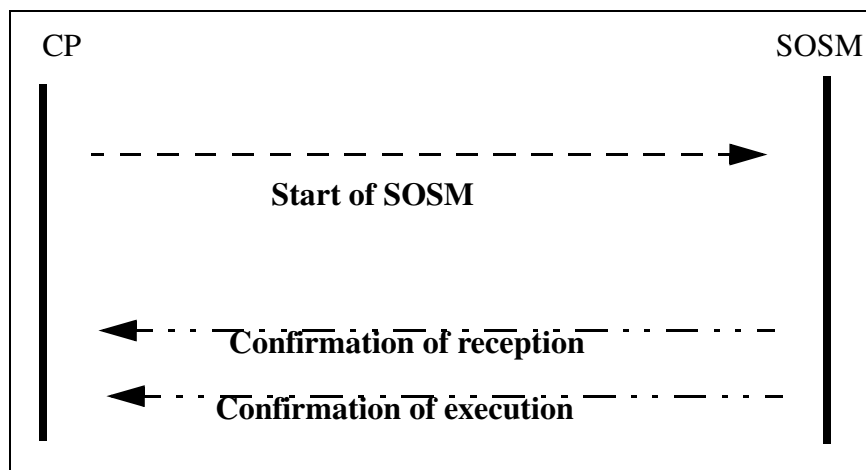
**Start of SOSM command**



*Code of Command*= 01H.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Start of SOSM scenario**



**Validation error checking:**

If “Start of SOSM” command is received when SOSM has already been activated, the command is rejected and “Confirmation of command reception” message is sent to CP. The “attribute of command execution” field is set to code **“command out of sequence”** with value **19H**.

**Execution error checking:**

If “Start of SOSM” command can not be executed due to technical problems, “Confirmation of command execution” message is sent to CP with the “attribute of command execution” field is set as **“technical\_problem - 66H”**.

**Stop of SOSM (Command N2)**

**R-58      Status: C**

“Stop of SOSM” (command N2) is given by CP to stop the SOSM system.



All data related to SOSM operation are deleted and the initial password, set by SOSM developers, is set as the valid password.

Monitoring of all active calls that are under surveillance is stopped, and the MCLs connected to those calls are disconnected, and all data in MCL and monitoring order databases is cleared.

***Note:** NO INFORMATION IS SENT TO CP about the disconnection of the MCLs, deactivation of monitoring or any further event in those calls during and after the execution of STOP SOSM command.*

The command format is shown in Figure “Stop of SOSM command”.

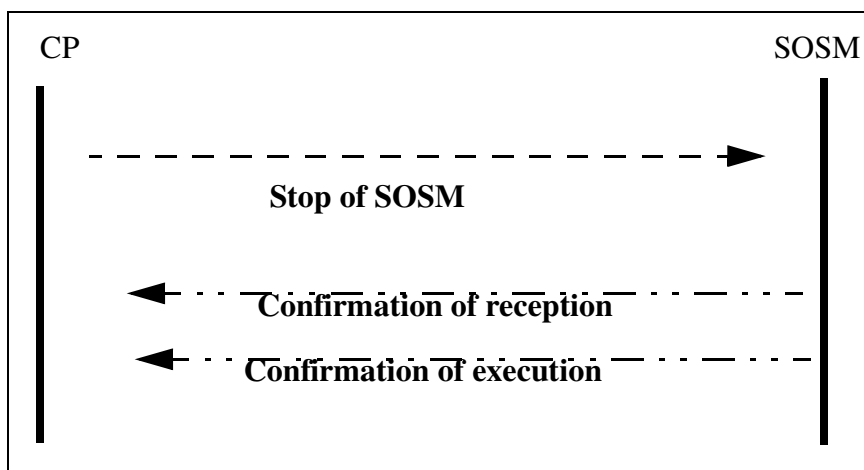
#### Stop of SOSM command



Code of Command = 02H

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

#### Stop of SOSM



#### Validation error checking:

If the SOSM system has not been started, the command is rejected and “Confirmation of command execution” message is sent to CP. The “attribute of command execution” field is set to code “**command out of sequence**” with value **19H**.

**Password setting (Command N3)****R-59      Status:    C**

Password Setting (command N3) is sent by CP to set the system password.

This command sets the new password for SOSM operation. The password specified in the “new password” field replaces the current SOSM system password. Any subsequent command must contain the new password.

After a system restart or restart of SOSM, the password is set back to initial system password.

The command format is shown in Figure “Password setting command”.

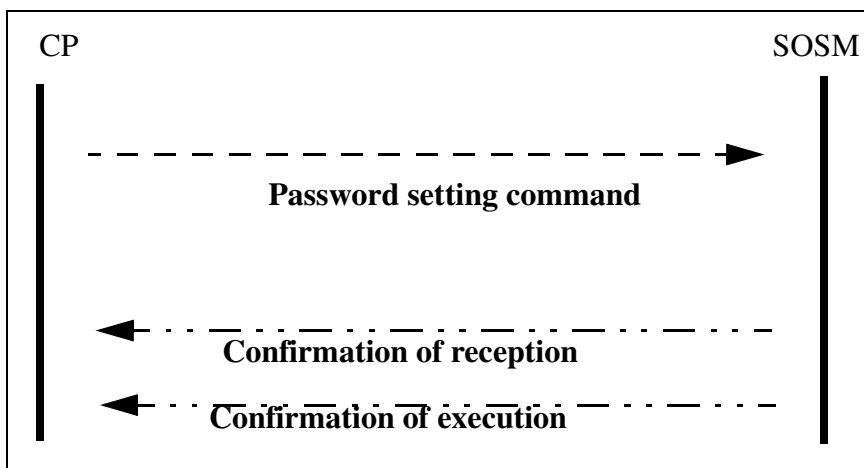
**Password setting command**

|   | Header       |
|---|--------------|
| 1 | New Password |
| 2 |              |
| 3 |              |
| 4 |              |
| 5 |              |
| 6 |              |

*Code of Command* = 03H

The “new password” parameter must be 6 bytes in length, each with a value within the ASCII printable character range (between **20H** to **FFH**).

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Password setting command****Validation error checking:**

If any of the following errors occur the command will be rejected. A “Confirmation of command reception” message is sent to CP. The “attribute of command reception” field is set as follows:

- If any of the new password bytes are outside of the valid PRINTABLE ASCII range of **20H** to **FFH**, code “**invalid password character**” is set with value “**15H**”.
- As in all other commands, password setting command must include a valid “current system password”, which most of the time would be the “initial system password”. Any mismatch will be handled as described in the password checking discussion in “Command reception error handling” on page 1305.

**Assignment of MCL to group (Command N4)****R-60 Status: C**

Assignment of Monitoring Line to Group (command N4) is sent by CP to create and configure MCL groups.

CP defines Monitoring Connecting Lines (MCLs) under a group number. The quantity of MCLs in a group can be from 1 up to the maximum quantity of MCLs between SOSM and CP.

Maximum quantity of MCL groups is also determined by the maximum number of MCLs between SOSM and CP.

The command format is shown in “Assignment of monitoring connecting line to group.” on page 1312.

**Assignment of monitoring connecting line to group.**

|   | Header           |
|---|------------------|
| 1 | MCL group number |
| 2 | MCL group type   |
| 3 | MCL-A number     |
| 4 | MCL-B number     |

*Code of Command* = 04H

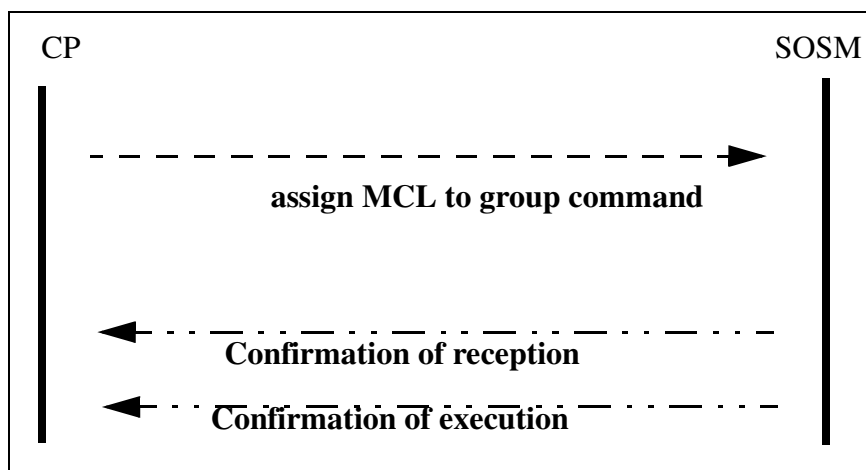
The most significant three bits (the most significant bit is on the left) of the MCL-A/B number specify the number of the primary PCM-30 group, and the remaining five bits specify the number of the PCM channel (Time Slot) within this primary PCM-30 group.

**MCL group type:**

01H: group for subscribers A and B joint monitoring

11H: group for separate monitoring

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Assign MCL to group command**

Requirements:

- Maximum number of MCL groups can not exceed the maximum number of MCLs
- An MCL can not exist in more than one group
- One group may contain MCLs of the same group type, mixed groups (separate and combined) of MCLs are not allowed.
- If Command N4 is received to add MCLs into a group of type “11H - group for separate monitoring”, MCLA and MCLB numbers received in the command must correspond to MCLs on the same PCM-30 group.

A new MCL can be added into the MCL database if the following criteria are met.

- MCL group number, MCLA/MCLB number(s) should be within the allowed ranges.
- Number of MCLs and number of MCL groups should remain within the allowed ranges upon execution of the received command.
- If the MCL group received in the message already exists, the group type in the message should match with the existing MCL group's type.
- MCL number(s) should not exist within any of the predefined MCL groups.
- If subject MCL group is for separate monitoring, MCLA and MCLB must be on the same PCM-30.

If the MCL group number does not exist, and the MCLs do not exist in any other group, a new group is created and the new MCLs are stored.

#### **Validation error checking:**

If any of the following errors occur, the command will be rejected. A “Confirmation of command reception” message is sent to CP. The “attribute of command reception” field is set as follows:

- If the MCL group number value is less than 1 or exceeds the Maximum Number of MCLs (currently 224), code “**invalid MCL group number**” is set with value “**08H**”.
- If the MCL group type field value is not one of 01H (combined) or 11H (separate), code “**invalid MCL group type**” is set with value “**09H**”.
- If in the MCL number parameter(s), least significant five bits (CL number) do not correspond to a number between 1 and 28, code “**invalid MCL number**” is set with value “**0AH**”.

#### **Execution error checking:**

If any of the following errors occur, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP. The “attribute of command execution” field is set as follows:

- If MCLA (or MCLB in separate monitoring category) already exists in the database, code **“duplicate MCL number”** is set with value **51H**.
- If in the MCL number parameter(s), most significant three bits do not correspond to a valid trunk group dedicated for SOSM usage, in other words, if the MCL number refers to a PCM-30 group which does not exist in table SOSMTRK, code **“missing PCM-30 group data”** with value **“50H”** is set.
- If the MCL group type is “joint monitoring” and MCL-B field is not either FFH or equal to MCL-A, code **“Invalid MCL B For Group”** is set with value **“5BH”**.
- If the MCL group type is “separate monitoring” and MCL-B is equal to MCL-A, code **“Invalid MCL B For Group”** is set with value **“5BH”**.
- If the MCL group type is “separate monitoring”, but MCL-A and MCL-B are not on the same primary PCM-30 group, code **“invalid MCL B for group”** is set with value **5BH**.
- If member\_id for MCL does not exist in table TRKMEM, code **“missing trkmem datafill”** with value **53H** is returned and command is rejected.
- If the MCL group to which the MCL is being added, does not match the MCL group type (separate or combined) previously defined for that group, code **“wrong mcl type for group”** with value **52H** is returned and command is rejected.
- If mcl database is being transferred during receiving the command, code **“mcl transfer in progress”** with value **64H** is returned and command is rejected.
- If any other error occurs, code **“invalid parameter”** with value **43H** is returned and command is rejected.

### Setting an object for monitoring (Command N5)

#### **R-61      Status: PC**

Setting of Objects for Monitoring (command N5) is sent from the CP to add a monitored subscriber to the database of observed objects.

This command is used to create an object to be supervised with certain properties. The data related to this object is written to the appropriate SOSM database.

The command format is shown in “Setting of objects for monitoring.” on page 1315.

**Setting of objects for monitoring.**

| Header                                       |                                              | Telephone number<br>of the monitored<br>subscriber |
|----------------------------------------------|----------------------------------------------|----------------------------------------------------|
| Conditional Number<br>of Object              |                                              |                                                    |
| Type of object                               |                                              |                                                    |
| Sign of telephone number                     |                                              |                                                    |
| Number of digits in telephone number         |                                              |                                                    |
| digit 2<br>digit 4<br><br>.<br>.<br>digit 18 | digit 1<br>digit 3<br><br>.<br>.<br>digit 17 |                                                    |
| Incoming group<br>conditional number         |                                              |                                                    |
| Monitoring category                          |                                              |                                                    |
| MCL group number                             |                                              |                                                    |
| Priority mark                                |                                              |                                                    |

*Code of Command* = 05H.

**Conditional number of object** is unique for each object and is assigned by CP to all objects being monitored. Its value can be within 0000H-FFFFEH for “Command N5 - Setting an object for monitoring”. The same object may not have several conditional numbers.

“Conditional number of object” parameter might be set as FFFFH in some other CP commands (Please refer to Section “Request object data (Command N10)” on page 1336.) and section “Clearing of MCL (Command N8)” on page 1330.

FFFFH is not a valid value for “Conditional number of object” in Command N5-setting a monitoring object, Command N6-removal of a monitoring object (section ), Command N7-connect to voice path (section ), and Command N15-change a monitoring object (section ). These commands will be rejected if “Conditional number of object” is received as FFFFH.

**Type of object** field has following values:

01H:subscriber of present exchange: This type of object has complete telephone number. Monitoring of only IBN agents are supported by SOSM.

02H: telephone network subscriber with complete telephone number;

5-7 digits for local network subscribers

7 digits for present zonal network subscribers

10 digits for other zone subscribers

up to 15 digits for another country’s subscribers

**SOSM triggers monitoring for these objects only in line-to-trunk calls where the specified network number is dialed.**

12H: telephone network subscriber with incomplete telephone number

Insufficient digits of incomplete numbers are filled by FH

**SOSM triggers monitoring for these objects only in line-to-trunk calls where the specified incomplete network number is dialed.**

Unsupported:

“03H: group of incoming connecting lines or channels;”

FFH: no value; this value is not accepted as a valid value in Command N5, and the command is rejected if FFH is received within **Type of object**.

FFH value is valid for “Type of Object” parameter only in Command N10. (Please refer to Section “ Request object data (Command N10)” on page 1336.).

***Note:** In the tables of supervised objects, complete and incomplete telephone numbers coinciding with appropriate first digits can not appear at the same time. After writing this object in the data base if another object with coinciding appropriate first digits (whether more generic or not) is received for recording to the database, it is rejected and this is reported to CP with an appropriate unsuccessful execution code. This is also valid for network complete numbers.*



*For example, if the database contains an object of type 12H (or 02H) with digits 216, and subsequently a new object of the type 12H (or 02H) with digits 216329 is wanted to be added, this new object is rejected. If another new object of type 12H (or 02H) and with digits 21 is wanted to be added, this object is also rejected. An object with digits 212 of these types will be accepted.*

**Sign of telephone number** field has following values:

01H: present exchange subscriber's telephone number.

02H: local telephone network subscriber's telephone number (local number).

03H: present zonal telephone network subscriber's telephone number (zonal number).

04H: another zonal telephone network subscriber's telephone number (toll number).

05H: another country subscriber's telephone number (international number).

06H: special services local communication inquiry, informational services telephone numbers or toll and international communication order and inquiry services numeration.

FFH: is used in case of monitoring by connecting lines group number or channels number.

Number of digits in telephone number gives the quantity of the complete digits in the "monitored subscriber's telephone number" field.

Monitored subscriber telephone number can be complete or incomplete. It can also be local communication special services and inquiry- informational services telephone numbers or toll and international communication order and inquiry services numeration.

**Note:** *According to LONIIS specification, National and international telephone numbers are given with indexes of outlet to urban, toll and international networks and these numbers are corresponding to information dialled by subscriber.*

*The DMS MMP SOSM expects exit codes in the telephone number. When checking a dialled number in the SOSM subscriber database, the exit codes are NOT removed before searching.*

*SOSM will not monitor a call FROM a network sosm subscriber, as per specification.*

**Unsupported:**

**Incoming group conditional number** DMS MMP does not support this parameter in Command N5, and rejects its all values, but FFFFH.

**Category of monitoring** defines whether the supervision is performed on a complete or statistical basis. In statistical monitoring a MCL is not connected to speech path where in the complete monitoring case supervised calls are transmitted to CP over the connected MCL.

01H: complete monitoring (joined monitoring).

11H: complete monitoring (separate monitoring).

02H: statistical monitoring.

**MCL group number** assigns a group of MCLs to a supervised object with complete category of monitoring. It takes the values 01H(1)-E0H (224) and is equal to FFH in case of statistical monitoring.

**Priority mark** is valid for the complete monitoring category and defines the priority class of the monitored object.

01H: priority object for monitoring.

02H: usual object for monitoring.

FFH: only for statistical monitoring.

“If a call under surveillance -due to a monitoring object with priority class of 01H- can not allocate a free MCL, since all MCLs in the group are busy, another MCL in this group which is used by any monitored call with priority class of 02H is released and connected to that call with 01H priority.” Figure , "Clear MCL On Priority" illustrates the messaging between SOSM and CP for this case.

## Clear MCL On Priority

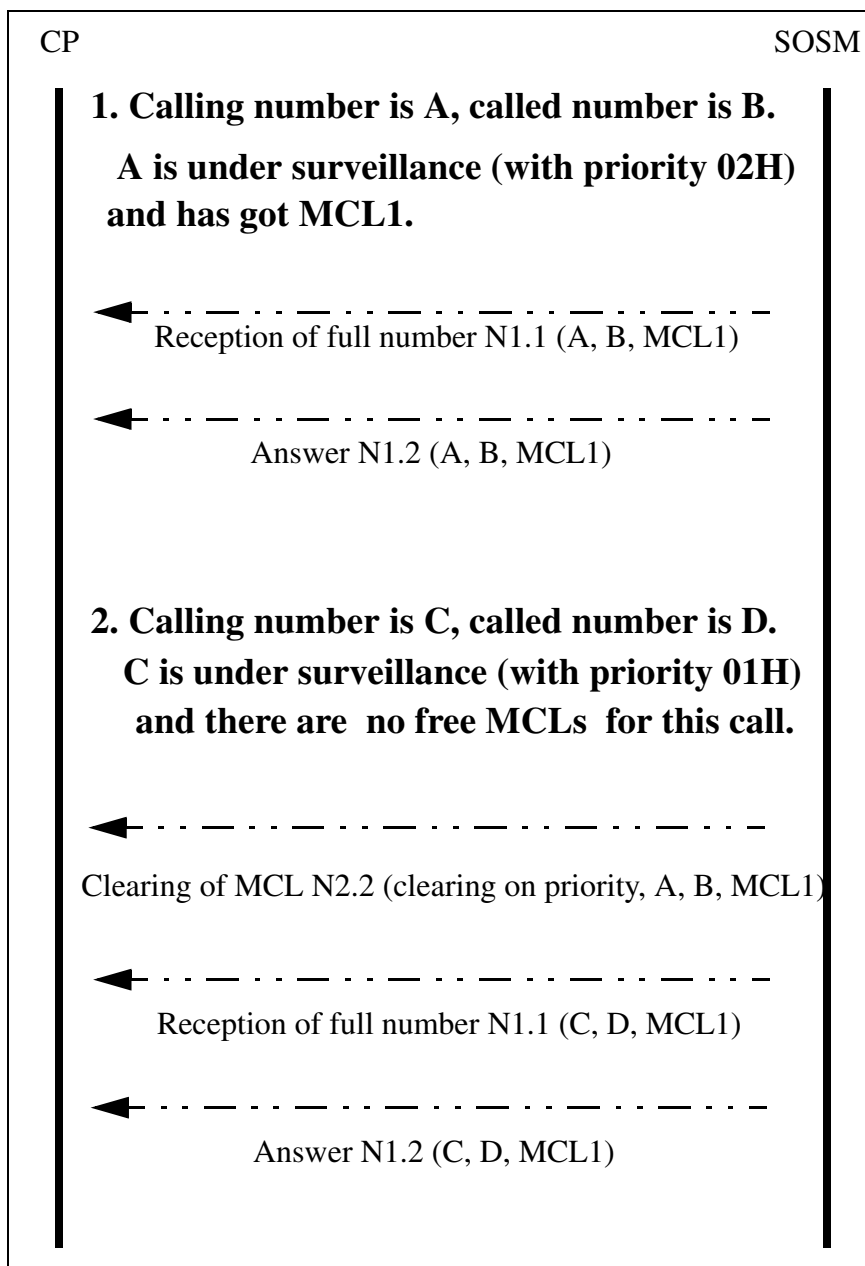
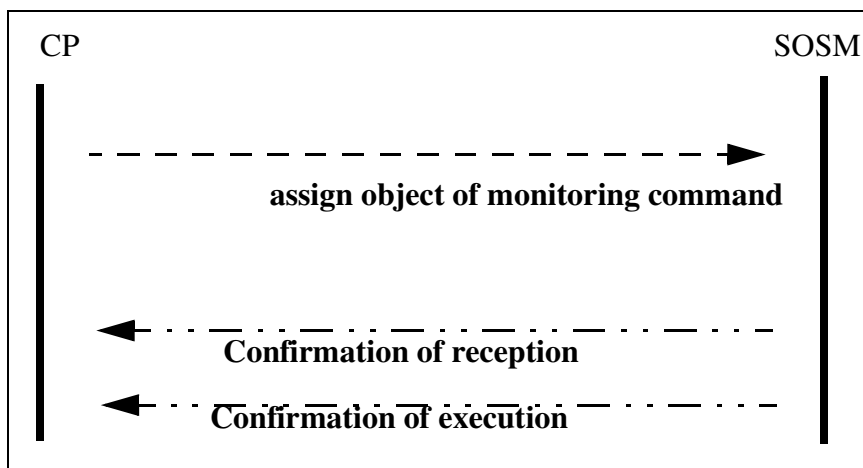


Figure , "Assign object of monitoring command" illustrates the messaging between SOSM and CP for handling this command.

**Assign object of monitoring command**

Those calls, matching criteria within the new monitoring object, and which are active when this command is received by SOSM, are not monitored. Monitoring of the corresponding subscribers takes place in their succeeding calls.

**Validation error checking:**

If any of the following errors exist, the command will be rejected. A "Confirmation of command reception" message is sent to CP. The "attribute of command reception" field is set as follows:

- if the "conditional number of object" is not within 0H-FFFEH, code **"invalid conditional number"** is set with value **"1AH"**
- if the "type of object" parameter is not one of {01H, 02H, 03H, 12H}, code **"invalid object type"** is set with value **"0BH"**.
- if the "sign of telephone number" parameter is not one of {01H - 06H}, code **"invalid sign of telephone number"** is set with value **"0CH"**.
- if the "number of digits" is less than one or greater than 18, code **"invalid number of digits"** is set with value **"12H"**.
- if the "category of monitoring" is not one of {01H, 02H, 11H}, code **"invalid category of monitoring"** is set with value **"0FH"**.
- if the "MCL group number" is not FFH or not in the range 01H- maximum number of MCLs, code **"invalid MCL group number"** is set with value **"08H"**.
- if the "priority mark" is not one of {01H, 02H, FFH}, code **"invalid priority code"** is set with value **"10H"**.
- if the "don digits" are not between 0-9, # (0EH) or \* (0DH), **"invalid digit"** is set with value **"11H"**

**Execution error checking:**

If any of the following errors occur, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP. The “attribute of command execution” field is set as follows:

- If the “conditional number of object” already exists in the database, code **“duplicate conditional number of object”** is set with value **42H**.
- If the “type of object” parameter is “incoming group of connecting lines” (03H), code **“unsupported parameter”** with value **5EH** is set, not for toll exchange.
- If the MCL group of the object is not found in the MCL database, code **“mcl info not found”** is set with value **4BH**.
- If “monitored subscriber telephone number” is non-unique, this implies that an object of this type with this telephone number already exists in the database. The “attribute of command execution” field is set to code **“non-unique object”** with code **44H**.
- If the “type of object” is “subscriber of present exchange”, and the specified telephone number does not exist in the exchange, the “attribute of command execution” field is set to code **“invalid dn for exchange”** with value **58H**.
- If the “type of object” is “subscriber of present exchange”, and if the specified telephone number does not correspond to an IBN or V5.2(IBN) agent, “attribute of command execution” field is set to code **“unsupported agent type”** with value **5AH**.
- If the maximum number of objects of the specified type is already provisioned in the exchange (i.e. there are 1024 network or 1024 present subscriber objects in the database), code **“maximum number of objects exceeded”** with value **4FH** is set.
- If the “category of monitoring” and the MCL group type do not match, code **“wrong mcl type for group”** with value **52H** is set.
- If the “category of monitoring” and the “priority mark” do not match, code **“priority code mismatch”** with value **5CH** is set.
- If the “number of digits” parameter does not match the actual number of digits in the “telephone number” parameter (actual number is determined by counting digits until an FFH is reached), code **“invalid number of digits”** is set with value **4DH**.

***Note:** “01H” and “02H” values of “priority mark” are valid for combined (01H) and separate (11H) monitoring. “FFH” value of “priority mark” is valid only for statistical monitoring (02H).*

- If the “type of object” and “sign of telephone number” do not form a valid combination, code **“type and sign mismatch”** is set with value **5DH**.

The following table list the valid combinations:

**Valid object type and sign of telephone number combinations**

| Object Type                                     | Sign of Telephone Number                                           |
|-------------------------------------------------|--------------------------------------------------------------------|
| Present Exchange (01H)                          | Present exchange subscriber (01H)<br>Special services number (06H) |
| Network subscriber with complete number (02H)   | All but “present exchange subscriber” (01H) or FFH                 |
| Network subscriber with incomplete number (12H) | All but “present exchange subscriber” (01H)                        |
| Group of incoming lines (03H) <sup>a</sup>      | FFH only, <b>Unsupported</b>                                       |

a. not supported in DMS MMP

- If “number of digits” is not valid for “type of object” and the “sign of telephone number”, code “**invalid number of digits**” is set with value “**4DH**”.

Valid number of digits for supported “type of object” and “sign of telephone number” combinations are given in Table , “Valid number of digits per object type and sign of telephone number.”.

**Valid number of digits per object type and sign of telephone number<sup>a</sup>**

| Type of Object                                  | Sign of Telephone Number          | Number of digits                                    |
|-------------------------------------------------|-----------------------------------|-----------------------------------------------------|
| Present Exchange (01H)                          | Present exchange subscriber (01H) | 5-7                                                 |
|                                                 | special services (06H)            | >1                                                  |
| Network subscriber with complete number (02H)   | Local number (02H)                | 5-7                                                 |
|                                                 | Zonal number (03H)                | toll exit code + zonal exit code + 7                |
|                                                 | Toll number (04H)                 | toll exit code + 10                                 |
|                                                 | International number (05H)        | toll exit code + international exit code + up to 15 |
|                                                 | special services (06H)            | >1                                                  |
| Network subscriber with incomplete number (12H) | Not “Present exchange”            | >1 or =1                                            |
| Group of incoming lines (03H) <sup>b</sup>      | FFH                               | 0                                                   |

a. Toll exit code, zonal exit code and international exit codes are provisionable values. Default values are 8 for toll exit code, 2 for zonal exit code and 10 for international exit code. Detailed information about provisioning of these values is given in “Provisioning of SOSM specific parameters” on page 1394.

b. not supported

- If “incoming group conditional number” is not “FFFFH”, code “**unsupported parm**” is set with value **5EH**.
- If “mcl group number” is specified (other than FFH) for a statistical monitoring, “**invalid mcl group**” is set with value **49H**.
- If “mcl group number” is specified as FFH for non-statistical monitoring, “**invalid mcl group**” is set with value **49H**.
- If object database is being transferred during receiving the command, “**object transfer in progress**” is set with value **63H**.
- If any other failure occurs, code “**command failed**” with value **FFH** is returned.

### Remove monitored object (Command N6)

**R-62      Status:** PC<sup>4</sup>

Removal of the Object from Monitoring (command N6) is sent from CP to remove an object of monitoring from the database.

Data about the monitored object is removed from the SOSM database by issuing this command. If at the given moment an object with complete monitoring category is under monitoring, MCL connected to this object is cleared.

---

4. Conditional number of incoming group field is not supported in DMS MMP

**Removal of the object from monitoring**

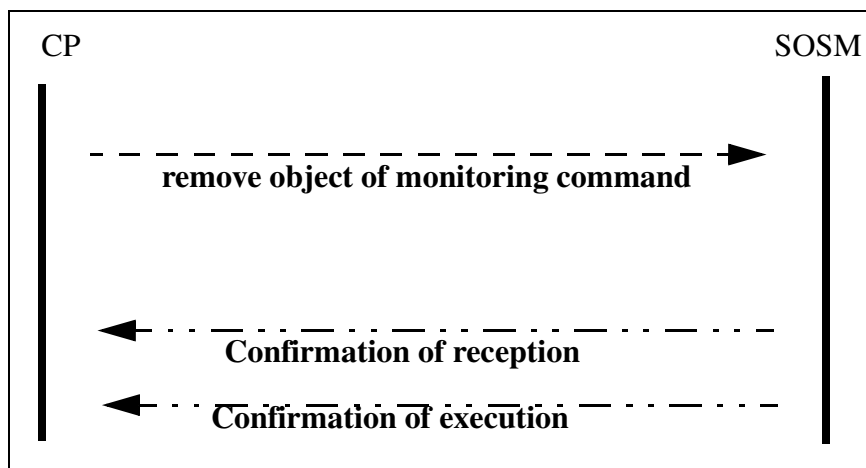
| Header                                                    |          | Telephone number<br>of the monitored<br>subscriber |
|-----------------------------------------------------------|----------|----------------------------------------------------|
| Conditional Number<br>of Object                           |          |                                                    |
| Type of Object                                            |          |                                                    |
| Sign of telephone number                                  |          |                                                    |
| Number of digits in telephone number                      |          |                                                    |
| digit 2                                                   | digit 1  |                                                    |
| digit 4                                                   | digit 3  |                                                    |
| .                                                         | .        |                                                    |
| digit 18                                                  | digit 17 |                                                    |
| Conditional number<br>of incoming groups<br>(unsupported) |          |                                                    |

*Code of Command* = 06H.

Descriptions of the fields in this command are the same as in Figure “Setting of objects for monitoring.” on page 1315.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.



**Remove object of monitoring command****Validation error checking:**

Please refer to the validation error checking of the relevant parameters in section “Setting an object for monitoring (Command N5)” on page 1314 for validation of the parameters in this command.

**Execution error checking:**

For errors related to the combinations of parameters, digit numbers etc. please refer to section “Setting an object for monitoring (Command N5)” on page 1314.

- If the object specified in the command is not found in the monitored subscribers database, the command is rejected. The “attribute of command execution” field is set to code **“object not found”** with code **45H**.
- if the “sign of telephone number” parameter does not match the same parameter for the object in the database, code **“sign of dn mismatch”** with value **56H** is set, and the command is rejected.
- if the “telephone number” parameter does not match the same parameter in the object database, code **“digits mismatch”** with value **55H** is set and command is rejected.
- if the “type of object” parameter does not match the same parameter in the object database, code **“object type mismatch”** with value **54H** is set and the command is rejected.
- amount of digits in the “telephone number” parameter does not match the the “Number of digits in telephone number” parameter in the message, **“digits mismatch”** with value **55H** is set and command is rejected.
- If the “conditional number of incoming group” is received with a value but FFFFH, command is rejected with the **“unsupported parm-5EH”** code.

- If object database is being transferred during receiving the command, command is rejected with the **“object transfer in progress-63H”**.

### Connect to voice path (Command N7)

#### **R-63      Status:    C**

Connection to Voice Path (command N7) is sent from CP to request an explicit connection of MCL to a statistically monitored call.

This command connects an MCL to the speech path defined by the “Number of call” field.

This command can be executed before answer (during ring).

Execution of this command is performed for supervised subscribers with:

- Statistical monitoring category: In this case MCL connection is performed using the MCL group’s number given in the command. Monitoring category of the **call** is set to complete. Priority of MCL connection -in the **call-** is set as 01H.
- Complete monitoring category: For this category ‘Connection to voice path’ command is used:
  - If earlier connected MCL had been released due to “Clearing of MCL” command or its MCL had been connected to a high priority call.
  - If no MCL had been found during connection of subscribers.

If free MCL cannot be found during the execution of this command, an MCL in the group - which is used for a low priority call - is disconnected, and it is used for the call identified in this command.

For the complete monitoring category case “MCL group’s number” field is ignored and connection is performed using MCL group defined in “Setting of objects for monitoring” command.

“Command N7-Connect to voice path” does not change the category of monitoring object which is defined by “Command N5-Setting of objects for monitoring”. For subscribers supervised with statistical monitoring category, this command connects voice path only for the current active call.

Number of MCL (MCL-A in joint monitoring) to be connected is transmitted to CP in message “MCLs connection” (N2.1).

The format of this command is shown in Figure “Connection to voice path” on page 1327.

**Connection to voice path**

| Header                          |
|---------------------------------|
| Number<br>of Call               |
| Type of Object                  |
| Conditional Number<br>of Object |
| MCL group's number              |

*Code of Command* = 07H

**Number of call** is assigned by DMS MMP exchange for every monitored connection (either incoming or outgoing call). This number is unique for each monitored call, and varies from 0000H up to FFFFH. When it reaches FFFFH it returns again to 0000H.

Other fields correspond to the definitions given for “Setting of objects for monitoring” command.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

This command related call scenarios and call messages are:

1. A is under surveillance as statistical. A calls B. B answers. MCL of joint group is connected to this call with the command No.7 and then call is completed. The messages are:

**A is under surveillance as statistical.**

|                          | 1.1 | 1.2 | 2.1 | 1.3 |
|--------------------------|-----|-----|-----|-----|
| Calling DN               | A   | A   | A   | A   |
| Called DN                | B   | B   | B   | B   |
| SOSM Call #              | 1   | 1   | 1   | 1   |
| Attribute of choice      | 02  | 02  | 02  | 02  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  |

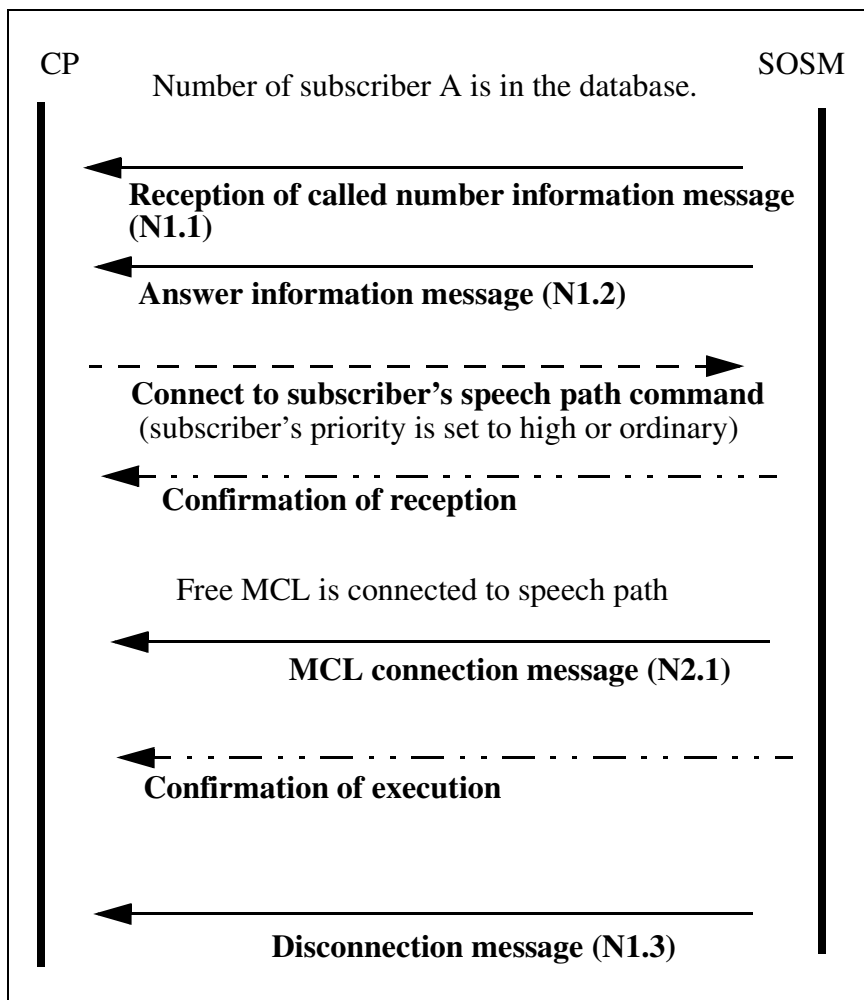
|                   | 1.1 | 1.2 | 2.1 | 1.3 |
|-------------------|-----|-----|-----|-----|
| MCL #             | #FF | #FF | 1   | 1   |
| Code of operation | #FF | #FF | 00  | 05  |
| Priority          | #FF | #FF | #FF | #FF |

2. A is under surveillance as joint. A calls B. B answers. The MCL connection in the call is disconnected due to priority and then new MCL is connected to this call with the command No.7 (*new MCL is taken from MCL group in database of A line. The MCL information in the command No.7 is ignored*) and then call is completed. The SOSM callp messages for this call are:

**A is under surveillance as joint**

|                          | 1.1 | 1.2 | 2.2 | 2.1         | 1.3 |
|--------------------------|-----|-----|-----|-------------|-----|
| Calling DN               | A   | A   | A   | A           | A   |
| Called DN                | B   | B   | B   | B           | B   |
| SOSM Call #              | 1   | 1   | 1   | 1           | 1   |
| Attribute of choice      | 01  | 01  | 01  | 01          | 01  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C          | 1C  |
| MCL #                    | 1   | 1   | 1   | 2 (new MCL) | 2   |
| Code of operation        | 00  | 00  | 02  | 00          | 05  |
| Priority                 | 2   | 2   | 2   | 2           | 2   |

**As you seen in tables above, MCL and Code of operation informations are only updated in the message 2.1 (MCL connection).**

**Connect to voice path command****Validation error checking:**

Please refer to the validation error checking of the relevant parameters in section "Assignment of MCL to group (Command N4)" on page 1311 and section "Setting an object for monitoring (Command N5)" on page 1314 for validation of the parameters in this command.

**Execution error checking:**

If any of the following error conditions occur, the command is rejected and the specified error code is set in the confirmation message:

- if the "call number" field corresponds to a call which no longer exists (i.e. disconnection occurred), the "attribute of command execution" field is set to **"invalid call number"** code, with value **46H**.
- if the "conditional number of object" field does not match the object monitored in the specified call, the "attribute of command execution" field is set to **"invalid object number"** code with value **47H**.

- if the “type of object” field does not match the type of monitored object involved in the specified call, the “attribute of command execution” field is set to “**invalid object type**” code with value **48H**.
- If the category of monitoring is statistical and MCL group number is greater than 224 then code “**invalid MCL group**” with value “**49H**” is set.
- if the “MCL group number” field specifies an MCL group which does not exist, and if the value of “**category of monitoring**” parameter of the object in database is “**02H- statistical**”, the “attribute of command execution” field is set to “**invalid MCL group number**” code with value **49H**.

*Note:* If category of the monitoring is complete (either combined or separate), MCLs of the group specified in the object are used. *MCL group received in the command is ignored even if it is invalid (i.e MCL group greater than 224 or nonexisting MCL group).*

- if the call specified in “call number” is already connected to an MCL, code “**call already monitored**” is set with value **4EH**.
- if the MCL is not present in the given group, code “**mcl info not found**” with value **4BH** is set.
- if the connect command is given while a call is ON HOLD, code “**command out of sequence**” with value **4CH** is set.
- If MCL connection cannot be done because of the technical problem in PDTC, code “**sosm command failed**” with value “**FFH**” is set.

### Clearing of MCL (Command N8)

#### **R-64      Status:    C**

Clearing of Monitoring Connecting Line (command N8) is sent from CP to request disconnection of an MCL from a call.

This command clears a selected connection between SOSM and CP by force. If parameters in the bytes from 1 up to 5 are given then MCL occupied by present connection is cleared. If only MCL-A (MCL-B number is equal to FFH for joint monitoring) is given (bytes from 1 up to 5 are filled with FFH) then this MCL is cleared.

Format of this command is given in “Clearing of monitoring connecting line” on page 1331.

Messages about further phases of monitored call should be transmitted to CP after command Clearing of MCL is sent to SOSM, as in a statistically monitored call.

**Clearing of monitoring connecting line**

| <b>Header</b>                   |
|---------------------------------|
| Number<br>of Call               |
| Type of Object                  |
| Conditional Number<br>of Object |
| MCL-A number                    |
| MCL-B number                    |

*Code of Command* = 08H

**Number of call** is the number of a call among incoming and outgoing calls.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

This command related call scenarios and call messages are:

1. A is under surveillance as joint. A calls B. B answers. MCL connection in the call is disconnected with the command No.8 and then call is completed. The messages are:

**A is under surveillance as joint.**

|                          | <b>1.1</b> | <b>1.2</b> | <b>2.2</b> | <b>1.3</b> |
|--------------------------|------------|------------|------------|------------|
| Calling DN               | A          | A          | A          | A          |
| Called DN                | B          | B          | B          | B          |
| SOSM Call #              | 1          | 1          | 1          | 1          |
| Attribute of choice      | 01         | 01         | 01         | 01         |
| Parameters of connection | 1C         | 1C         | 1C         | 1C         |
| MCL #                    | 1          | 1          | 1          | <b>#FF</b> |
| Code of operation        | 00         | 00         | <b>01</b>  | <b>05</b>  |
| Priority                 | 2          | 2          | 2          | 2          |

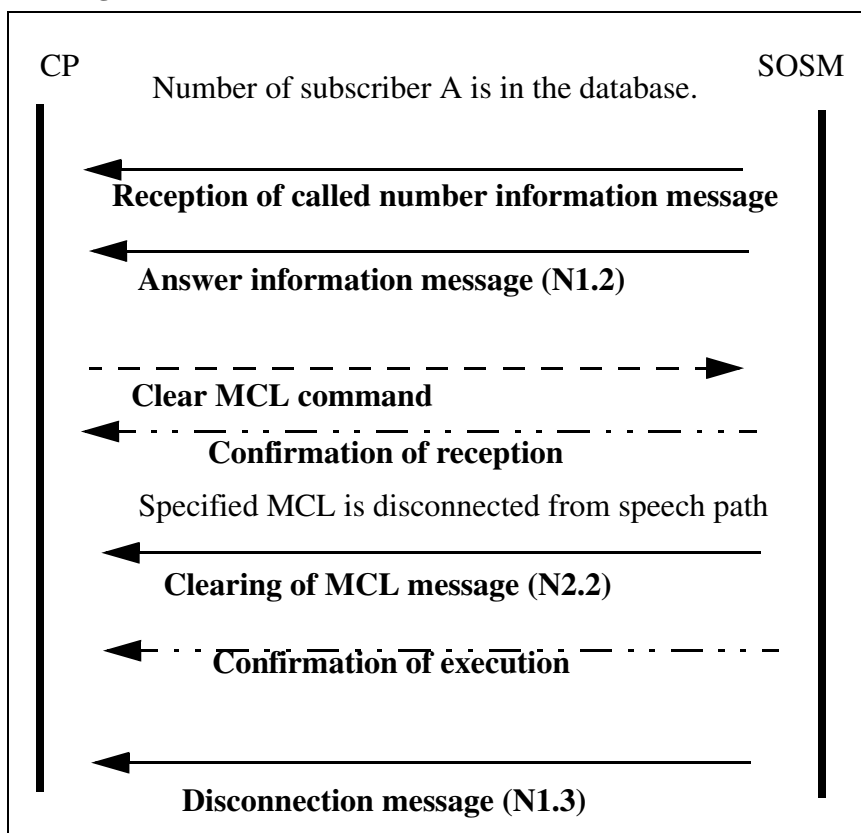
2. A is under surveillance as statistical. A calls B. B answers. The MCL connection is connected to the call with the command No.7 and then MCL connection is disconnected from this call with the command No.8 and then call is completed. The SOSM callp messages for this call are:

**A is under surveillance as statistical**

|                          | <b>1.1</b> | <b>1.2</b> | <b>2.1</b> | <b>2.2</b> | <b>1.3</b> |
|--------------------------|------------|------------|------------|------------|------------|
| Calling DN               | A          | A          | A          | A          | A          |
| Called DN                | B          | B          | B          | B          | B          |
| SOSM Call #              | 1          | 1          | 1          | 1          | 1          |
| Attribute of choice      | 02         | 02         | 02         | 02         | 02         |
| Parameters of connection | 1C         | 1C         | 1C         | 1C         | 1C         |
| MCL #                    | #FF        | #FF        | <b>1</b>   | <b>1</b>   | <b>#FF</b> |
| Code of operation        | #FF        | #FF        | <b>00</b>  | <b>01</b>  | <b>05</b>  |
| Priority                 | #FF        | #FF        | #FF        | #FF        | #FF        |

**As you seen in tables above, Code of operation information is only updated in the message 2.2 (Clearing of MCL message).**



**Clearing of MCL command****Validation error checking:**

Please refer to the validation error checking of the relevant parameters in section "Assignment of MCL to group (Command N4)" on page 1311 and section "Setting an object for monitoring (Command N5)" on page 1314 for validation of the parameters in this command.

**Execution error checking:**

If any of the following error conditions occur, the command is rejected and the specified error code is set in the confirmation message:

- if the "call number" field is specified and corresponds to a call which no longer exists (i.e. disconnection occurred), the "attribute of command execution" field is set to **"invalid call number"** code, with value **46H**.
- if the "conditional number of object" field is specified and does not match the object monitored in the specified call, the "attribute of command execution" field is set to **"invalid object number"** code with value **47H**.
- if the "type of object" field is specified and does not match the type of monitored object involved in the specified call, the "attribute of command execution" field is set to **"object type mismatch"** code with value **54H**.

- if the MCL number(s) specified are not currently connected to a call, code “**invalid mcl number**” is set with value **4AH**.
- if at the time the command is given the specified call is not connected to an MCL, code “**command out of sequence**” with value **4CH** is set.

### Exclude MCL command (Command N9)

#### **R-65      Status:    C**

Excluding of MCL out of Group (command N9) is sent from CP to request the removal of an MCL from an MCL group.

Parameters of this command are the same as for command “Assignment of MCL to group”. In case of joint monitoring one MCL (MCL-A) is excluded out of group. MCL-B has the value equal to MCL-A or FFH. In the case of Separate monitoring, two MCLs are deleted from the specified group.

MCL A (and B if not combined) are removed from specified group. If there are no MCLs left in the group, the MCL group is removed as well.

***Note:** The MCL numbers in the exclude mcl command **MUST** match the numbers that were given in the Add MCL command.*

*For example, if in the Add MCL command MCL-A was given as #22 and MCL-B was equal to MCL-A, the exclude command must specify MCL-A and MCL-B as #22 #22 respectively. However, if MCL-A was #22 and B was #FF in the add command, the exclude command **MUST** specify MCL-A as #22 and B as #FF. Failure to do so will result in MCL information not found error.*

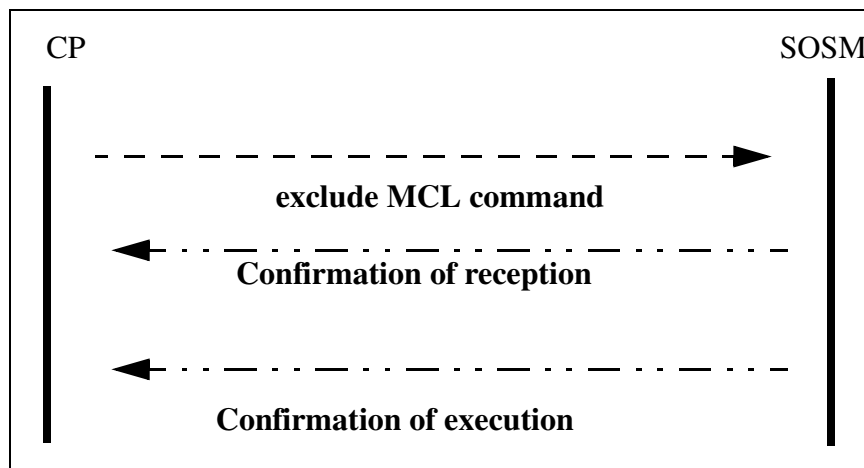
The format of this command is shown in the following figure.

#### Excluding of MCL out of group

| Header           |
|------------------|
| MCL group number |
| MCL-A number     |
| MCL-B number     |

*Code of Command = 09H*

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Exclude MCL from group command****Validation error checking:**

When any of the parameters in this command are specified (i.e. are not FFH), validation rules as specified in section “Clearing of MCL (Command N8)” on page 1330 apply.

**Execution error checking:**

- If the specified “mcl group” does not exist in the database, the “attribute of command execution” field is set to “**mcl information not found**” code with value **4BH**.
- If MCLA number, received in the command, is not defined in MCL database, the “attribute of command execution” field is set to “**mcl information not found**” code with value **4BH**.
- If the MCL group type is “separate monitoring”, and MCL-B number received in the command is not defined in MCL database, the “attribute of command execution” field is set to “**mcl information not found**” code with value **4BH**.
- If the MCL group type is “separate monitoring”, and MCLB is defined, but not engaged with MCLA, the “attribute of command execution” field is set to “**mcl information not found**” code with value **4BH**.
- If at the time the command is given the MCL(s) specified is in use, the “attribute of command execution” field is set to “**mcl in use**” code with value **41H**.
- If the MCL group type is “separate monitoring” and MCL-B is equal to MCL-A, code “**Invalid MCL B For Group**” is set with value “**5BH**”.
- If mcl database is being transferred during receiving the command, code “**MCL data transfer in progress**” is set with value “**64H**”.

The behavior in this scenario is changed for this command. For this scenario, the command “Assignment of MCL to group” fails in the validation error checking, That is No:7 (NOK) is only sent to CP but the messages No:7 (OK) and No:8 (NOK) is sent to CP in this command.

### Request object data (Command N10)

#### **R-66      Status:** PC<sup>5</sup>

Request for Objects of Monitoring Data Transmission (command N10) is sent from CP to request information about one or more monitored objects.

This command sends a request for information transmission about the monitored object or objects.

The format of this command is shown in the following figure.

#### Request for objects of monitoring data transmission

| Header                                          |                                                 |
|-------------------------------------------------|-------------------------------------------------|
| Conditional Number<br>of Object                 |                                                 |
| Type of Object                                  |                                                 |
| Sign of telephone number                        |                                                 |
| Number of digits in telephone number            |                                                 |
| digit 2<br><br>digit 4<br><br>.<br><br>digit 18 | digit 1<br><br>digit 3<br><br>.<br><br>digit 17 |
| Conditional number<br>of incoming groups        |                                                 |

subscriber's  
telephone number

*Code of Command* = 0AH

---

5. Conditional number of incoming group is not supported in DMS MMP.

Parameters of this command have the same meanings as for command “Setting of objects for monitoring”.

**Conditional number of object:** If it is set then this object’s data are sent to CP.

**Type of object:** If it is set all this type objects are reported to CP.

**Sign of telephone number, number of digits in telephone number, monitored subscriber telephone number:** If they are set then this object’s data are transmitted to CP.

**Not supported in DMS MMP: “Conditional number of incoming group:** If this is set this object’s data is reported to CP.”

If none of the above mentioned parameters is set then all objects of monitoring data are transmitted to CP.

#### Valid parameter combinations for No10, and SOSM actions for each

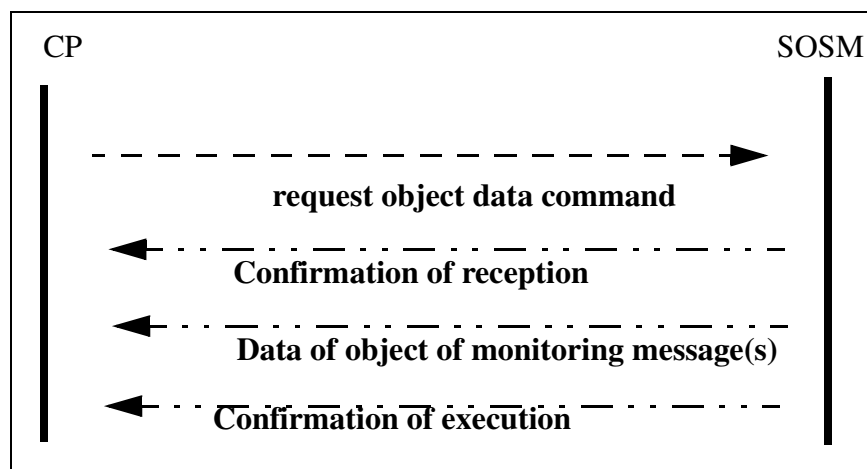
| Conditional Number                | Type of Object   | DN                           | Actions                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------|------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Corresponds to an existing object | FFH              | all digits are FF            | Transmit object’s data (No7:OK - No3 -No8:OK)                                                                                                                                                                                                                                                                                               |
| Corresponds to an existing object | {01H, 02H, 12H } | all digits are FF            | Ensure that the type_of_ objects -in the message and in the database- are same. Otherwise, reject command (No7:OK - No3 - No8:NOK)<br><br>Transmit object’s data. (No7:OK - No3 -No8:OK)                                                                                                                                                    |
| Corresponds to an existing object | {01H, 02H, 12H } | Valid digits and digit count | Ensure that the type_of_ object and digits -in the message and in the database- are same. Otherwise, reject command (No7:OK - No3 - No8:NOK)<br><br>Transmit object’s data. (No7:OK - No3 -No8:OK)                                                                                                                                          |
| FFFFH                             | {01H, 02H, 12H } | all digits are FF            | Transmit all objects of the type received in the message. (No7:OK -(n* No3) -No8:OK)                                                                                                                                                                                                                                                        |
| FFFFH                             | {01H, 02H, 12H } | Valid digits and digit count | Find the object with the type_of_ object and digits received in the message.<br><br>If not found,, reject command (No7:OK - No3 - No8:NOK)<br><br>Ensure that the type_of_ objects - in the command and in the database- are same. Otherwise, reject command (No7:OK - No3 - No8:NOK)<br><br>Transmit object’s data. (No7:OK - No3 -No8:OK) |

**Valid parameter combinations for No10, and SOSM actions for each**

| Conditional Number | Type of Object | DN                           | Actions                                                                                                                                                                       |
|--------------------|----------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FFFFH              | FFH            | Valid digits and digit count | Find the object with the digits received in the message.<br><br>If not found, , reject command (No7:OK - No3 - No8:NOK)<br><br>Transmit object's data. (No7:OK - No3 -No8:OK) |
| FFFFH              | FFH            | all digits are FF            | Transmit all objects. (No7:OK -(n* No3) -No8:OK)                                                                                                                              |

If more than one object's data is retrieved, several response message will be sent as described in "SOSM to CP Ch.1 messages" on page 1350.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Request object data command****Validation error checking:**

Please refer to Section "Command reception error handling" on page 1305.

**Execution error checking:**

For any of the execution errors specified below, data in the request message is copied into the response message Msg.N3 and sent to CP before Msg.N8- "confirmation of command execution" message. (Please refer to Section "Data of objects of monitoring (Msg. N3)" on page 1353.)

- If the "conditional number of incoming group" is received with a value but FFFFH, command is rejected with the "**unsupported parm-5EH**" code.

- If the conditional number is not FFFFH, but it does not exist in the database, command is rejected with the “**object not found-45H**” code.
- If a telephone number is specified in the command, but it does not exist in the database, command is rejected with the “**object not found-45H**” code.
- If the conditional number corresponds to an object in the database, and if a telephone number is specified in the command, the specified telephone number must comply with the object’s telephone number in the database. Otherwise, command is rejected with “**object not found-45H**” code.
- If the conditional number and telephone number is specified in the command and the conditional number corresponds to an object in the database but phone number does not exist in the database then command is rejected with the “**object not found-45H**” code.
- If telephone number is specified within command, and amount of digits in “subscriber’s telephone number” does not comply with the value in “number of digits in telephone number” parameter, command is rejected with the “**invalid number of digits-4DH**” code.
- if “type of object” parameter is not one of {01H, 02H, 03H, 12H} or FFH, code “**invalid object type**” is set with value “**48H**”.
- if an object which exists in the database is specified with “sign of telephone number” and/or “conditional number of object”, “type of object” received in the command must comply with the object’s type in the database. Otherwise, command is rejected with “**object type mismatch-54H**” code.
- if the “sign of telephone number” parameter is not one of {01H - 06H} or FFH, code “**invalid sign of telephone number**” is set with value “**5FH**”.
- If sign of dn in the command does not matches with the sign of dn in database, command is rejected with “**sign of dn mismatch-56H**”.
- If all parameters are set in the command but this object does not exists in the database, command is rejected with the “**object not found-45H**”
- If object database is empty, command is rejected with “**no data exists in database-60H**”

### Request MCL group information (Command N11)

#### **R-67      Status:    C**

Request for Transmission of Information about MCL and Group Correspondence (command N11) is sent from CP to obtain MCL group configuration.

Any field of the command can be set or empty. Empty fields are filled with value FFH.

- If all fields have value FFH then complete table of correspondence is sent to CP.

- If number of group is given then list of MCLs belonging to this group is reported.
- If MCL group's type is given then correspondence table of MCLs and groups for this type is transmitted to CP.
- If MCL number is given then group corresponding to it is reported to CP.

The format of this command is shown in the following figure.

The request for transmission of the information about MCL and group correspondence

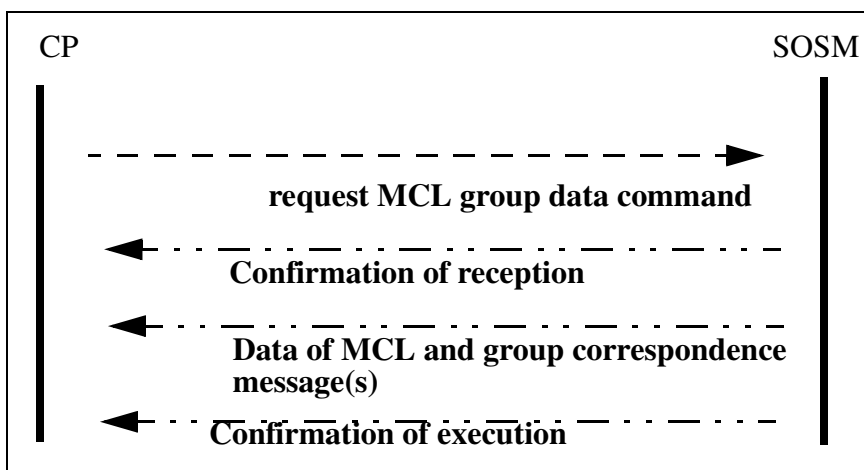
| Header           |
|------------------|
| MCL group number |
| MCL group type   |
| MCL-A number     |
| MCL-B number     |

*Code of Command* = 0BH

If more than one message is required to transmit the information, several response message will be sent as described in "SOSM to CP Ch.1 messages" on page 1350.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Request MCL group information command**



**Validation error checking:**



Please refer to Section “Command reception error handling” on page 1305.

**Execution error checking:**

- If the MCL group number is not within allowed range (greater than 224 or less than 1), command is rejected with **“invalid MCL group-49H”** code.
- If the value of MCL group type field is not one of 01H (combined) or 11H (separate), code **“invalid MCL group type”** is set with value **“61H”**.
- If MCLA and/or MCLB are specified (not FFH), but the specified value is not within allowed range (number of PCM channel in MCLA and MCLB is one of values (0, 16, 30, 31)), command is rejected with **“invalid MCL number-4AH”** code.
- If both MCL group and MCL group type are specified in the command, the group type in the command must comply with the type previously defined in the database. Otherwise, the command will be rejected with **“wrong MCL type for group-52H”**.
- If only a valid MCL group number is received in the command, but if it does not correspond to an existing MCL group, command is rejected with **“MCL information not found”** code with value **“4BH”**.
- If only MCL group type parameter is set in the received command, but if there is no MCL group of the specified type in the database, command is rejected with **“MCL information not found”** code with value **“4BH”**.
- If MCLA and/or MCLB numbers are set in the command, but if the specified MCL(s) does not exist in the database, command is rejected with **“MCL information not found”** code with value **“4BH”**.
- If MCL group number, and MCLA and/or MCLB are received in this command, it is checked in the database if the specified MCL(s) are assigned to the given MCL group. If MCL(s) belong to other MCL groups, command is rejected with **“invalid MCL number-4AH”** code.
- If MCL group type and MCLA/MCLB number parameters are set, the value of MCL group type parameter within the command and the type of the MCL group in the database (which includes MCLA/MCLB specified in the command) must be identical. Otherwise, command is rejected with code **“invalid MCL group type-61H”** code.
- If MCL group type and MCLB number parameters are set, and if value of MCL group type is not “separate monitoring”, code **“invalid MCL group type”** is set with value **“61H”**.
- If MCLA number and MCLB number are specified within the command, MCLA and MCLB numbers must be equal or MCLB must be FF where MCL group type is combined. (Note that MCLA and MCLB number must match with the values in database). Otherwise, command is rejected with **“invalid MCLB for group-5BH”** code.

- If MCLA number and MCLB number are specified within the command, MCLA and MCLB numbers must be different where MCL group type is separate (Note that MCLA and MCLB number must match with the values in database). Otherwise, command is rejected with “**invalid MCLB for group-5BH**” code.
- If MCL database is empty, command is rejected with “**no data exists in database-60H**”.

### Request subscriber's SS list (Command N12)

**R-68      Status:    C**

Request for Transmission of Supplementary Services List (command N12)

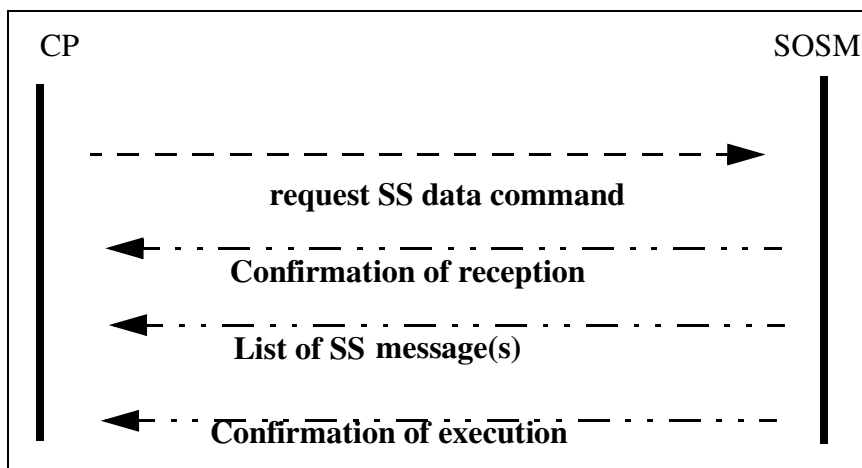
Upon issuing this command SOSM gives the list of supplementary services (SS) that are available to **supported subscribers (IBN/V5.2(IBN))** of present exchange. Digits without value in telephone number field are filled with FFH. Format of this command is given in the following figure:

**The request for transmission of supplementary services list**

| Header                               |          |
|--------------------------------------|----------|
| Sign of telephone number: 01H        |          |
| Number of digits in telephone number |          |
| digit 2                              | digit 1  |
| digit 4                              | digit 3  |
| .                                    | .        |
| .                                    | .        |
| digit 18                             | digit 17 |

*Code of Command* = 0CH.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Request SS list command**

While executing this command, all features in the customer group and CEPT casual features in table CUSTSTN are sent to CP, as well.

This command is not supported for BRI and EBS lines. For unsupported line types, the message 8-NOK is sent.

**Validation error checking:**

Please refer to the validation error checking of the relevant parameters in section “Setting an object for monitoring (Command N5)” on page 1314 for validation of the parameters in this command.

- If the number of digits specified is greater than 7 (local exchange subscriber), code **“number of digits mismatch”** is set with value **“13H”**.

**Execution error checking:**

- If the requested subscriber’s telephone number does not exist in the exchange, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP and the “attribute of command execution” field is set to code **“invalid dn for exchange”** code with value **58H**.
- If the specified subscriber does not have any assigned supplementary services, A “Confirmation of command execution” message is sent to CP and the “attribute of command execution” field is set to code **“no services found”** code with value **57H**.
- If the requested subscriber’s “sign of telephone number” is not “subscriber of present exchange”, code **“invalid sign of telephone number”** is set with value **“5FH”**.
- If the subscriber is of the unsupported line type, code **“unsupported agent type”** is set with value **“5AH”**.

- If amount of digits in phone No does not comply with the mentioned in byte 2, code “invalid number of digits” is set with value “4DH”.

### Interrupt transmission command (Command N13)

**R-69 Status: C**

Interruption of Messages Output on the Request for Transmission of the Tables Contents (command N13) is sent from CP to stop data transmission.

Current output of information about the query to a SOSM table is stopped upon this command. Un-transmitted portion of the data is lost.

The format of this command is given in the following Figure.

**Interruption of messages output on the request for the transmission of the tables contents**

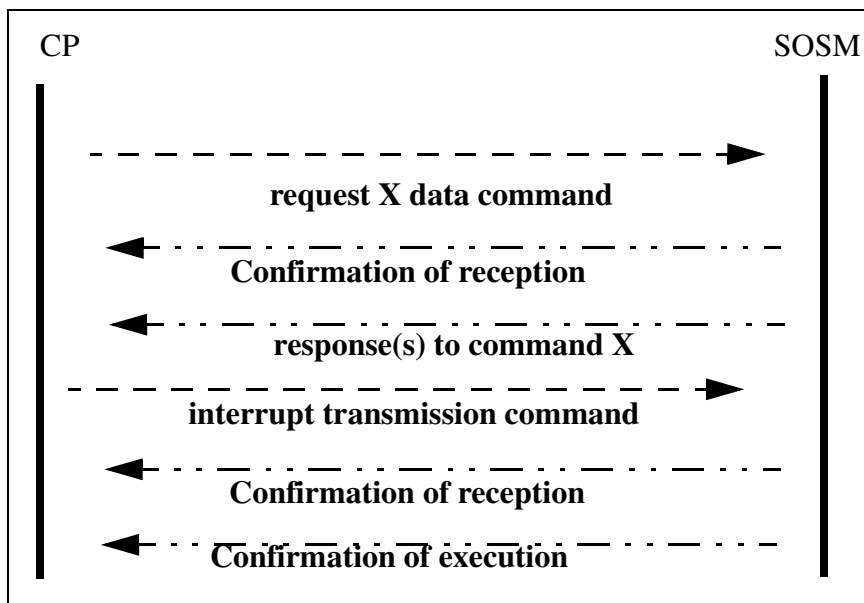


*Code of Command* = 0DH

**Note:** When this command is executed, the message 8-NOK is sent to CP for the command requesting the data transmission.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**transmission of information interrupt**



**Execution error checking:**

- If at the time the interrupt request is received no transmission is taking place, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP and the “attribute of command execution” field is set to code “**command out of sequence**” code with value **4CH**.

### Testing DTC command (Command N14)

#### **R-70      Status:    C**

Testing of Data Transfer Channels (command N14) is sent from CP to validate operational state of the Data Links.

Testing of data transfer channels (DTC) 1 and 2 between SOSM and CP is started upon this command.

If SOSM does not receive a new N14 command during 10 minutes after the last N14 command is received, SOSM tries to switch to the next link datafilled in table SOSMMPC. If the actual link is the last link, then the next link is the first link. If there are no other reserved links, then R-48 is applied. Test answer will only be sent over current channels 1 and 2.

The format of this command is given in the following figure.

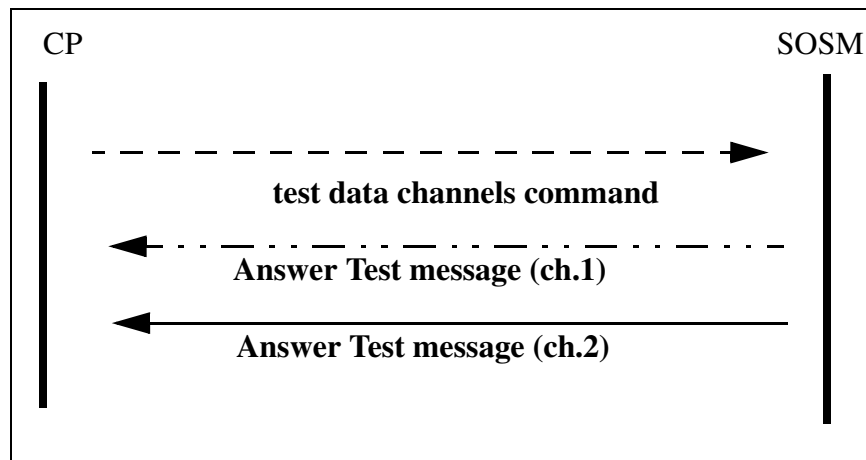
#### Testing of data transfer channels

| Header                 |
|------------------------|
| Number of test message |

*Code of Command* = 0EH

**Number of test message:** It changes cyclically from 00H to FFH.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Test data channel command****Change object of monitoring (Command N15)**

**R-71 Status:** Object of Monitoring Parameters Change (command N15) is sent from CP to modify the parameters of an existing object.

Following parameters assigned by the command “Setting of object for monitoring” are changed:

- Category of monitoring
- MCL group number
- Priority mark

If at the moment of this command’s reception, the object is in conversation state then new parameters set by this command takes place from the next call of the object.

The format of the command is given in the following figure.

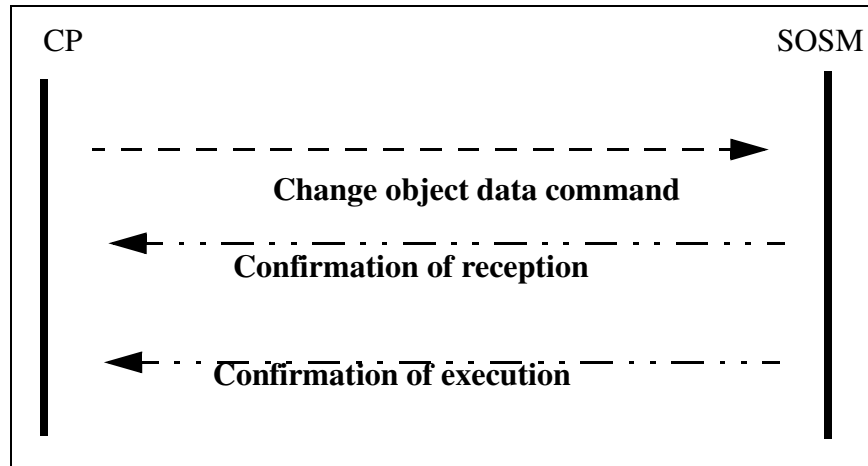
**Object of monitoring parameters change**

| Header                          |
|---------------------------------|
| Conditional Number<br>of Object |
| Category of monitoring          |
| MCL group number                |
| Priority mark                   |

*Code of Command* = 0FH

The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Change object of monitoring command**



**Validation error checking:**

Please refer to the validation error checking of the relevant parameters in section “Setting an object for monitoring (Command N5)” on page 1314 for validation of the parameters in this command.

**Execution error checking:**

- If the requested object does not exist in the database, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP and the “attribute of command execution” field is set to code “**object not found**” with value **45H**.
- If the MCL group number is not found in the database, code “**mcl info not found**” with value **4BH** is returned and command rejected
- If the type of MCL group specified does not correspond to the Category of monitoring, code “**wrong mcl type for group**” with value **52H** is returned and command is rejected.
- If the “category of monitoring” and the “priority mark” do not match, code “**priority code mismatch**” with value **5CH** is returned and command is rejected.
- If MCL group number is specified for statistical monitoring change order, code “**invalid mcl group**” with value **49H** is returned and command rejected.

- If MCL group number is specified as for non-statistical monitoring change order, code “**invalid mcl group**” with value **49H** is returned and command rejected.
- If me database is being transferred during receiving the command, code “**me transfer in progress**” with value **63H** is returned and command is rejected.

### Request incoming group information (Command N16)

#### **R-72      Status: C**

Request for Transmission of Information about Correspondence between Exchange Incoming Group's Name and It's Conditional Number (command N16).

Upon receiving this command SOSM should give information about incoming groups' lines (channels) symbolic exchange's names correspondence to conditional number of incoming groups.

The format of the command is given in the following figure.

**Request for transmission of information about correspondence between exchange incoming group's name and it's conditional number**

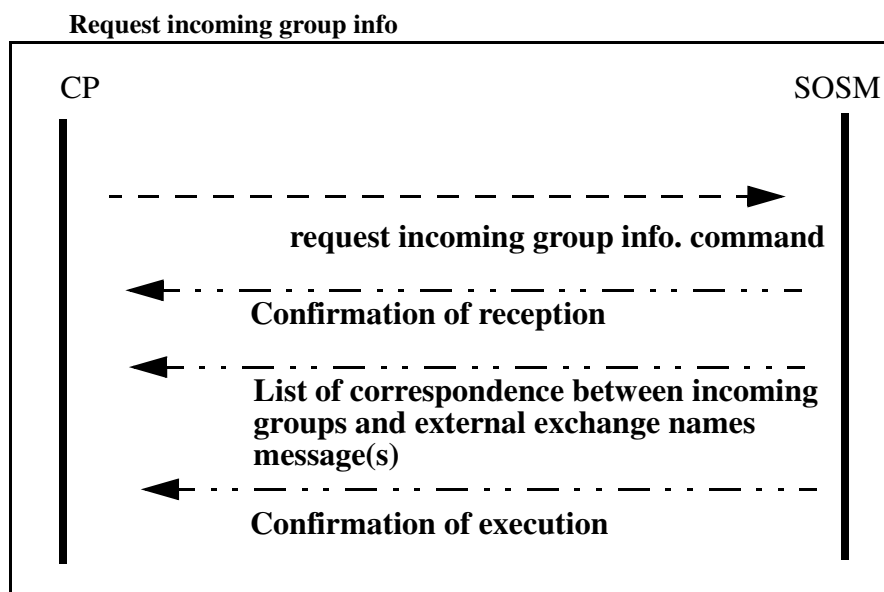
| Header                                  |
|-----------------------------------------|
| Conditional number of<br>incoming group |

*Code of Command* = 10H

If the “conditional number of incoming group” value is FFFFH, a complete list of incoming groups on the exchange is sent to the CP.

The following message sequence illustrates the messaging between SOSM and CP for handling this command.



**Execution error checking:**

- If the Incoming Group number is specified (i.e. not FFFFH) and that group is not found on the exchange, command execution will fail and the command will be rejected. A “Confirmation of command execution” message is sent to CP and the “attribute of command execution” field is set to code **“object not found”** with value **45H**.

**Request SW version command (Command N17)****R-73      Status: C**

Request of Exchange’s SW Version (command N17) is sent by CP to request information about the exchange’s software.

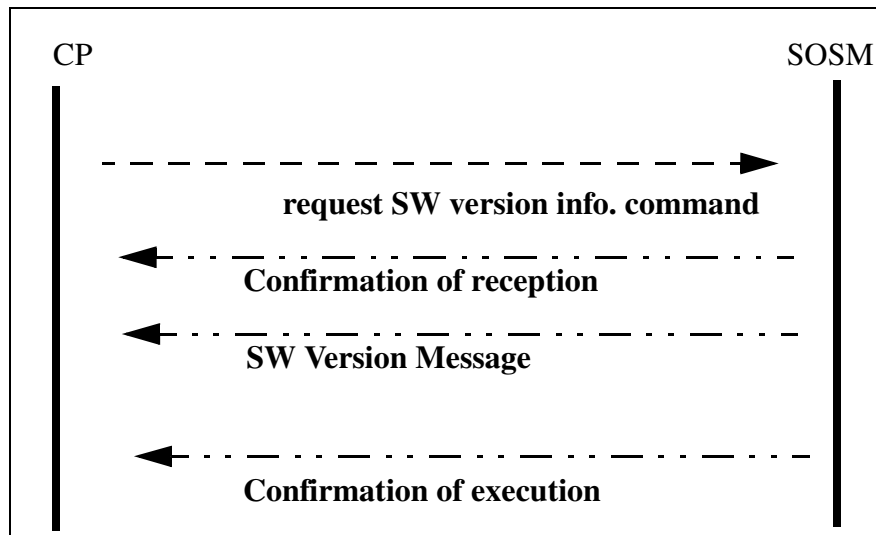
SOSM gives the version and edition of exchange’s software upon this command.

The format of the command is given in the following figure.

**Request of exchange’s SW version**

*Code of Command* = 11H

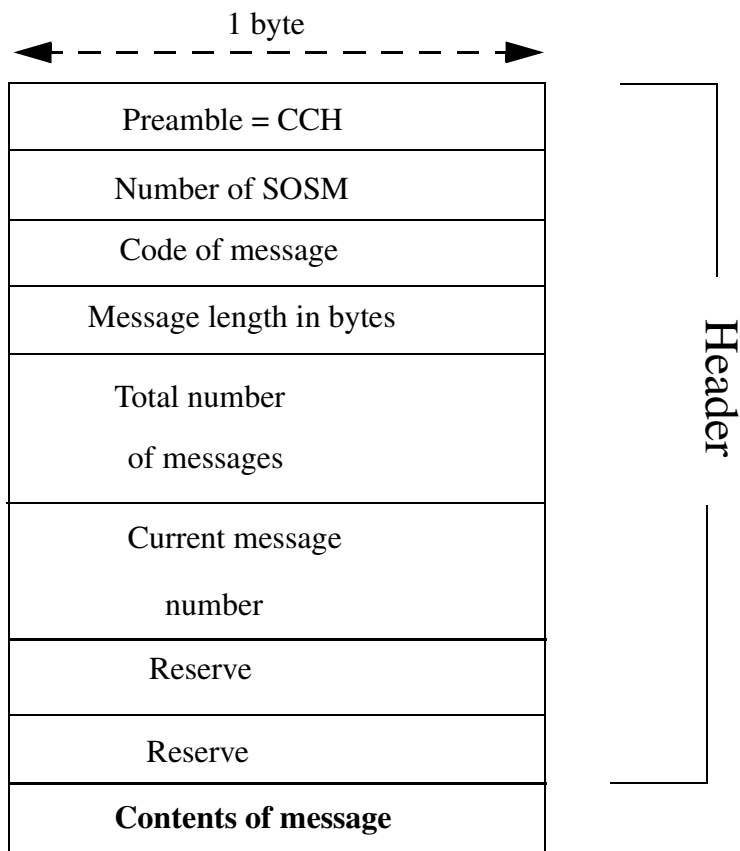
The following message sequence illustrates the messaging between SOSM and CP for handling this command.

**Request SW version info****SOSM to CP Ch.1 messages**

Channel 1 messages are messages in response to commands from CP or messages informing the CP of system events. For those messages that are sent in response to a command, information regarding the command can be found in section “CP to SOSM Command Processing” on page 1305.

**R-74      Status: C**

The information field of messages from SOSM to CP has the following format:

**Format of SOSM to CP Control Message**

**Total number of messages** field is used if the length of a message is insufficient for information transmission to CP. In this case additional messages are formed to transmit the whole information and sequence number of the message is indicated in **Current message number** field. If no additional messages are needed then **Total number of messages** field is equal to 1 in binary code.

**Failure Message (Msg.N1)**

**R-75      Status: C**

Failure (message N1) is sent to alert the CP of a system failure.

This message is transmitted in case of exchange's hardware or software failure, influencing SOSM operation or upon monitored objects maintenance.

The format of this message is given in the following figure.

**Failure message format**

| Header          |
|-----------------|
| Type of failure |
| Code of Failure |

*Code of Message* = 21H

**Type of failure** can take the following values:

01H: Causes loss of exchange's SOSM database and requires retransmission of SOSM tables from CP side.

02H: Does not cause SOSM's database loss, but it requires CP operator intervention.

03H: Does not cause SOSM's database loss and does not require SOSM tables retransmission or CP operator intervention.

When a problem occurs during the processing of a SOSM operation, an appropriate code will be reported in the failure message. Since the SOSM software is not to generate any reports or logs on the exchange, when software errors or resource problem occur, the CP will be informed with a failure message. **The CP operator should report these failures to the vendor.**

The following "code of failure" values are defined:

**Expanded codes of failure**

| Name                       | Value     | Action                                                                                           |
|----------------------------|-----------|--------------------------------------------------------------------------------------------------|
| system outage              | 01H       | Inform operating company                                                                         |
| subscriber circuit failure | 02H       | Inform operating company                                                                         |
| PCM30 link fault           | 03H       | Inform operating company if problem persists                                                     |
| conference circuit fault   | 04H       | Inform operating company if problem persists <sup>a</sup>                                        |
| Maximum calls exceeded     | 06H       | None, this may occur if many observed subscribers originate or receive calls at the same time    |
| Resource Problem           | 10H - 19H | None, this may occur periodically under heavy traffic. report to vendor if this problem persists |
| software error             | 20H - FEH | Report to vendor (NETAS)                                                                         |

a. NOTE: under heavy SOSM traffic, it is possible that the conference circuits may fail. This is a limitation of the 3X67 conference circuit card on the MTM or CTM shelf. In those rare cases, failure message will be sent to the CP, the MCL using that conference port card will be release, and message 52 (MCL cleared) will be reported to CP. In addition, NET102 logs (not SOSM specific) may be generated in the office, reporting the card problem.

### Restart message (Msg.N2)

#### **R-76      Status:    C**

Exchange S/W Restart (message N2) is sent to inform CP of a system restart.

This message is sent if exchange or SOSM are ready for service after the following events:

- Initial start of exchange
- Failure of exchange
- Restart of exchange's SW
- Upon software upgrade (ONP) from MMP to MMP
- Restart of SOSM system due to system failure

After this message, CP should:

- Send "Start of SOSM" command for initialization of SOSM
- Retransmit SOSM tables

The format of this message is given in the following figure.

#### Exchange S/W restart



*Code of Message= 22H*

### Data of objects of monitoring (Msg. N3)

#### **R-77      Status:    C**

Data of Objects of Monitoring (message N3) is sent to CP as a response to a previous query.

This message is transmitted as an answer upon the command "**Request for objects of monitoring data transmission**". When appropriate fields in this command are filled with FFH then "**Data on objects of monitoring**" message about every monitored object is transmitted to CP.

For information about message sequence and processing please refer to “Request object data (Command N10)” on page 1336.

Format of the message is given in Figure “Data of objects of monitoring”.

**Data of objects of monitoring**

|                                                       |                          |
|-------------------------------------------------------|--------------------------|
| Header                                                |                          |
| Conditional Number<br>of Object                       |                          |
| Type of Object                                        |                          |
| Sign of telephone number                              |                          |
| Number of digits in telephone number                  |                          |
| digit 2<br>.<br>digit 18                              | digit 1<br>.<br>digit 17 |
| Conditional number<br>of incoming group (unsupported) |                          |
| Category of Monitoring                                |                          |
| MCL Group Number                                      |                          |
| Mark of Priority                                      |                          |
| State of subscriber circuit                           |                          |

monitored  
subscriber's  
telephone  
number

*Code of Message* = 23H

**Unsupported:**

**Conditional number of connecting lines incoming group** is present if type of object = 03H, otherwise is equal to FFFEh.

**State of subscriber circuit** can take the following values:

00H: Subscriber circuit is in good working order (subscriber can use incoming/outgoing communication)

01H: Subscriber circuit is out of order (subscriber can not use incoming/outgoing communication).

If more than one message is required to transmit all the requested data, then **Total number of messages** and **Number of current message** fields in the message header are set.

If no supervised objects with required parameters in command “**Request for objects of monitoring data transmission**” are found in the database then these parameters are repeated in “**Data on objects of monitoring**” message and remaining fields are filled with FFH.

#### **Information about MCL groups message (Msg.N4)**

**R-78      Status:    C**

The Information about Correspondence between MCLs and Groups (message N4) is sent to CP in response to a previous request.

This message is sent as the answer to the command “Request for Transmission of Information about Correspondence between MCLs and Groups”. Message contents length should be 45 bytes. If the message length is less than 45 bytes then the unused bytes are filled with FFH. If more than 45 bytes are needed for information transmission (that means there are more than 11 MCLs in the group) then additional messages are formed. In this case appropriate values should be put in the fields, “**Total number of messages**” and “**Current message number**”, of header.

For information about message sequence and processing, please refer to “Request MCL group information (Command N11)” on page 1339.

Format of the message is given in “Information about correspondence between MCLs and groups” on page 1356.

**Information about correspondence between MCLs and groups**

| Header           |
|------------------|
| MCL group number |
| MCL group type   |
| MCL-A1 number    |
| MCL-B1 number    |
| MCL group number |
| MCL group type   |
| MCL-A2 number    |
| MCL-B2 number    |
| ...              |
| MCL group number |
| MCL group type   |
| MCL-AN number    |
| MCL-BN number    |
| FFH              |

*Code of Message* = 24H

**List of Supplementary Services message (Msg.N5)****R-79      Status:    C**

The List of Subscriber's Supplementary Services (message N5)

This message is sent as an answer to the command "Request for Transmission of Supplementary Services List" for every subscriber of the exchange.

For information about message sequence and processing, please refer to "Request subscriber's SS list (Command N12)" on page 1342.



Format of the command is given in the following figure.

**List of Subscriber's Supplementary Services**

| <b>Header</b>                        |         |
|--------------------------------------|---------|
| Sign of telephone number = 01H       |         |
| Number of digits in telephone number |         |
| digit 2                              | digit 1 |
| digit 4                              | digit 3 |
| .                                    | .       |
| dig16                                | dig15   |
| dig18                                | dig17   |
| Total number of services             |         |
| Spare= FFH (fixed)                   |         |
| Spare = FFH (fixed)                  |         |
| Service Code                         |         |
| ...                                  |         |
|                                      |         |
|                                      |         |

First service description

Nth service description

*Code of Message*= 25H

The service description parameter is a three byte parameter as follows:

- Byte 1 and Byte 2 are both set to FFH
- Byte 3 represents the Service Code.

The service codes correspond to service names as defined in “Subscriber Services Codes” on page 1443.

Message length can not exceed 55 bytes including the header. The maximum number of services codes in one message is 11.

### Unauthorized access message (Msg.N6)

#### **R-80      Status:    C**

Unauthorized Access to SOSM's Software (message N6) is transmitted to report an unauthorized access to the software and data of SOSM.

The format of this message is given in the following figure.

#### Unauthorized Access to SOSM's software

| Header                           |
|----------------------------------|
| Code of access                   |
| Date of current month (2 Digits) |
| Hour (2 Digits)                  |
| Minutes (2 Digits)               |
| Seconds (2 Digits)               |

*Code of Message*= 26H

Code of access field can take following values;

01H: access trial from forbidden port

02H: access trial with wrong password

03H: trial of SOSM data tables reading/record

04H: trial to refix port of SOSM communication with CP

05H: attempt to access SOSM configuration tables directly (not via SOSMCONF interface<sup>6</sup>)

06H: attempt to access SOSMCONF interface with wrong password

---

6. Please refer to "Access to SOSM configuration tables and parameters: SOSMCONF" on page 1395.

Bytes from 2 up to 45 are used for additional information about unauthorized access as follows:

- Byte 2 to 5 present the time the access violation was detected as:

|   |                                       |
|---|---------------------------------------|
| 2 | Date of current month<br>(two DIGITS) |
| 3 | Hours (Two DIGITS)                    |
| 4 | Minutes (Two DIGITS)                  |
| 5 | Seconds (Two Dlgits)                  |

The date and time information is stored in BCD digits from 0 to 9.

### Confirmation of command reception (Msg.N7)

#### **R-81      Status:    C**

Confirmation of Command out of CP Reception (message N7) is sent to confirm receipt of a command, or to indicate an error in a command.

This message is transmitted for any received command from CP over data channel 1 after correctness of the command parameters are checked. This check should be done within **400 milliseconds** since the command entered exchange's port.

This message is not transmitted for the command "**Testing of data transfer channels**".

Format of the message is given in the following figure.

#### **Confirmation of command out of CP reception**

| <b>Header</b>                    |
|----------------------------------|
| Code of command                  |
| Attribute of command's reception |

*Code of Message = 27H*

**Code of command** stands for the command for which the confirmation is given.

**Attribute of command's reception** can take the following values:

00H: command is accepted for execution

Any value other than 0H indicates an error as described in “Command reception result codes” on page 1447.

### **Confirmation of command execution (Msg.N8)**

#### **R-82      Status:    C**

Confirmation Command out of CP Execution (message N8) is sent to confirm execution of a command, or to indicate an error in the processing of a command.

This message is sent after execution or non-execution of the command received over channel 1.

This message is not transmitted for the command “**Testing of data transfer channels**”.

The format of the message is given in the following figure.

#### **Confirmation command out of CP execution**

| <b>Header</b>                    |
|----------------------------------|
| Code of command                  |
| Attribute of command's execution |

*Code of Message = 27H*

**Code of command** stands for the command for which the confirmation is given.

**Attribute of command's execution** can take the following values:

00H: command is executed successfully

Any value other than 0H indicates an error as described in “Command execution result codes” on page 1448.

**Answer test message (Msg.N9)****R-83      Status: C**

Answer Test Message Sent over DTC1 (message N9) for data channel diagnostics.

This message is sent over **all** existing data transfer channel 1s (DTC 1) as an answer to the command “Testing of data transfer channels” which is received over an available DTC1. After the command entered exchange’s port answer message should be sent within 200 milliseconds.

The format of the message is given in the following figure.

Answer test message sent over DTC 1

| Header                 |   |   |   |   |   |   |   |
|------------------------|---|---|---|---|---|---|---|
| Number of test message |   |   |   |   |   |   |   |
| X                      | X | X | X | X | X | X | X |
| X                      | X | X | X | X | X | X | X |

PCM group 7

PCM group 6

...

PCM group 0

State DTC 1

State DTC 2

*Code of Message* = 29H

**Number of test message** should coincide with the value of the “**Number of test message**” field in “**Testing of data transfer channels**” command.

**State of DTC 1 and state of DTC 2** can take following values:

1: if the DTC is in working condition

0: in case of DTC failure or absence

Bits of fields “State of DTC 1 and DTC 2” belong to PCM-30 primary groups from 0 up to 7.

**Incoming group data message (Msg.10)****R-84      Status: PC**

Data about Correspondence between Conditional Numbers of Incoming Groups and Their Real Exchange Names (message 10).

This message is issued ONLY upon command from CP. Format of the message is given in Figure , "Request incoming group info".

For information about message sequence and processing, please refer to "Request incoming group information (Command N16)" on page 1348.

**Data about correspondence between conditional numbers of incoming groups and their real exchange names**

| Header                                                  |
|---------------------------------------------------------|
| Conditional number                                      |
| of incoming group                                       |
| Incoming group's<br><br>symbolic<br><br>exchange's name |

*Code of Message = 2AH*

**Conditional number of incoming group** can take values from 0000H up to FFFE<sub>H</sub>.

If the field "**Conditional number of incoming group**" in the command "**Request for transmission of information about correspondence between exchange incoming group's name and it's conditional number**" (command N16) has the value FFFF<sub>H</sub> then SOSM should give the whole correspondence table for incoming groups.

If the length of the message exceeds **45** bytes then additional messages are formed with appropriate "**Number of current message**" and "**Total number of messages**" values in the header.

The Incoming group exchange name parameter has the following structure:

- Byte 1 to 2: Common Language Name Identifier: identifies the numeric value of the Incoming Trunk group number
- Bytes 3 and 4: Name length, the length of the actual string representation in bytes
- Bytes 5 to 20: Incoming group's name in ASCII characters

All remaining bytes in the message are set to FFH.

### Exchange SW version message (Msg.11)

#### **R-85      Status:    C**

Version of Exchange's SW is sent as a response to a previous request from CP.

This message is transmitted as an answer to the command "**Request of exchange's SW version**" (command N17).

For information about message sequence and processing, please refer to "Request SW version command (Command N17)" on page 1349.

The format of the message is given in the following figure.

#### **Version of exchange's SW**

| <b>Header</b>                               |
|---------------------------------------------|
| Version and edition of<br><br>exchange's SW |

*Code of Message* = 2BH

Values in bytes from 1 up to 7 define exchange's SW version and edition in ASCII code as follows:

|   |         |
|---|---------|
| 1 | B (42H) |
| 2 | C (43H) |
| 3 | S (53H) |
| 4 | 5 (35H) |
| 5 | 5 (35H) |

|   |         |
|---|---------|
| 6 | . (2E)  |
| 7 | 0 (30H) |

- Bytes 1-3 are hard coded to the string 'BCS' in ASCII code
- Bytes 4-5 represent the release number in ASCII code
- Bytes 7-8 represent the sub-release number in ASCII code
- All remaining bytes in the message are set to FFH

### Information Messages Transmitted over Data Channel 2

The following messages are sent from SOSM to CP over data channel 2:

- Reception of called subscriber complete telephone number.
- Called subscriber answer.
- Disconnection.
- Supplementary services (SS) using.
- Monitoring Connecting Line's (MCL) connection.
- Clearing of MCL.
- Answering test message.

### Format of SOSM to CP Information Messages

#### **R-86      Status: C**

Information field of the messages about monitored connections have the following format:

#### **Format of Header in Information Messages from SOSM to CP**

| Byte No. | Parameter                    |
|----------|------------------------------|
| 1        | Preamble =CCH                |
| 2        | Number of SOSM               |
| 3        | Message Code                 |
| 4        | Message length               |
| 5        | Number of call               |
| 6        |                              |
| 7        | type of object               |
| 8        | conditional number of object |
| 9        |                              |



| Byte No. | Parameter                       |
|----------|---------------------------------|
| 10       | attribute of object's selection |
| 11       | parameter of communications     |
| 12       | code of SS phase                |

Byte 1 is the SOSM Preamble, a constant with value CC Hex.

Byte 2 is the SOSM number as assigned by software.

Byte 3 is the message code, values are defined in the following sections.

Byte 4 is the message content length in bytes.

Bytes 5-6 identify the Call Number as previously defined.

Byte 7 identify object type as previously defined

Byte 8-9 identify Conditional Number of Object.

Byte 10 identify the object selection as follows:

#### Attribute of object selection

| Bit No.      | Parameter                                                                        |
|--------------|----------------------------------------------------------------------------------|
| <b>D1 D0</b> | <b>Selection according to calling subscriber</b>                                 |
| 0 1          | Complete monitoring, combined                                                    |
| 1 1          | Complete monitoring, separate                                                    |
| 1 0          | Statistical monitoring                                                           |
| <b>D3 D2</b> | <b>Selection according to called subscriber</b>                                  |
| 0 1          | Complete monitoring, combined                                                    |
| 1 1          | Complete monitoring, separate                                                    |
| 1 0          | Statistical monitoring                                                           |
| <b>D5 D4</b> | <b>Selection according to Conditional Number of incoming group (UNSUPPORTED)</b> |
| 0 1          | Complete monitoring, combined                                                    |
| 1 1          | Complete monitoring, separate                                                    |
| 1 0          | Statistical monitoring                                                           |

| Bit No.      | Parameter                                                  |
|--------------|------------------------------------------------------------|
| <b>D7 D6</b> | <b>Selection according to Conditional Number of Object</b> |
| 0 1          | Complete monitoring, combined                              |
| 1 1          | Complete monitoring, separate                              |
| 1 0          | Statistical monitoring                                     |

Byte eleven identifies communications parameters and is defined as follows:

**Parameters of communication**

| Bit No.            | Parameter                            |
|--------------------|--------------------------------------|
| <b>D3 D2 D1 D0</b> | <b>Type of communications</b>        |
| 0 0 0 1            | Outgoing call                        |
| 0 0 1 0            | incoming call                        |
| 0 1 0 0            | international transit                |
| 1 0 0 0            | toll transit                         |
| 1 1 0 0            | cross-office call                    |
| <b>D5 D4</b>       | <b>Call setup method<sup>a</sup></b> |
| 0 1                | Direct Dialed(Automatic)             |
| 1 0                | Operator Assisted (Semi-automatic)   |
| <b>D7 D6</b>       | <b>reserved</b>                      |
| 0 0                | Reserved = 0                         |

a. Note: The 'type of communications' byte is assigned as 'Semi-automatic' for all operator originating calls.

Byte 12 defines code of supplementary services phase and has the following values:

- 00H - Normal call
- 01H - order of SS service
- 02H - test of SS service
- 03H - abolition of SS service
- 04H - SS activation

Contents of Message field of the information message has the following format:

**Format of the Contents field of Information Message**

| <b>Byte No.</b> | <b>Parameter</b>                     |
|-----------------|--------------------------------------|
| 1               | Attribute of Telephone number        |
| 2               | Number of digits in telephone number |
| 3               | Calling DN                           |
| 4               |                                      |
| 5               |                                      |
| 6               |                                      |
| 7               |                                      |
| 8               |                                      |
| 9               |                                      |
| 10              |                                      |
| 11              |                                      |
| 12              | attribute of telephone number        |
| 13              | Number of digits in telephone number |
| 14              | Called DN                            |
| 15              |                                      |
| 16              |                                      |
| 17              |                                      |
| 18              |                                      |
| 19              |                                      |
| 20              |                                      |
| 21              |                                      |
| 22              |                                      |
| 23              | Conditional number of incoming group |
| 24              |                                      |
| 25              | MCL-A number                         |
| 26              | MCL-B number                         |
| 27              | Date of current month (two DIGITS)   |
| 28              | Hours (Two DIGITS)                   |

| Byte No. | Parameter              |
|----------|------------------------|
| 29       | Minutes (Two DIGITS)   |
| 30       | Seconds (Two Digits)   |
| 31       | Priority               |
| 32       | Operation Code         |
| 33       | Description of Service |
| 34       |                        |
| 35       |                        |
| 36       | Additional Code        |

Bytes 1 to 11 define the Calling subscriber. Bytes 12 to 22 define the Called subscriber.

Attribute of telephone number is defined as follows:

- 01H - present exchange subscriber
- 02H - local network subscriber
- 03H - local ZONE subscriber
- 04H - OTHER ZONE subscriber
- 05H - Other country subscriber
- 06H - local or international emergency or inquiry services
- FFH - combination without value

**Note:** Attribute of telephone number for Called DN will always be present correctly. For calling DN, if the originator is a line in the present exchange, that attribute will be present, otherwise, combination without value (FFH) is set.

The content of the calling DN field depends on the originator of the call as follows:

- If the call is a line originated call, the DN (Office code + DN Digits, excluding area code) is provided in the calling DN field.
- If the call is a trunk originated call, the incoming ANI digits are provided in the calling DN field. SOSM is not able to determine the sign of the incoming ANI digits, therefore the attribute of the calling DN parameter will be set as #FF in these scenarios.
- If the call is a trunk originated call, and ANI digits are not received, calling DN field are filled with #F.

The content of the called digits depends on the terminating agent as follows:

- If the call terminates to an exchange subscriber, the called DN field will include the DN of the terminating line (Office code + DN Digits, excluding area code) instead of dialed digits.
- If the call terminates to a trunk, called DN field will include all available dialed digits.

**Note:** *The available digits depend on the dial plan in the given office and changes between Local Offices and Toll/Tandem offices.*

Bytes 23-24 is used when the number of the incoming call to the supervised subscriber can not be determined, otherwise it is set to FFFFH. It may take values from 0000H to FFFFH and corresponds to group's symbolic name."

Bytes 25-26 define the MCL numbers used for monitoring.

Bytes 27-30 define the current month's day and time stamp.

Byte 31 defines the priority of the object.

Byte 32 defines the operation code as:

- Code of connection completion for Disconnection message
- Code of MCL connection for messages Connection of MCL, Reception of called number, Answer and Using of SS services. Please refer to "Command execution result codes" on page 1448 for an expanded list of mcl connection codes
- Code of MCL clearing for message Clearing of MCL
- Code FFH otherwise

Bytes 33-36 are used for service codes in Use of SS message, otherwise, FFH is used.

If in a call, both Calling and Called parties are monitored objects, then for each party, a separate information message is sent to the CP reporting the call phases, with a unique call number. If MCL connection is required, each "SOSM call" is connected as defined in the subscriber object definition.

The SOSM system can support any monitoring type (statistical, combined or separate) for both agents involved in a call - where both called and calling parties are under surveillance -, if adequate resources are available for MCL connections.

**Reception of called party number (Msg. No.1.1)****R-87      Status:    PC**

Reception of the called subscriber telephone number message (N1.1) is sent to CP to report reception of called number in a monitored call.

This message is transmitted after receiving called subscriber's number information and if any of the numbers is found in the SOSM database for supervised objects. If calling number can not be determined, and the originator is a trunk, the number of incoming trunk group is reported instead.

In line-to-trunk overlapped calls, it can be determined if the call should be monitored prior to reception of the full called number. In these calls, reception of called\_party number message (MSG.1.1) is sent just after enough digits are received to determine the monitoring object.

The "description of service" fields are set to FFH.

The format of the message is given in "Format of the Contents field of Information Message" on page 1367.

*Code of Message* = 41H.

For links, selected on "complete monitoring" category, this message should be transmitted to CP immediately after free MCL had been fastened to the selected call, or after decision about the absence of free MCL for this call.

The result of MCL allocation is set in the Operation's code "code of MCL unconditional" as follows:

- 00H - Normal connection
- 01H- no free MCL in group
- FFH - for statistical monitoring
- other connection code (Please refer to "Command execution result codes" on page 1448 for an expanded list of mcl connection codes)

**Answer message (Msg. No 1.2)****R-88      Status:    C**

Answer of the Subscriber message (N1.2) is sent to CP to report Answer event in a monitored call.

This message is transmitted after the called subscriber answers the call. Format of the message is given in "Format of the Contents field of Information Message" on page 1367.

*Code of Message* = 42H.

The result of MCL connection is set in the Operation's code "code of MCL unconditional" as follows:

- 00H - Normal connection
- 01H - no free MCL in group
- FFH - for statistical monitoring

other connection code (Please refer to "Command execution result codes" on page 1448.).

### **Disconnection message (Msg. No 1.3)**

**R-89      Status: C**

Disconnection message (N1.3) is sent to the CP to report call completion.

This message is transmitted when the call is complete and taken down. If applicable, data transmission over MCL is stopped and MCL resources allocated to this conversation are decollated.

The format of the message is given in "Format of the Contents field of Information Message" on page 1367.

The "operation code" field of the message is set to have "code of connection completion" parameter as follows:

- 01H - disconnection because of technical reason
- 02H - disconnection after incomplete dialling
- 03H - disconnection in case of busy called party
- 04H - disconnection if subscriber B does not answer
- 05H - disconnection after normal conversation ends

*Code of Message* = 43H.

**Note: (01H)** Technical reason will be used for any cause values which are not defined above.

### **Service usage message (Msg. No 1.4)**

**R-90      Status: C**

SS services usage message (N1.4) is transmitted when a Supplementary Service (SS) is activated, deactivated, or interrogated by a monitored subscriber.

The format of the message is given in “Format of the Contents field of Information Message” on page 1367.

The “description of service” field of the message is populated the service code being used as defined for message “[List of Subscriber’s Supplementary Services](#)” on page 1357.

The “Additional code” field is populated with FFH.

The “additional code” field is populated with codes of services not defined by international standards. Values of these services should be communicated to the customer.

***Note:** DMS specific service codes are put in the Service Code field as opposed to the Additional Code byte as requested by LONIIS. Refer to “[List of Subscriber’s Supplementary Services](#)” on page 1357 for complete information.*

*Code of Message = 44H.*

The value of MCLA, MCLB, category, priority and Operation code fields of this message are determined as follows:

- **Service activation / interrogation / deactivation:**

Subscribers can activate/interrogate/deactivate CEPT services even within a separate call, or during an answered call.

If a subscriber only makes a service activation/deactivation/interrogation at origination, and does not connect to another agent, SOSM does not connect MCLs for this call in order to optimize resource usage. MCLA and MCLB indexes of the messages (service usage (Msg.1.4) and call clearing (Msg.1.3) messages) in these calls are set as FFH.

The category of the call is filled with monitoring order category.

The priority of the call is filled with monitoring order priority.

The parameter of communications field is set to “cross-office call”.

The operation code field of service usage message (Msg.1.4) is set to FFH.

**Upon unsuccessful service activation/interrogation/deactivation attempts, SOSM does not send service notification message. Instead, only call clearing message (Msg.1.3) is sent with “disconnection after incomplete dialling - 02” operation code. However, if the service is inactive for the monitored subscriber, the call clearing message (Msg.1.3) is sent with “disconnection because of technical reason - 01” operation code upon interrogation of the service.**



SOSM sends service notification message (Msg.1.4) for the monitored agent's activation/interrogation/deactivation attempts during the call. If a subscriber flashes, and activates/deactivates/interrogates a CEPT service during an active call, SOSM reports this event with the same call number as in the call data messages of the original call. Additionally, category and priority fields of the message is the same with the call data messages of the original call. However, Parameter of Comm. is set as "cross-office call", the MCL# and Operation Code fields are set to FFH even though it is not FFH in the call data message.

- **Service usage:**

In some scenarios, SOSM reports the subscriber services -which are used within a monitored call- to the control point. MCLA and MCLB fields within service usage messages depend on the call state at which SOSM sends the message.

In a monitored call, SOSM allocates MCLs after the dialled digits are successfully translated (just before sending reception of full number message). MCLs are connected as the originating subscriber receives ring-back tone. In a monitored call, SOSM allocates MCLs after the dialled digits are successfully translated (just before sending reception of full number message). MCLs are connected as the originating subscriber receives ring-back tone.

If the service usage message is sent before MCL allocation (as in CCBS), MCLA and MCLB fields of the service usage message are filled with FFH. In such scenarios, the operation code of this message will also be populated with FFH.

If the service usage message is sent after MCL allocation, MCLA and MCLB fields of the message are populated with the MCL indexes which are used for the call. The operation code field includes information about the state of the MCLs (i.e normal connection-00H, -01H- no free MCL in group, etc....)

The below table shows the list of CEPT features supported by SOSM:

**CEPT features supported by SOSM**

| Feature | Activation | Deactivation | Interrogation | Usage |
|---------|------------|--------------|---------------|-------|
| ACRJ    | +          | +            | +             | -     |
| AR      | +          | +            | +             | -     |
| AUL     | N/A        | N/A          | N/A           | -     |
| CCBS    | +          | +            | +             | +     |
| CEPTW   | +          | N/A          | +             | N/A   |

**CEPT features supported by SOSM**

| <b>Feature</b> | <b>Activation</b> | <b>Deactivation</b> | <b>Interrogation</b> | <b>Usage</b> |
|----------------|-------------------|---------------------|----------------------|--------------|
| CEPTRA         | N/A               | N/A                 | N/A                  | +            |
| CDND           | +                 | +                   | +                    | -            |
| CDTA           | +                 | +                   | +                    | +            |
| CDTO           | +                 | +                   | +                    | +            |
| CFB            | +                 | +                   | +                    | +            |
| CFD            | +                 | +                   | +                    | +            |
| CFF            | +                 | +                   | +                    | +            |
| CFRA           | N/A               | N/A                 | N/A                  | +            |
| CFU            | +                 | +                   | +                    | +            |
| CLF            | N/A               | N/A                 | N/A                  | +            |
| CND (CLIP)     | +                 | +                   | +                    | -            |
| CNDB (CLIP)    | N/A               | N/A                 | N/A                  | -            |
| CNDBO (CLIRO)  | N/A               | N/A                 | N/A                  | -            |
| CPU            | N/A               | N/A                 | N/A                  | +            |
| I3WC           | N/A               | N/A                 | N/A                  | +            |
| I6WC           | N/A               | N/A                 | N/A                  | +            |
| ICT            | N/A               | N/A                 | N/A                  | +            |
| ICWT           | +                 | +                   | +                    | +            |
| ILR            | +                 | +                   | +                    | +            |
| IWUC           | +                 | +                   | +                    | +            |
| LNR            | N/A               | N/A                 | N/A                  | -            |
| SCL / SCS      | +                 | +                   | +                    | -            |
| SCR            | N/A               | N/A                 | N/A                  | -            |
| SUPPRESS       | +                 | +                   | +                    | -            |
| WML            | +                 | +                   | +                    | -            |

For the above table,

(+) denotes that SOSM sends Msg.1.4. For detailed usage notification of above features, see appropriate section (2.11.x) of this document.

(-) denotes that SOSM does not send Msg.1.4.

(N/A) denotes that Msg.1.4 cannot be sent.

### MCL connection message (Msg No 2.1)

#### **R-91      Status: C**

Connection of MCL message (N2.1) is transmitted after MCL connection as a result of command N7.

The format of the message is given in “Format of the Contents field of Information Message” on page 1367.

The “operation code” field is populated with “code of MCL unconditional” as follows:

- 00H - normal connection
- 01H- no free MCL in group
- other connection code (Please refer to “Command execution result codes” on page 1448 for an expanded list of mcl connection codes)

*Code of Message = 51H*

### Clearing of MCL message (Msg No.2.2)

#### **R-92      Status: C**

Clearing of Monitoring Connecting Line message (N2.2) is transmitted if clearing of MCL has happened for **any reason**.

The format of the message is given in “Format of the Contents field of Information Message” on page 1367.

The “operation code” field is populated with “code of MCL clearing” code as follows:

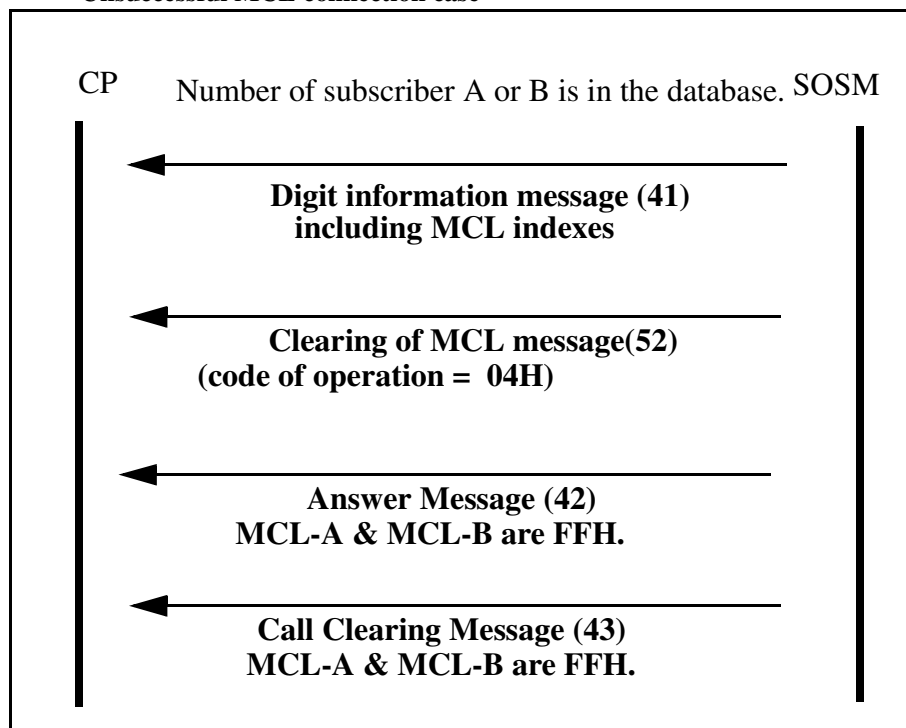
- 01H - on command N8 “clearing of MCL”
- 02H - on monitored object priority
- 03H - on priority as a result of command N7: “connection to voice path”
- 04H - equipment failure
- 05H - on command N6 “removal of object of monitoring”

**Note:** On command “stop sosm” if there is an active monitored call, the MCL is cleared but **no message is sent to CP**.

*Code of Message = 52H*

SOSM only reserves MCLs those will be used within a call while sending reception of full number message (Msg.1.1). Call content delivery is started when the speech path is established between the connected parties. Therefore, SOSM notifies control point about the connection failures (i.e. resource problem, MCL outage,...) using this message with the operation code set to “equipment failure - 04H”.

#### Unsuccessful MCL connection case



#### Answer test message (Msg. No 2.3)

**R-93 Status: C**

Answering test message (N2.3) is sent for diagnostics of data channel 2.

This message is sent over **all** existing data transfer channel 2 (DTC 2) as an answer to the command “Testing of data transfer channels” which is received over an available DTC1. After the command entered exchange’s port answer message should be sent within 200 milliseconds.

The format of the message is given in the following figure.

**Answer test message sent over DTC 2**

| Header                 |   |   |   |   |   |   |   |
|------------------------|---|---|---|---|---|---|---|
| Number of test message |   |   |   |   |   |   |   |
| X                      | X | X | X | X | X | X | X |
| X                      | X | X | X | X | X | X | X |

**State DTC 1****State DTC 2**

PCM group 7

PCM group 6

...

PCM group 0

*Code of Message = 53H*

**Number of test message** should coincide with the value of the “**Number of test message**” field in “**Testing of data transfer channels**” command.

**State of DTC 1 and state of DTC 2** can take following values:

1:if the DTC is in working condition

0:in case of DTC failure or absence

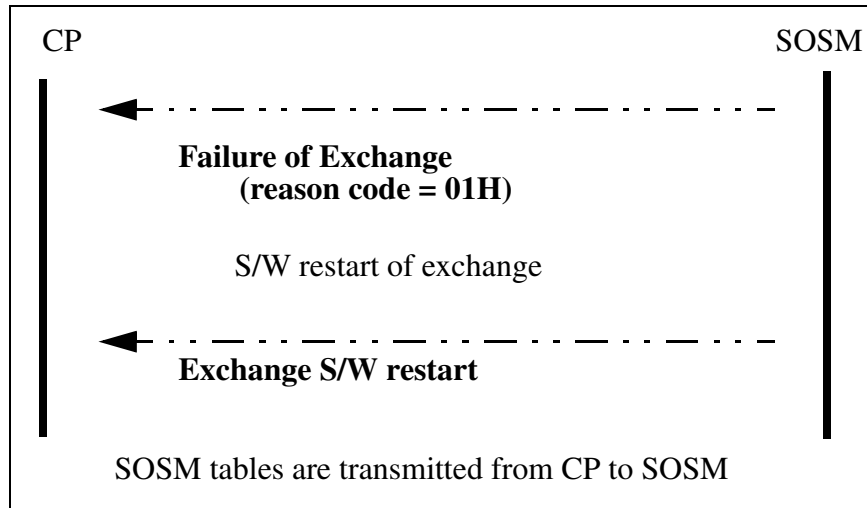
Bits of fields “State of DTC 1 and DTC 2” belong to PCM-30 primary groups from 0 up to 7.

The Channel 2 header fields “number of call”, “type of object”, “conditional number of object”, “sign of object’s selection”, “link’s parameters” and “code of SS phase” are all set to FFH.

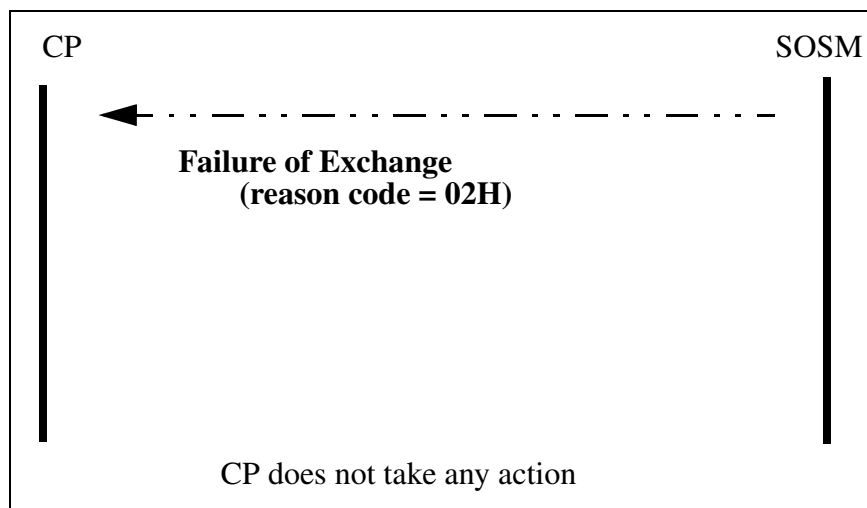
## Failure Cases message scenarios

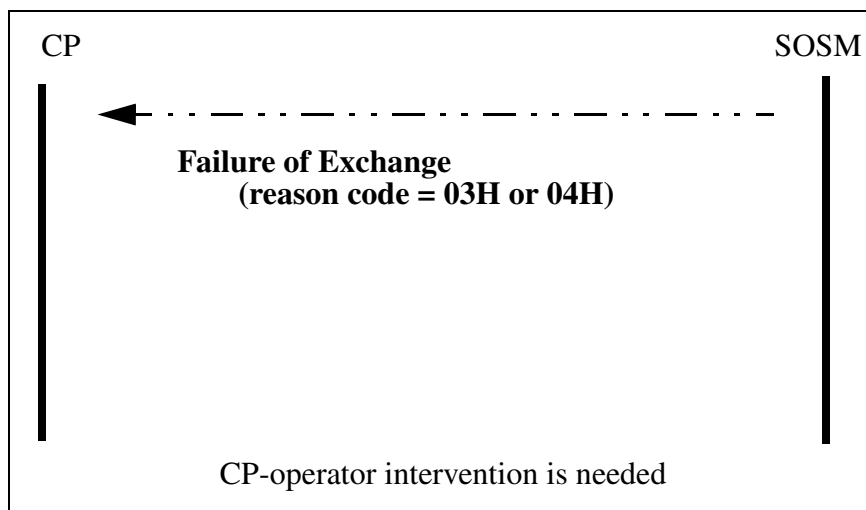
### Failure of Exchange

#### Failure of exchange causing SOSM tables to be deleted



#### Failure of exchange that does not need CP intervention



**Failure of exchange that needs CP intervention****Monitored Call Scenarios**

The process of selecting an object of monitoring is as follows:

- a. In line originated calls, the DN of the originating line (office code + DN digits, excluding area code) is obtained, and searched in the monitored objects database
- b. If the call is originated from an incoming trunk, SOSM does not search the originating number in monitoring order database.

If the call is monitored due to called party, ANI information received from the incoming trunk is reported in the call information messages. If ANI is not received, incoming group number is reported in the Call information message.

- c. Called party number is obtained and searched in the monitored object database.

**If the called party is a network subscriber, the dialled digits are searched within the database.**

**If called party is a present exchange subscriber, the DN of the terminating subscriber (office code + DN digits, excluding area code) is sourced in the database instead of the dialled digits. This way, SOSM monitors all accesses to the present exchange subscribers, and is not impacted by the retranslation scenarios.**

- d. If no objects are found, the call continues normally
- e. If one object is found, the call becomes a monitored call, the object's data is retrieved, and the call continues. All subsequent required call events will be reported to the CP. If the object has complete monitoring

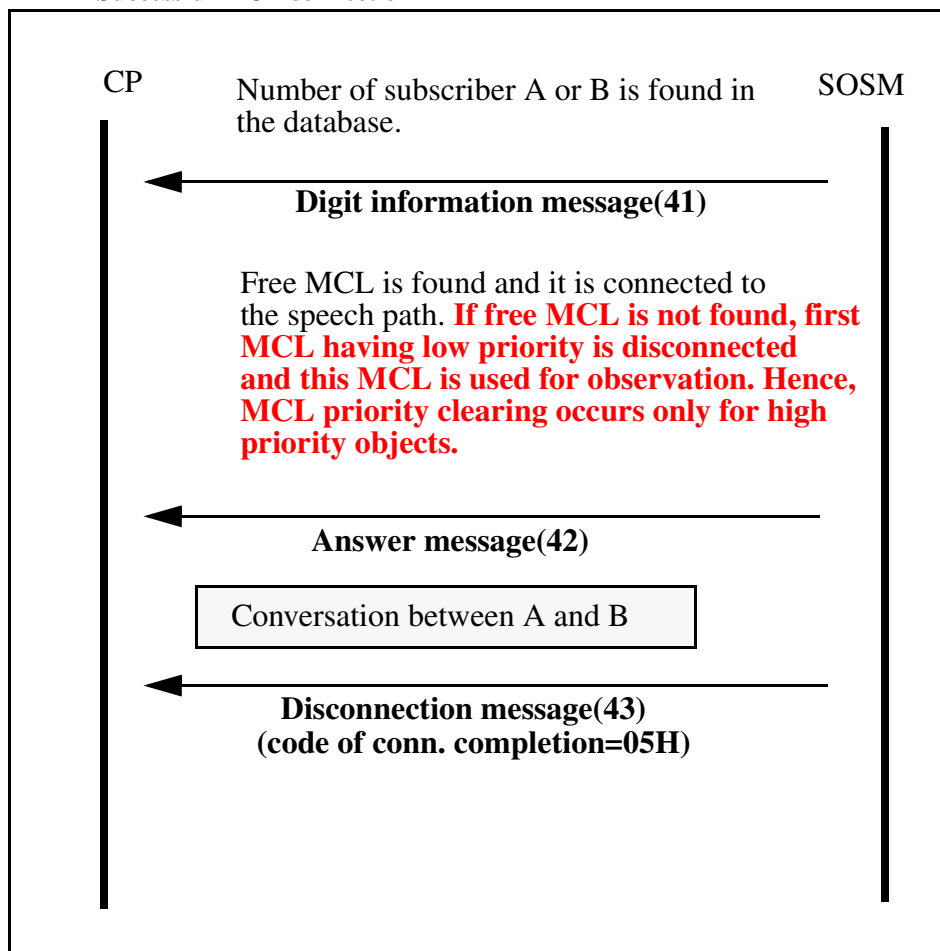
category, MCL connection is made when ringback tone is received (before answer phase). Please refer to the following figures.

- f. If both calling and called objects are found in the database, then two sosm call numbers are assigned for each subscriber's call. The properties of the each subscriber are used for making MCL connection (if required). A separate message for each object is sent to the CP for each required call event.
- g. SUSPended agents are not monitored by SOSM, although they exist in monitoring order database.

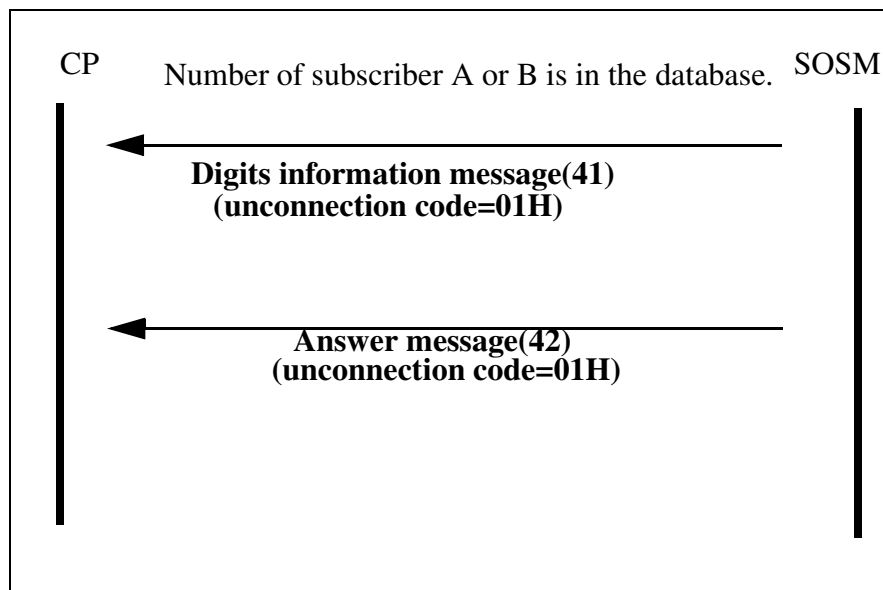
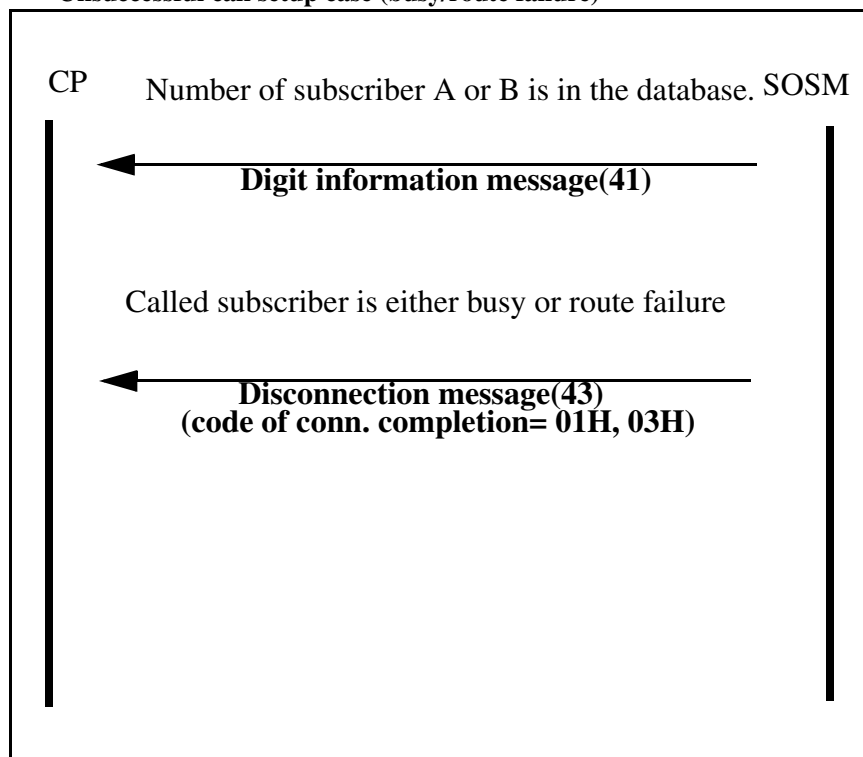
The following sections describe the messaging that takes place for each call scenario.

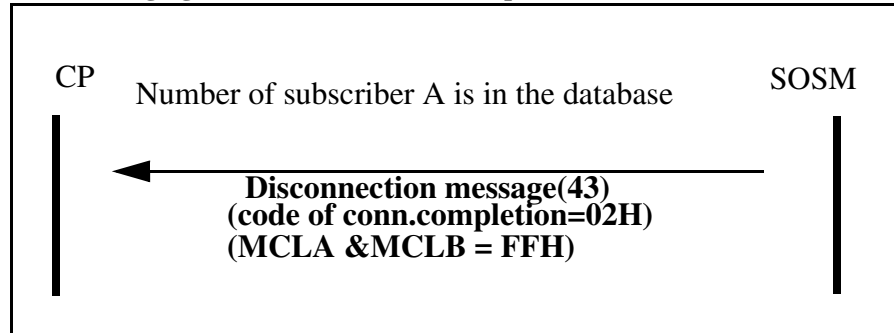
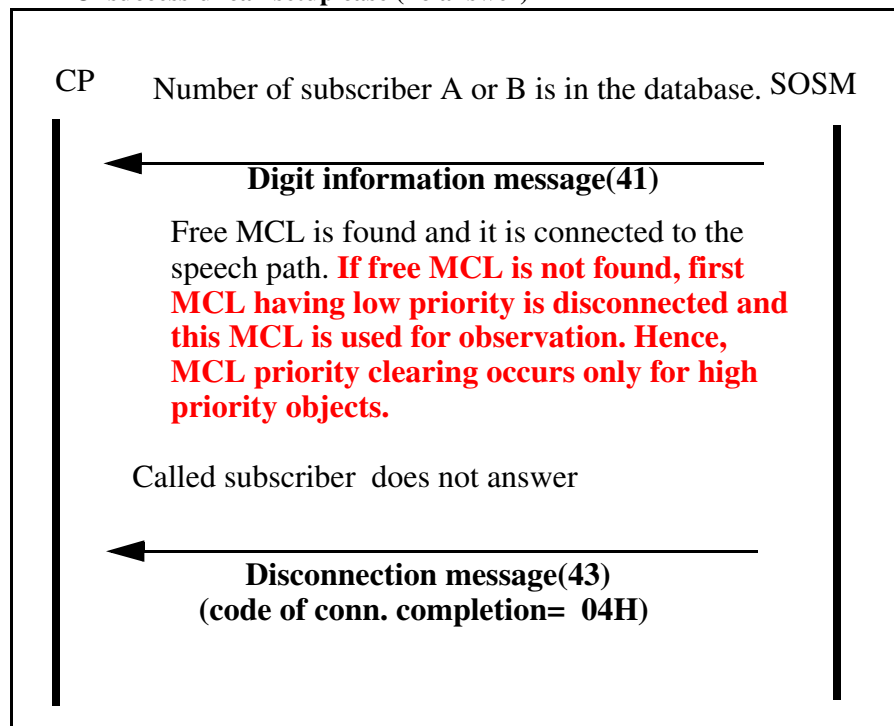
### Supervised Subscriber with Complete Monitoring

#### Successful MCL connection



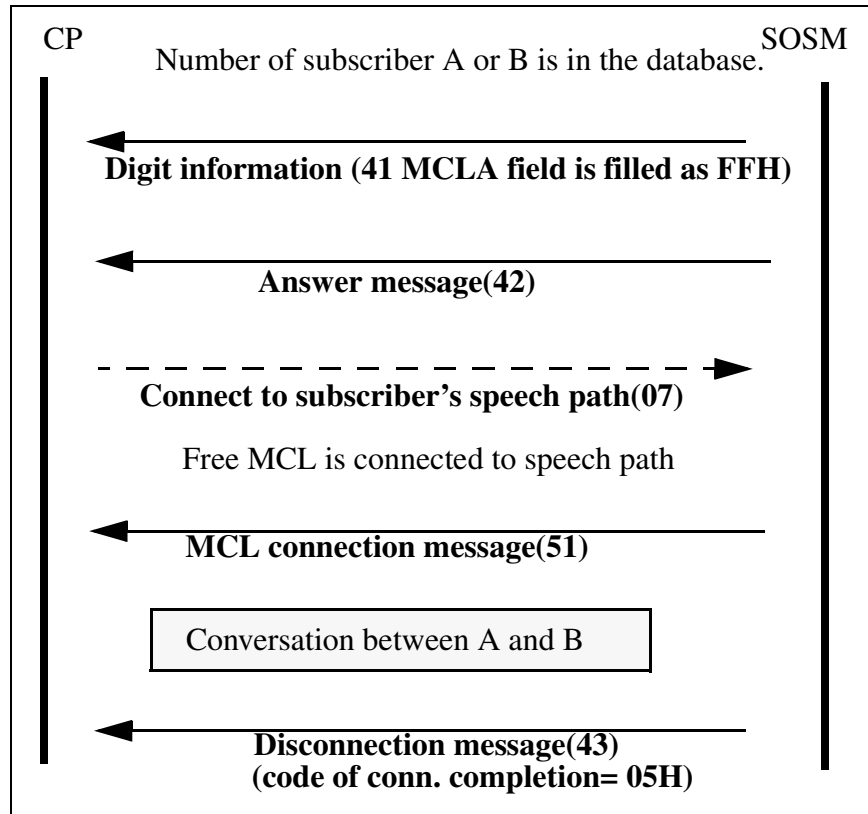


**Unsuccessful MCL connection if no free MCL is found****Unsuccessful call setup case (busy/route failure)**

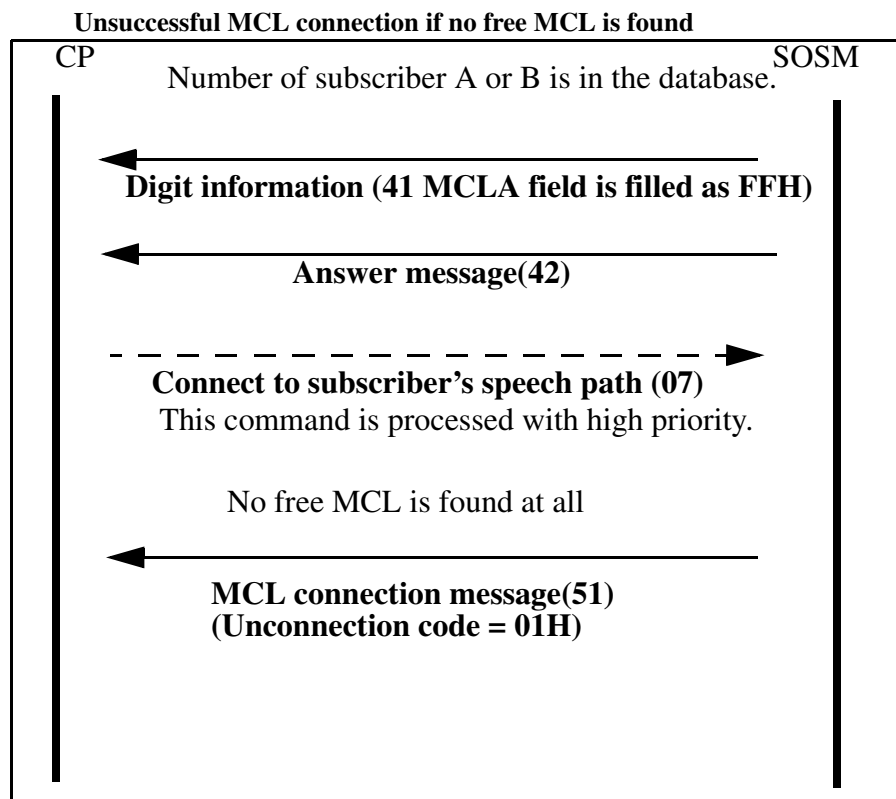
**Messaging when the translation fails (partial/no dial)****Unsuccessful call setup case (no answer)**

## Supervised Subscriber with Statistical Monitoring

### Successful MCL connection



After receiving "Connect to subscriber's speech path" command, category of monitoring is switched from statistical to complete ONLY for the specified call.



## Software Optionality Control (SOC)

Software Optionality Control is provided for this feature. SOC order code is SOSM0001.

While SOSM0001 is OFF:

- Any message received from CP are ignored. (DMS MMP neither executes the message nor sends response.)
- Access to SOSM configuration CI level is not permitted even if the valid password is entered.
- SOSM configuration tables SOSMMPC, SOSMTRK and SOSMPARM can be reached only within SOSMCONF CI level. Since access to SOSMCONF CI level is not permitted at this state, access to SOSM configuration tables is not possible while SOSM0001 is OFF.

Activation of SOSM0001:

- It is not allowed to turn SOSM0001 to ON state, while there is any other active NBD flavor (DNBD, etc....) on the switch.

While SOSM0001 is ON:

- Activation of any other Network Broadcast Delivery (NBD) application is prevented after turning SOSM0001 to ON state.
- Access to SOSM configuration tables via SOSMCONF CI level is possible.
- Commands received from CP are processed as described in the previous sections.

Deactivation of SOSM0001:

- Turning SOSM0001 OFF deactivates all SOSM applications on the exchange. SOSM is stopped, and all dynamic data within MCL and monitoring order databases are cleared.
- SOSM system password is reset with the initial password.
- Data in SOSMMPC, SOSMTRK and SOSMPARM tables remains unchanged. However, access to these tables are prevented as indicated above.

## Password Management

The SOSM system has 3 different passwords:

- SOSM initial password
- SOSM current password
- SOSM CI access password

A Password is defined as a character string of no more and no less than SIX (6) bytes. Characters are represented as per the ASCII printable character set in the range (20H to FFH).

## Provisioning

The SOSM system makes use of several DMS MMP tables and commands for static data which is used in the operation of SOSM. The following sub-sections describe those tables and commands.

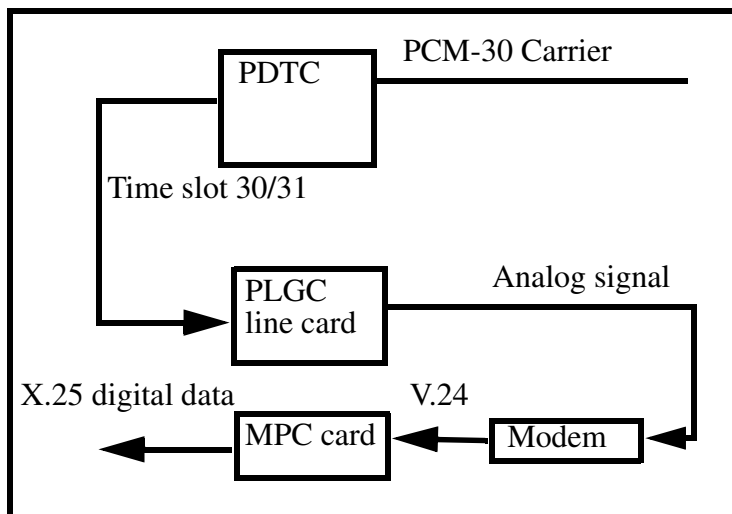
### X.25 related tables

SOSM X.25 system uses the MPC card and associated tables to provide X.25 DTC 1 and 2. When X.25 data is transmitted via PCM-30 carriers, additional datafill is required to transfer that data from the PCM-30 carrier into the appropriate MPC card.

The following figure depicts the general configuration required for supporting X.25 on PCM-30. A connection is made between the MCL timeslot 30/31 on the carrier and a line card, via table SPCCON. The analog line is connected to a modem, which is then connected to the V.24 (RS232) port of the MPC card.

For each X.25 channel, a dedicated connection must be made. Semi-Permanent Connection trunks are used for this purpose.

#### X.25 on PCM-30 hardware configuration



The following sections describe the datafill requirement for MPC operations as well as additional datafill for X.25 on PCM-30 variant.

#### Table IOC

The datafill of this table is needed for IOM. Example datafill is shown in the following:

| IOCNO | FRTYPE | FRNO | SHPOS | FLOOR | ROW | FRPOS | MSCARD | MSPORT | PECINFO                    |
|-------|--------|------|-------|-------|-----|-------|--------|--------|----------------------------|
| 2     | ISME 0 | 33   | 0     | B     | 0   | 21    | 3      | FX30AA | MTM 10 3 IOMRAS01 D010PMLD |
| 3     | ISME 0 | 47   | 0     | B     | 0   | 20    | 3      | FX30AA | MTM 11 3 IOMRAS01 D010PMLD |

#### Table MPC

Table MPC must be datafilled with all the MPC card(s) used by the DMS-MMP. The SOSM system will use some of those cards for its communications with the CP.

For each pair of data channels between the DMS MMP and the CP, one MPC card must be installed. Link 2 on the card will be used for Data Channel 1, and Link 3 for Data Channel 2.

At a minimum, one card must be installed and dedicated for SOSM. If multiple redundant cards are installed, each card will provide a redundant pair of Channels. When the card currently being used is experiencing trouble, the new card will automatically be selected.

An example datafill of table MPC is shown in the following table.

**Table MPC datafill example**

| MPCNO | MPCIOC | IOCCCT | EQ     | DLDFILE   |
|-------|--------|--------|--------|-----------|
| 0     | 0      | 24     | 1X89BB | MPC403AC  |
| 1     | 1      | 24     | 1X89BB | MPC403AC  |
| 2     | 2      | 4      | FX30AA | IOM\$LOAD |
| 3     | 3      | 4      | FX30AA | IOM\$LOAD |

**Table MPCLINK**

Table MPCLINK is used to specify the protocol parameters of the X.25 link. For each MPC card and port (link), one entry must be datafilled in this table.

An example assumes clocking is provided by the Control Point X.25 card. An example datafill of table MPCLINK is shown in the following table. The example assumes clocking is provided by the Control Point X.25 card.

**Table MPCLINK datafill example for Modem Connection**

| LINKKEY | LINKALM | PRTCLDAT                                                                                   |
|---------|---------|--------------------------------------------------------------------------------------------|
| 1 1     | Y       | X2584 0 0 (NODETYPE DTE) (CLKSRCE EXTERNAL) (THRUPUT T9600) (NUMPVCS 1) (PVCDBIT DON)\$ \$ |
| 1 2     | Y       | X2584 0 0 (NODETYPE DTE) (CLKSRCE EXTERNAL) (THRUPUT T9600) (NUMPVCS 1) (PVCDBIT DON)\$ \$ |

**Table MPCLINK datafill example for Direct Cable Connection<sup>a</sup>**

| LINKKEY | LINKALM | PRTCLDAT                                                                                   |
|---------|---------|--------------------------------------------------------------------------------------------|
| 1 1     | Y       | X2584 0 0 (NODETYPE DTE) (CLKSRCE EXTERNAL) (THRUPUT T9600) (NUMPVCS 1) (PVCDBIT DON)\$ \$ |
| 1 2     | Y       | X2584 0 0 (NODETYPE DTE) (CLKSRCE EXTERNAL) (THRUPUT T9600) (NUMPVCS 1) (PVCDBIT DON)\$ \$ |

a. Note that datafill in this table may change depending on Control Point configuration.

Each entry corresponds to one link on the card.

The LINKKEY (Link Key) field identifies which MPC is used (i.e. MPC 3 Link 2 will appear as 3 2).

The LINKALM (Link Alarm) field controls the generation of system alarms in case when the link goes in to trouble state (SBSY).

The PRTCLDAT (Protocol Data) field specifies the protocol parameters.

There are several other X.25 L2 and L3 parameters that may be added, depending on the configuration of the control point X.25 system.

#### Table SOSMMPC (new)

Table SOSMMPC is used to map existing MPC cards and links in the office to pairs of SOSM channel 1 and 2. For each SOSM pair of channel, one entry is required.

This table can ONLY be accessed via SOSMCONF CI. Direct access attempt will result in “unauthorized access” message sent to CP, and any table commands thereafter is rejected.

An example datafill is shown in the following table.

Table SOSMMPC example datafill

| SOSMLINK | CHNL1 | CHNL2 |
|----------|-------|-------|
| 0        | 0 2   | 0 3   |
| 1        | 1 2   | 1 3   |
| 2        | 2 2   | 3 3   |

The SOSMLINK field indicates the SOSM Link number. Each new number can be used for redundancy. At least one entry must be present for SOSM to operate.

The CHNL1 and CHNL2 fields specify the MPC number and Link number to be used. MPC number must be a valid MPC datafilled in table MPC. The link number must can be {2 or 3} and must be a valid link datafilled in table MPCLINK.

CHNL1 and CHNL2 do not have to reside on the same MPC card.

***Note:** The deletion of the active link in this table is denied while SOSM is active. Other tuples (non-active links) can be deleted or added when sosm is active.*

#### Table LINEATTR

This table is used to define the Line Attribute Index of a line. The SOSM application uses it to define the dedicated lines used for connection between the MCL carrier (TS 30 or 31) and the modem. This line must be have a Line Class Code (LCC) of type **SPC**. An example datafill is shown below:

```
15 SPC NONE NT 15 15 NILSFC 0 PX NETXLA NTRS02 00
102_NPRT_1 NLCA_NILLA_1 $
```



**Table LCCOPT**

To define SPC line in MMP, the following tuple must be in table LCCOPT.

SPC (DGT) \$

**Table LENLINES**

Example SPC line datafill is shown below:

> Servord

> new \$ 7835479 spc 15 HOST 01 0 00 09 DGT \$

table LENLINES:

HOST 01 0 00 09 S 0 102 7835479 DT 27 102\_NPRT\_1 NLCA\_NILLA\_1 \$

**TABLE SPCCON**

This table is used for making Leased line (Semi-permanent) connections on DMS MMP. The SOSM system uses it to make a connection between an MCL trunk and a line card. The analog output of the line is then connected to the Modem. Trunks and lines datafilled in table SPCCON MUST be of type SPC.

An example datafill is shown below:

**SPCCON Datafill**

| SPCKEY | AGENT1   | AGENT2               | CONNECT |
|--------|----------|----------------------|---------|
| 0      | SOSMGRP0 | LINE HOST 01 0 00 09 | Y       |

Agent 1 identifies the trunk member to use. This trunk must be previously datafilled in table TRKMEM and put into service (please refer to “MCL trunk related datafill” on page 1389 for complete information on creation of SOSM MCL trunks).

Agent 2 identifies a line dedicated for the SOSM X.25 connection. This line must be properly created and put in service prior to datafill of table SPCCON.

The CONNECT field indicates if a connection should be established when the datafill is complete.

**MCL trunk related datafill**

The SOSM MCL trunks are implemented using SPC (Semi-Permanent Connection) trunks with no signalling.

These MCLs are used to transmit speech information to CP, as well as to provide X.25 channels for commands and data (if variant 1 is required).

Note that there is no correspondence between MCL groups and PCM-30 trunk groups. An MCL group can contain members from different PCM-30 trunk groups. However, for each group of PCM-30 carriers, there must be a UNIQUE CLLI assigned as shown in the sections to follow.

To provide MCL trunks the following datafill order is required: CLLI, TRKGRP, TRKSGRP, TRKMEM, SOSMTRK (via SOSMCONF CI).

When a PCM-30 trunk group is datafilled in table SOSMTRK, that trunk group can not be deleted from TRKGRP table.

The sections to follow describe each table and provide a datafill example. For complete information regarding these tables, please refer to the appropriate NTP.

### Table CLLI

Table CLLI is used to define Common Language Names for every piece of equipment on the DMS MMP. The SOSM system uses it to define MCL trunk groups. An example datafill for SOSM MCL trunk groups in table CLLI is shown in the following table.

**Table CLLI datafill**

| CLLI     | ADNUM | TRKGRSIZ | ADMININF         |
|----------|-------|----------|------------------|
| SOSMGRP0 | 218   | 30       | SOSM_MCL_GROUP_0 |
| SOSMGRP1 | 219   | 30       | SOSM_MCL_GROUP_1 |
| SOSMGRP2 | 220   | 30       | SOSM_MCL_GROUP_2 |
| SOSMGRP3 | 221   | 30       | SOSM_MCL_GROUP_3 |
| SOSMGRP4 | 222   | 30       | SOSM_MCL_GROUP_4 |
| SOSMGRP5 | 223   | 30       | SOSM_MCL_GROUP_5 |
| SOSMGRP6 | 224   | 30       | SOSM_MCL_GROUP_6 |
| SOSMGRP7 | 225   | 30       | SOSM_MCL_GROUP_7 |

For each PCM-30 group of MCLs, a separate CLLI is required. The number of members specified in TRKGRSZ corresponds to the number of PCM-30 time slots in an MCL group.

### Table TRKGRP

This table is used to define the characteristics of a trunk in DMS MMP. For each trunk group, a tuple must be datafilled.

The SOSM system uses this table to define MCL trunk groups. An example datafill of this table is shown in the following table. The example shows eight MCL groups for up to 224 MCLs.

**Table TRKGRP datafill**

| GRPKEY   | GRPTYP | TRAFSNO | PADGRP | NCCLS | GRPINFO |
|----------|--------|---------|--------|-------|---------|
| SOSMGRP0 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP1 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP2 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP3 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP4 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP5 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP6 | SPC    | 0       | NPDGP  | NCRT  | OG      |
| SOSMGRP7 | SPC    | 0       | NPDGP  | NCRT  | OG      |

For each PCM-30 group a separate trunk group must be defined.

**The GRPTYP field MUST be SPC, and the direction field must indicate OG (outgoing).**

**Table TRKSGRP**

This table is used to provide more specific information about a trunk group. An example datafill is shown in the following table.

**Table TRKSGRP datafill**

| SGRPKEY  | CARD-CODE | SGRPVAR |
|----------|-----------|---------|
| SOSMGRP0 | DS1SIG    | NOSIG   |

The card-code filed MUST specify P30CAS, and SGRPVAR must be NOSIG.

**Table TRKMEM**

This table defines the peripheral and carrier parameter of each PCM-30 carrier in a trunk group. The SOSM system uses a PDTC with QDT load for MCL trunks. For each MCL in a PCM-30 group, a tuple must be added to this table. The following table provides an example datafill.

**Table TRKMEM datafill**

| CLLI     | EXTRKNM | SGRP | MEMVAR |        |
|----------|---------|------|--------|--------|
| SOSMGRP0 | 1       | 0    | PDTC   | 7 2 21 |

The CLLI field corresponds to the PCM-30 group name created in table CLLI and further defined in tables TRKGRP and TRKSGRP. The EXTRKNM field identifies the trunk member number. The member information field identifies the PDTC on which the trunk is installed (e.g. PDTC 7) and the carrier number (e.g. 2) and timeslot number (e.g. 21) on that carrier.

For a PCM-30 group of MCLs with all members defined, there must be one tuple per MCL member (i.e. members 1 through 28). If X.25 channels 1 and 2 are transmitted over PCM-30, two additional members are required (30 and 31).

There is a one-to-one correspondence between the member number in field EXTRKNM and MCL number. Mapping of MCL number to Timeslot number is done via the MEMVAR field.

***Note:** MCL numbers 1 through 15 map to Timeslot 1 through 15. Timeslot 16 IS NOT USED! MCL 16 must be mapped to Timeslot 17, MCL 17 to Timeslot 18, and so on up to MCL 28- timeslot 29. The following table shows an example of this mapping.*

Suppose PDTC 7 carrier 0 is used, and the PCM-30 group number is 0 (i.e. table SOSMTRK contains a tuple: 0 SOSMGRP0). The following table gives the correct mapping between TRKMEM datafill and MCL numbers.

**Mapping of Time Slot to MCL numbers**

| Trunk Member Number<br>(EXTRKNM in table<br>TRKMEM) | MEMVAR field    | Timeslot | PCM-30 Group<br>number in CP<br>commands and<br>messages | MCL member<br>number in CP<br>commands and<br>messages |
|-----------------------------------------------------|-----------------|----------|----------------------------------------------------------|--------------------------------------------------------|
| <b>0</b>                                            | <b>PDTC 7 0</b> | <b>0</b> | <b>N/A</b>                                               | <b>N/A</b>                                             |
| 1                                                   | PDTC 7 0 1      | 1        | 0                                                        | 1                                                      |
| 2                                                   | PDTC 7 0 2      | 2        | 0                                                        | 2                                                      |
| 3                                                   | PDTC 7 0 3      | 3        | 0                                                        | 3                                                      |
| 4                                                   | PDTC 7 0 4      | 4        | 0                                                        | 4                                                      |
| 5                                                   | PDTC 7 0 5      | 5        | 0                                                        | 5                                                      |
| 6                                                   | PDTC 7 0 6      | 7        | 0                                                        | 6                                                      |

**Mapping of Time Slot to MCL numbers**

| Trunk Member Number<br>(EXTRKMN in table<br>TRKMEM) | MEMVAR field    | Timeslot | PCM-30 Group<br>number in CP<br>commands and<br>messages | MCL member<br>number in CP<br>commands and<br>messages |
|-----------------------------------------------------|-----------------|----------|----------------------------------------------------------|--------------------------------------------------------|
| 7                                                   | PDTC 7 0 7      | 7        | 0                                                        | 7                                                      |
| 8                                                   | PDTC 7 0 8      | 8        | 0                                                        | 8                                                      |
| 9                                                   | PDTC 7 0 9      | 9        | 0                                                        | 9                                                      |
| 10                                                  | PDTC 7 0 10     | 10       | 0                                                        | 10                                                     |
| 11                                                  | PDTC 7 0 11     | 11       | 0                                                        | 11                                                     |
| 12                                                  | PDTC 7 0 12     | 12       | 0                                                        | 12                                                     |
| 13                                                  | PDTC 7 0 13     | 13       | 0                                                        | 13                                                     |
| 14                                                  | PDTC 7 0 14     | 14       | 0                                                        | 14                                                     |
| 15                                                  | PDTC 7 0 15     | 15       | 0                                                        | 15                                                     |
| 16                                                  | PDTC 7 0 17     | 17       | 0                                                        | 16                                                     |
| 17                                                  | PDTC 7 0 18     | 18       | 0                                                        | 17                                                     |
| 18                                                  | PDTC 7 0 19     | 19       | 0                                                        | 18                                                     |
| 19                                                  | PDTC 7 0 20     | 20       | 0                                                        | 19                                                     |
| 20                                                  | PDTC 7 0 21     | 21       | 0                                                        | 20                                                     |
| 21                                                  | PDTC 7 0 22     | 22       | 0                                                        | 21                                                     |
| 22                                                  | PDTC 7 0 23     | 23       | 0                                                        | 22                                                     |
| 23                                                  | PDTC 7 0 24     | 24       | 0                                                        | 23                                                     |
| 24                                                  | PDTC 7 0 25     | 25       | 0                                                        | 24                                                     |
| 25                                                  | PDTC 7 0 26     | 26       | 0                                                        | 25                                                     |
| 26                                                  | PDTC 7 0 27     | 27       | 0                                                        | 26                                                     |
| 27                                                  | PDTC 7 0 28     | 28       | 0                                                        | 27                                                     |
| 28                                                  | PDTC 7 0 29     | 29       | 0                                                        | 28                                                     |
| <b>29</b>                                           | <b>PDTC 7 0</b> |          | <b>N/A</b>                                               | <b>N/A</b>                                             |

**Table SOSMTRK (new)**

This table is used by the SOSM system for mapping generic trunk groups into dedicated SOSM trunks. Each entry identifies a trunk group to be used for the PCM-30 group of MCLs.

This table can ONLY be accessed via SOSMCONF CI, while SOC SOSM0001 is ON.

While SOSM0001 is ON, direct access attempt to this table will result in “unauthorized access” message sent to CP, and any table commands thereafter is rejected.

An example datafill is shown in the following table.

**Table SOSMTRK example datafill**

| SOSMGRP | CLLI     |
|---------|----------|
| 0       | SOSMGRP0 |
| 1       | SOSMGRP1 |

The SOSMGRP field identifies the PCM-30 group number (0 through 7).

The CLLI field identifies the trunk group to be used. The CLLI entered here must correspond to a valid trunk datafilled in tables CLLI, TRKGRP, TRKSGRP and TRKMEM.

When a trunk is datafilled in this table, it can not be deleted from tables TRKGRP and TRKMEM.

***Note:** Changing data in this table will result in an “Unauthorized access to SOSM” message if the SOSM system is active, and the change will be rejected. SOSM must be switched OFF with a “STOP SOSM” command from CP before data is removed or changed.*

### **Provisioning of SOSM specific parameters**

Table SOSMPARM is used by SOSM for saving SOSM specific parameters.

This table can ONLY be accessed via SOSMCONF CI while SOC SOSM0001 is ON.

While SOSM0001 is ON, direct access attempt to SOSMPARM will result in “unauthorized access” message sent to CP, and any table commands thereafter is rejected.

SOSMPARM table has 2 fields; PARMNAME, and PARMVAL.

PARMNAME is the name of the parameter. Currently, TOLL\_EXIT\_CODE, INTRAZONAL\_CODE, and INTERNTNL\_CODE parameters exist within this table.

The second field is PARMVAL. This field is a refinable area. Each parameter refines this area to hold its required data.

The selector field in PARMVAL area is PARMSEL. It identifies the appropriate subfields within PARMVAL area for the corresponding SOSM parameter.

#### Default SOSMPARM tuples

| PARMNAME        | PARMVAL    |                                                  |
|-----------------|------------|--------------------------------------------------|
|                 | PARMSEL    | EXCODE                                           |
| TOLL_EXIT_CODE  | TOLL       | 8 (1 digit is allowed for this parameter)        |
| INTRAZONAL_CODE | INTRAZONAL | 2 (1 digit is allowed for this parameter)        |
| INTERNTNL_CODE  | INTERNTNL  | 10 (1-2 digit(s) are allowed for this parameter) |

Data in SOSMPARM table can not be deleted. Furthermore, addition of new tuples with table editing commands is prevented by SOSM software. Default values for parameters which are provisionable via SOSMPARM are given in Figure “Default SOSMPARM tuples”.

It is not permitted to change PARMSEL for TOLL\_EXIT\_CODE, INTRAZONAL\_CODE and INTERNTNL\_CODE by table editing commands.

***Note:** Changing data in this table will result in an “Unauthorized access to SOSM” message if the SOSM system is active, and the change will be rejected. SOSM must be switched OFF with a “stop sosm” command from CP before data is changed.*

#### Access to SOSM configuration tables and parameters: SOSMCONF

Access to SOSM configuration tables, namely, SOSMMPC, SOSMTRK and SOSMPARM is restricted. The only way to reach these tables is with a new CI level called SOSMCONF (SOSM CONFiguration). In order to reach this CI level, the correct SOSM CI access password must be entered.

SOSMCONF provides the access to tables SOSMMPC, SOSMTRK, and SOSMPARM through normal table control, only after a valid password is entered. If password checking fails three consecutive times, the SOSMCONF CI is exited and an unauthorized access message will be sent to CP.

If access to either tables SOSMMPC, SOSMTRK, or SOSMPARM is attempted outside of SOSMCONF level, the corresponding unauthorized access message will be sent to CP.

Access to SOSMCONF CI level is not permitted while SOC SOSM0001 is OFF state.

The following example shows editing of table SOSMTRK via SOSMCONF.

```
>SOSMCONF
THIS IS THE SOSM CONFIGURATION TABLES
      ACCESS INCREMENT
SOSMCONF:
ENTER PASSWORD:
>*****
INVALID PASSWORD
ENTER PASSWORD:
>*****
*****
*          ACCESS CONFIRMED *
*      SOSM CONFIGURATION TABLES *
*          ACCESS LEVEL *
*****
>table SOSMTRK
TABLE: SOSMTRK
>QUIT
SOSMCONF
>QUIT
CI:
```

In this example, a wrong password was entered, followed by a valid password. Once access is granted, all normal editing can resume using TABLE command.

In the next example, attempt to access table SOSMTRK directly is blocked:

```
>table SOSMTRK
EMPTY TABLE
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: SOSMMPK
>
>ADD 1 SOSMGRP1
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
YOU ARE NOT AUTHORIZED TO REACH TO THIS TOOL
TUPLE TO BE ADDED:
      2      2 2      2 3
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>N
DMO REJECTED
WARNING:  CURRENTLY NOT POSITIONED
>QUIT
CI:
```



In the above example, the craftsperson attempts to access the table directly rather than through SOSMCONF. An attempt to ADD a tuple to the table results in unauthorized access message with code **05H**, and the add command is refused.

## Hardware Requirements

The exchange must be provisioned with additional conference circuits to support SOSM combined monitoring. For each MCL there must be one conference port (i.e. if 112 simultaneous calls with combined monitoring are allowed, 112 conference circuits are required).

Either MPC cards (NT1X89) or IOM must be installed to provide X.25 connection to the control point. For each pair of X.25 channels, one MPC card is needed.

If X.25 data is carried over PCM-30 channels, one dedicated line card per X.25 channel is required on an PLGC.

For each X.25 channel one **synchronous power-up leased line modem** is required to be connected between the serial port of the MPC card, and the data source (either line card for PCM-30 X.25 variant) or directly to the other (CP) modem. The serial port of the modem is connected to the MPC card via IOC to DB25 cable, NT part ID: **PEC NT0X26LY**. Pinout mappings are as follows:

### Pinout mappings for DB25-IOC connector

| DB25 (TO THE MODEM) | IOC CONNECTOR |
|---------------------|---------------|
| 2                   | 14            |
| 3                   | 26            |
| 4                   | 23            |
| 5                   | 34            |
| 6                   | 21            |
| 7                   | 47-11         |
| 8                   | 31            |
| 12                  | 17            |
| 15                  | 24            |
| 17                  | 16            |
| 18                  | 33            |
| 20                  | 37            |
| 21                  | 27            |
| 22                  | 41            |
| 23                  | 44            |
| 24                  | 43            |

MCL trunks must be provisioned on an existing or new DTC and datafilled as described in "MCL trunk related datafill" on page 1389.

### Configuring an IOM

The Input Output Module (IOM) replaces the functionality of the DMS IOC. The IOM minimally consists of an IOM motherboard, NTFX30AA, and an IOM paddleboard, NTFX31AA. The NTFX30AA inserts into a universal slot, slot 3 or 4, of an ISME or CISM shelf. The NTFX31AA attaches to the backplane behind the NTFX30AA. The NTFX30AA paddleboard has twenty 2x4 connector sockets. Two of the twenty are spares, two are Message Switch links (for planes 0 and 1), and the remaining sixteen, numbered 0 through 15, are connected via 26 gauge two-pair twisted-pair cabling to what are called smart-connectors. The cable that connects the paddleboard 2x4 connectors directly to a smart-connector is an NT0X96LU; it has a 2x4 connector on one side, and has a six position modular plug on the smart-connector side. In the case of a CISM shelf, the paddleboard's connectors are brought out to the bulkhead using cable harnesses (one DB37 per 8 ports and MS link), and each port appears on the outside of the frame as a separate 1x4 connector; the cable between these 1x4 connectors and the smart-connectors is an NTRX26GA. As viewed by a user of the bulkhead connectors, the IOM in slot 3 is on the right, and the IOM in slot 4 is on the left. The bottom 1x4 in each column of nine connectors is for a Message Switch link; the upper eight correspond to the eight positions of the 2x4 sockets on the IOM's paddleboard.

\*\*\*\* The following description is restricted to synchronous data links only.  
\*\*\*\*

For EIA/TIA-232-F, the NTFX34AA smart-connector is used. For ITU\_T V.35, either the NTFX35AA or the NTFX35BA smart-connectors are used; the NTFX35AA is used for speeds up to and including 64 KBPS, and the NTFX35BA is used for speeds up to and including 512 KBPS. When the NTFX35BA is used, only two of the sixteen IOM ports, ports 0 and port 8, can be used, and the IOM firmware name is of the form IOMHaann, where a is an alphabetic and n is a numeric. Normally, the regular IOM firmware is used; its name is of the form IOMRaann. Under the regular IOM firmware, any combination of NTFX34AAs or NTFX35AAs can be connected to any of the sixteen ports, observing IOM engineering guidelines to prevent overloading.

Neither a disk nor a DAT can be configured on an IOM that is running IOMHaann (high speed) firmware, but either or both may be on an IOM used for lower speed serial interfaces.

IOM smart-connectors ARE ALWAYS HARDWARE DTEs. They can provide ITU\_T circuit 113 (ANSI/EIA/TIA circuit DA) clock. The DTE clock rate is controlled by DMS datafill.

The NTFX35BA smart-connectors' DTE clock is always 512 KBPS.

Smart-connectors, unlike MPC and EMPC cards, provide signal ground isolation, and can therefore be directly connected to DCEs that may or may not

provide ground isolation. Modems or modem-eliminators are no longer necessary for National Electric Code compliance.

Smart-connectors may be connected to their IOM paddleboard with up to 750 feet of cabling.

The housing of the smart-connector can and should be bonded to the DCE's ground. This will not cause a ground loop.

The DCE's timing provided to the smart-connector's receive and transmit clocks must be at the same rate and must be in-phase. The easiest way of accomplishing this is to set the DCE to derive its transmit clock from receive data, or by setting both receive and transmit clocks to synchronize with the digital network serving the DCE (the DS1/E1 transmit side should always be traceable to the receive side). In other words, the modem physically connected to a smart-connector should always be set to "slave" timing, and the other modem should be set to either "internal" or "external" timing.

Other than the clocking restriction, both V.35 smart-connectors are perfect implementations of CCITT Red Book Appendix II, and are in the range for maximum compatibility with ITU\_T V.11 or EIA Configuring an IOM-422-B balanced interchange circuit drivers.

The NTFX34AA has a male DB25 connector complying with ISO 2110-1991(E) pin definitions for EIA/TIA-232-F.

The NTFX35AA has a male DB25 connector. The V.35 pin definitions match the DMS EMPC DB25, and are listed on a data sheet provided with every smart-connector. The NTFX35AA can be adapted to an ISO 2593 DTE (male) connector by using an NTFX3505, B0250556. (Standard V.35.)

The NTFX35BA has a male DB25 connector. The V.35 pin definitions match the MVME 709-1 DB25, and are listed on a data sheet provided with every smart-connector. The NTFX35BA can be adapted to an ISO 2593 DTE (male) connector by using an NTFX3506, B0250557. (High speed V.35.)

One of the two twisted-pairs between a smart-connector and the IOM paddleboard transmits data from the smart-connector to the IOM. This pair is biased with 48 vdc which is used to power the smart-connector. If the smart-connector suffers an internal failure or this twisted-pair becomes shorted, the IOM will discontinue powering that line until the short/overload is removed; it will then automatically restore power to that line.

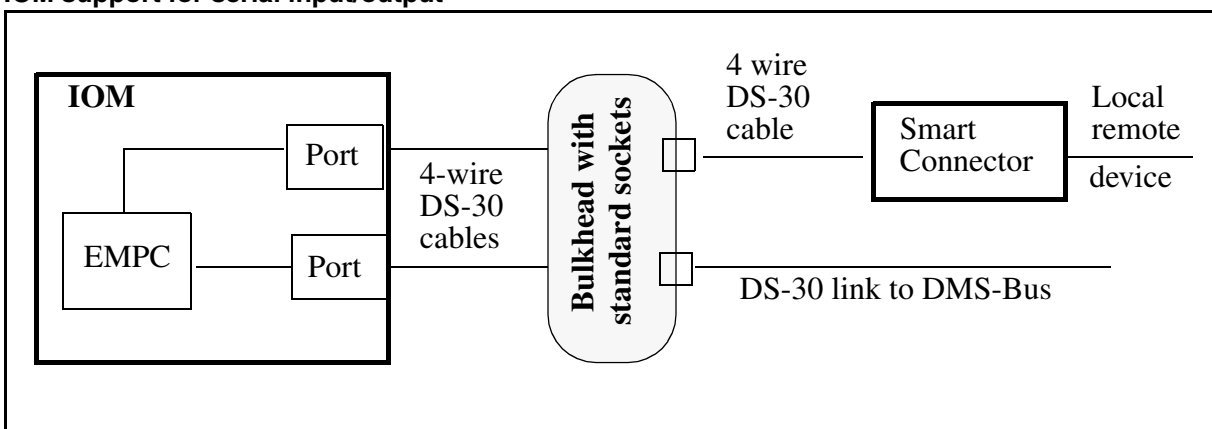
Smart-connectors will illuminate a green LED when they are properly configured and in service.

DMS datafill of the IOM is similar to IOC/EMPC datafill; three tables are involved: IOC, MPC, and MPCLINK. The IOM is first datafilled in table IOC and given a unique IOC number; associated with that IOC number are the MS ports, location, and the firmware to be downloaded to the IOM. Then a unique MPC number is arbitrarily chosen and used as an index in table MPC; the MPC number is associated with the IOC number just datafilled in table IOC, and with a port on the IOM, 0 through 15. Unlike EMPCs, the firmware file, already specified in table IOC, is always datafilled in table MPC as IOM\$LOAD. In table MPCLINK, the IOM port is indexed with an MPC number, just assigned in table MPC, and a link number which is always 3 for IOM ports; the MPCLINK entry contains the same configuration parameters that would be used for an EMPC port - with two exceptions for an NTFX35BA. When an NTFX35BA port is entered in table MPCLINK, its Electrospec is 512KV35, and parameter RITMAX should be set to 0. Again, a smart-connector is always a hardware DTE, so only the NODETYPE, DTE or DCE, needs to be set for appropriate LAPB addressing; the hardware type (DCE/DTE/DXE) should not be datafilled.

MAPCI commands allow the IOM firmware version to be queried. There are also commands to ask the IOM if it sees the correct smart-connector on a port, and commands to test data connectivity with the smart-connector via loopback testing. The DMS NTPs cover downloading, programming, and testing of the IOM and its smart-connectors.

At the device end of the cable is a smart connector that performs the necessary mapping between the standard 4-wire interface and the external interface, as summarised in Figure on page 1397.

#### IOM support for serial input/output



#### Software Requirements

N/A.

## Feature Interactions

This section describes the feature interactions of SOSM and other subscriber services. For each feature, message sequence is shown identifying some basic information reported to CP.

SOSM supports usage/activation/deactivation and interrogation of only CEPT features.

SOSM sends service usage notification message(s) only if both the subscriber using the service and the monitored subscriber are in the same exchange.

Any subscriber can put the connected subscriber on HOLD by FLASH.

In any of the scenarios described, when a party is put on HOLD, its MCL connection (if any) is also held.

The activation, deactivation and interrogation of CEPT IBN features (ILR, IWUC, CFU, CFB, CFD, ICWT, SCL, LNR, WML, CCBS, CND, SUPPRESS, CEPTPW) will be reported to CP. Message 1.4 indicating the code of service to be rendered to the subscriber will be sent. If these CEPT features are not assigned to the line, but exists in table CUSTSTN as default features, message 1.4 will be again send

A subscriber can activate/deactivate/interrogate CEPT features also within answered calls. In such scenarios, SOSM reports service activation/deactivation/interrogation of CEPT services only for the observed subscribers.

The following shown scenarios through this section are for “complete combined” monitoring. The attribute of object’s selection for other monitoring types are shown in the following figure:

### Attribute of object’s selection values

|                   | <b>Calling DN<br/>is SOSM<br/>subscriber</b> | <b>Called DN<br/>is SOSM<br/>subscriber</b> | <b>No one is SOSM<br/>subscriber in message</b> |
|-------------------|----------------------------------------------|---------------------------------------------|-------------------------------------------------|
| complete combined | 01H                                          | 04H                                         | 40H                                             |
| complete separate | 03H                                          | 0CH                                         | C0H                                             |
| statistical       | 02H                                          | 08H                                         | 80H                                             |

If MCL connection cannot be established, only MCL-A and MCL-B fields of call messages are set to FFH, and any other information (i.e. Attribute of Objects Selection) is not affected by the failure.

## Hold Functionality

Enquiry is responsible to setup multi-party calls as well as a base for Call Waiting, Call Transfer, Three Way Calling and Six Way Calling features.

When a party is added to a call via Enquiry, SOSM criteria check is performed on the added leg. If the controller is a SOSM subscriber, a new SOSM call number is allocated and the new call leg will be monitored as if it was a normal SOSM call. The original connection is also put on hold. When the controller returns to the original first call, the MCL connection is reactivated.

The following sections describe the messaging and behavior in each Enquiry scenario.

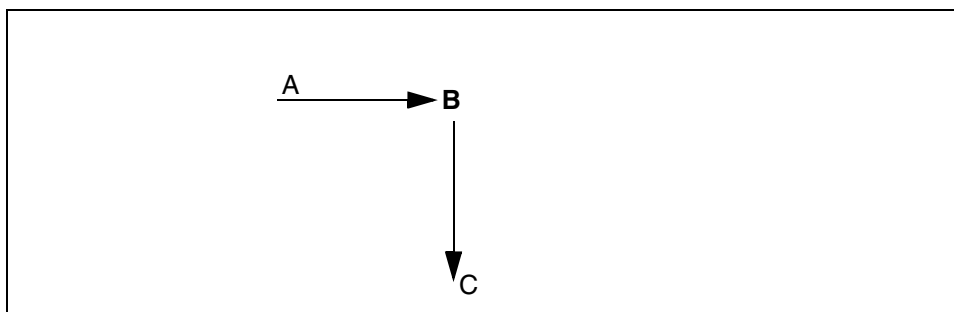
### Consultation Call

In this scenario, B is the controller which has one of the Enquiry feature options. A calls B, B answers. B flashes (holds party A) and calls C. C answers. While A and C are talking, C hangs-up. B flashes and dials R-code for toggle to return to A. Sometime later, conversation ends.

For IBN lines, I3WC, I6WC, ICT, ICWT line options provide this functionality.

If controller exists during consultation call, held party will re-ring the controller. The existing MCL connection will be active. The same messages will be sent.

#### Consultation Call Scenario



The message sequence is shown in the following tables

#### A is under surveillance

|            | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 |
|------------|-----|-----|-----|-----|-----|
| Calling DN | A   | A   | B   | B   | A   |
| Called DN  | B   | B   | A   | A   | B   |

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|-----|
| SOSM Call #                 | 1   | 1   | 1    | 1    | 1   |
| Attribute of choice         | 01  | 01  | 04   | 04   | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | HOLE | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.1 | 1.2 | 1.3 | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|-----|------|-----|
| Calling DN                  | A   | A   | B    | B   | B   | B   | B    | A   |
| Called DN                   | B   | B   | A    | C   | C   | C   | A    | B   |
| SOSM Call #                 | 1   | 1   | 1    | 2   | 2   | 2   | 1    | 1   |
| Attribute of choice         | 04  | 04  | 01   | 01  | 01  | 01  | 01   | 04  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  | 1C  | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 00  | 00  | 00  | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 2   | 2   | 2   | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00  | 00  | 05  | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  | FF  | FF  | HOLE | FF  |

**C is under surveillance**

|                          | 1.1 | 1.2 | 1.3 |
|--------------------------|-----|-----|-----|
| Calling DN               | B   | B   | B   |
| Called DN                | C   | C   | C   |
| SOSM Call #              | 2   | 2   | 2   |
| Attribute of choice      | 04  | 04  | 04  |
| Parameters of connection | 1C  | 1C  | 1C  |

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

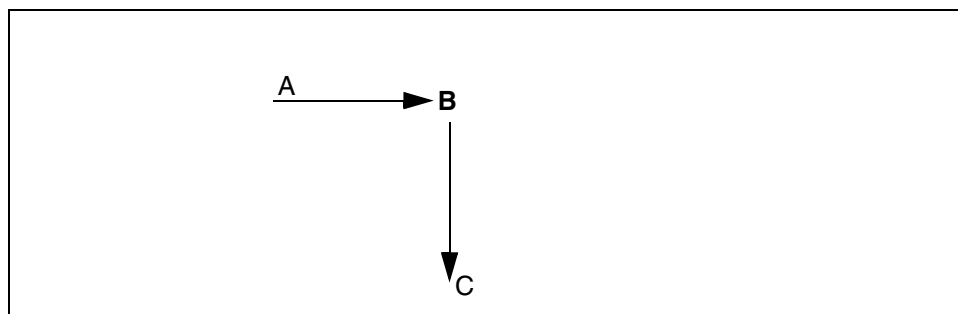
### Call Switching

In this scenario A calls B, B flashes (holds party A) and calls C. During conversation with C, B flashes (holds subscriber C), then dials R-code for toggle and re-connect to A. B switches to C, and then switches to A again. A to B call disconnects. The other call disconnects.

For IBN lines, I3WC, I6WC, ICT, ICWT line options provide this functionality.

In this scenario, MCL connection suspends after flashes, and resumes when speech is re-established.

#### Call Switching Scenario



The message sequence is shown in the following tables.

#### A is under surveillance

|                          | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|
| Calling DN               | A   | A   | B   | B   | B   | B   | A   |
| Called DN                | B   | B   | A   | A   | A   | A   | B   |
| SOSM Call #              | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice      | 01  | 01  | 04  | 04  | 04  | 04  | 01  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  |



|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|------|------|-----|
| Code of supp. service phase | 00  | 00  | 04   | 04   | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | HOLE | HOLD | HOLE | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.4   | 1.1 | 1.2 | 1.4   | 1.4   | 1.4   | 1.4   | 1.4   | 1.4   | 1.3 | 1.4   | 1.3 |
|-----------------------------|-----|-----|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-------|-----|
| Calling DN                  | A   | A   | B     | B   | B   | B     | B     | B     | B     | B     | B     | A   | B     | B   |
| Called DN                   | B   | B   | A     | C   | C   | C     | A     | A     | C     | C     | A     | B   | C     | C   |
| SOSM Call #                 | 1   | 1   | 1     | 2   | 2   | 2     | 1     | 1     | 2     | 2     | 1     | 1   | 2     | 2   |
| Attribute of choice         | 04  | 04  | 01    | 01  | 01  | 01    | 01    | 01    | 01    | 01    | 01    | 04  | 01    | 01  |
| Parameters of connection    | 1C  | 1C  | 1C    | 1C  | 1C  | 1C    | 1C    | 1C    | 1C    | 1C    | 1C    | 1C  | 1C    | 1C  |
| Code of supp. service phase | 00  | 00  | 04    | 00  | 00  | 04    | 04    | 04    | 04    | 04    | 04    | 00  | 04    | 00  |
| MCL #                       | 1   | 1   | 1     | 2   | 2   | 2     | 1     | 1     | 2     | 2     | 1     | 1   | 2     | 2   |
| Code of operation           | 00  | 00  | 00    | 00  | 00  | 00    | 00    | 00    | 00    | 00    | 00    | 05  | 00    | 05  |
| Feature Code                | FF  | FF  | HO LD | FF  | FF  | HO LD | HO LE | HO LD | HO LE | HO LD | HO LE | FF  | HO LE | FF  |

**C is under surveillance**

|                     | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|
| Calling DN          | B   | B   | B   | B   | B   | B   | B   |
| Called DN           | C   | C   | C   | C   | C   | C   | C   |
| SOSM Call #         | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice | 04  | 04  | 04  | 04  | 04  | 04  | 04  |

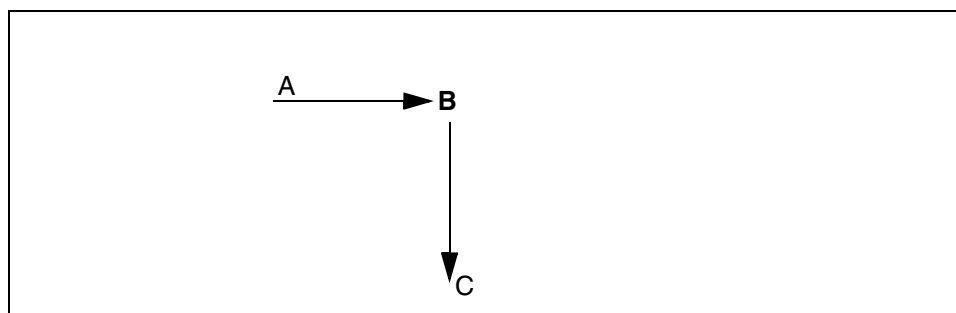
|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|------|------|-----|
| Parameters of connection    | 1C  | 1C  | 1C   | 1C   | 1C   | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04   | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | HOLE | HOLD | HOLE | FF  |

### Drop Held Party during Enquiry

In this scenario B is the controller which has one of the enquiry feature options. A calls B, B flashes and calls C. During conversation with C, B flashes (holds C) and dials R-code for disconnect first held party (A) and reconnects to C. Then B-C call is disconnected.

In this scenario, MCL connection suspends after flashes, and resumes when speech is established.

### Held Party Dropped



The message sequence is shown in the following tables.

### A is under surveillance

|                          | 1.1 | 1.2 | 1.4 | 1.3 |
|--------------------------|-----|-----|-----|-----|
| Calling DN               | A   | A   | B   | A   |
| Called DN                | B   | B   | A   | B   |
| SOSM Call #              | 1   | 1   | 1   | 1   |
| Attribute of choice      | 01  | 01  | 04  | 01  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  |

|                             | 1.1 | 1.2 | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|-----|
| Code of supp. service phase | 00  | 00  | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.1 | 1.2 | 1.4  | 1.3 | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|------|-----|------|-----|
| Calling DN                  | A   | A   | B    | B   | B   | B    | A   | B    | B   |
| Called DN                   | B   | B   | A    | C   | C   | C    | B   | C    | C   |
| SOSM Call #                 | 1   | 1   | 1    | 2   | 2   | 2    | 1   | 2    | 2   |
| Attribute of choice         | 04  | 04  | 01   | 01  | 01  | 01   | 04  | 01   | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  | 1C   | 1C  | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 00  | 00  | 04   | 00  | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 2   | 2   | 2    | 1   | 2    | 2   |
| Code of operation           | 00  | 00  | 00   | 00  | 00  | 00   | 05  | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  | FF  | HOLD | FF  | HOLE | FF  |

**C is under surveillance**

|                          | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|
| Calling DN               | B   | B   | B   | B   | B   |
| Called DN                | C   | C   | C   | C   | C   |
| SOSM Call #              | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice      | 04  | 04  | 04  | 04  | 04  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  |

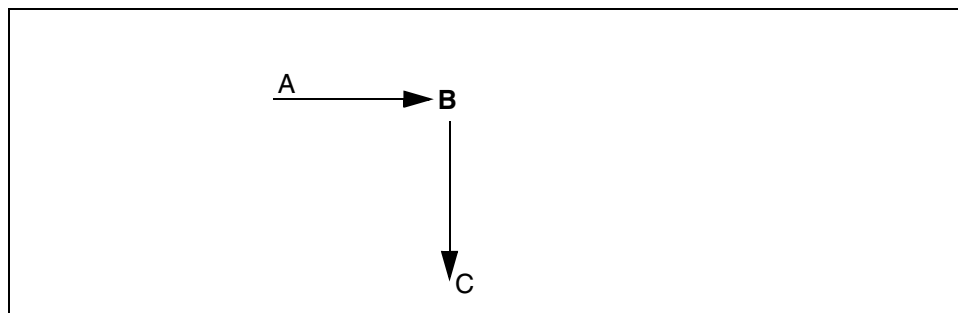
|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|-----|
| Code of supp. service phase | 00  | 00  | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | HOLE | FF  |

### Drop Active Party during Enquiry

In this scenario B is the controller which has one of the enquiry feature options. A calls B, B flashes (holds A) and calls C. During conversation with C, B flashes (holds C) and dials R-code to disconnect the last active party (C) and then toggles to re-connect to A. Then A-B call is disconnected.

In this scenario, MCL connection suspends after flashes, and resumes when speech is established.

#### Active Party Dropped



The message sequence is shown in the following tables.

#### A is under surveillance

|                             | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 |
|-----------------------------|-----|-----|-----|-----|-----|
| Calling DN                  | A   | A   | B   | B   | A   |
| Called DN                   | B   | B   | A   | A   | B   |
| SOSM Call #                 | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 04  | 04  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04  | 04  | 00  |
| MCL #                       | 1   | 1   | 1   | 1   | 1   |

|                   | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-------------------|-----|-----|------|------|-----|
| Code of operation | 00  | 00  | 00   | 00   | 05  |
| Feature Code      | FF  | FF  | HOLD | HOLE | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.1 | 1.2 | 1.4  | 1.3 | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|------|-----|------|-----|
| Calling DN                  | A   | A   | B    | B   | B   | B    | B   | B    | A   |
| Called DN                   | B   | B   | A    | C   | C   | C    | C   | A    | B   |
| SOSM Call #                 | 1   | 1   | 1    | 2   | 2   | 2    | 2   | 1    | 1   |
|                             |     |     |      |     |     |      |     |      |     |
| Attribute of choice         | 04  | 04  | 01   | 01  | 01  | 01   | 01  | 01   | 04  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  | 1C   | 1C  | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 00  | 00  | 04   | 00  | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 2   | 2   | 2    | 2   | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00  | 00  | 00   | 05  | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  | FF  | HOLD | FF  | HOLE | FF  |

**C is under surveillance**

|                             | 1.1 | 1.2 | 1.4 | 1.3 |
|-----------------------------|-----|-----|-----|-----|
| Calling DN                  | B   | B   | B   | B   |
| Called DN                   | C   | C   | C   | C   |
| SOSM Call #                 | 1   | 1   | 1   | 1   |
| Attribute of choice         | 04  | 04  | 04  | 04  |
| Parameters of connection    | 1C  | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04  | 00  |
| MCL #                       | 1   | 1   | 1   | 1   |

|                   | 1.1 | 1.2 | 1.4  | 1.3 |
|-------------------|-----|-----|------|-----|
| Code of operation | 00  | 00  | 00   | 05  |
| Feature Code      | FF  | FF  | HOLD | FF  |

## Call Waiting

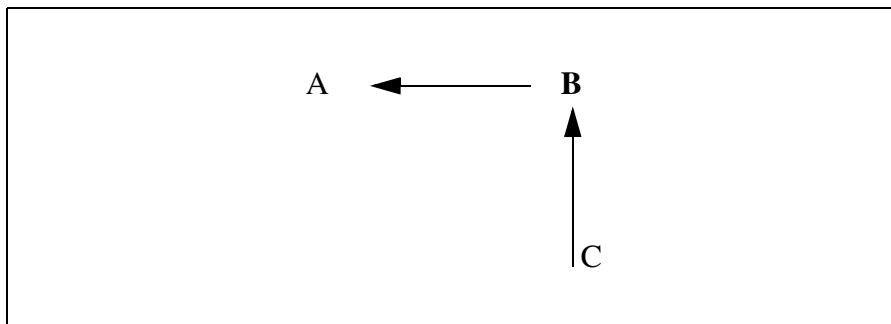
Call Waiting allows a subscriber (controller) to receive a call while active in another call.

In this scenario, B has the Call Waiting feature. B calls A, A answers and they are talking. C calls B. B hears Call Waiting tone. Then party B holds A with flash and answers C by dialing R-code (toggle). While B and C are talking, C exits. Sometime later, A or B exit.

In this scenario, MCL connection suspends after flashes, and resumes when speech is established.

For IBN lines, ICWT line option provide this functionality.

### Call Waiting Scenario



The message sequence is shown in the following tables.

### A is under surveillance

|                          | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|
| Calling DN               | B   | B   | B   | B   | B   |
| Called DN                | A   | A   | A   | A   | A   |
| SOSM Call #              | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice      | 04  | 04  | 04  | 04  | 04  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  |

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|-----|
| Code of supp. service phase | 00  | 00  | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | HOLE | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.1 | 1.4 | 1.4  | 1.2 | 1.3 | 1.4  | 1.3 |
|-----------------------------|-----|-----|-----|-----|------|-----|-----|------|-----|
| Calling DN                  | B   | B   | C   | B   | B    | C   | C   | B    | B   |
| Called DN                   | A   | A   | B   | A   | A    | B   | B   | A    | A   |
| SOSM Call #                 | 1   | 1   | 2   | 1   | 1    | 2   | 2   | 1    | 1   |
| Attribute of choice         | 01  | 01  | 04  | 01  | 01   | 04  | 04  | 01   | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  | 1C  | 1C   | 1C  | 1C  | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 00  | 04  | 04   | 00  | 00  | 04   | 00  |
| MCL #                       | 1   | 1   | 2   | 1   | 1    | 2   | 2   | 1    | 1   |
| Code of operation           | 00  | 00  | 00  | 00  | 00   | 00  | 05  | 00   | 05  |
| Feature Code                | FF  | FF  | FF  | CWT | HOLD | FF  | FF  | HOLE | FF  |

**C is under surveillance**

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | C   | C   | C   |
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 2   | 2   | 2   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |

|              | 1.1 | 1.2 | 1.3 |
|--------------|-----|-----|-----|
| Feature Code | FF  | FF  | FF  |

### Three Way Calling

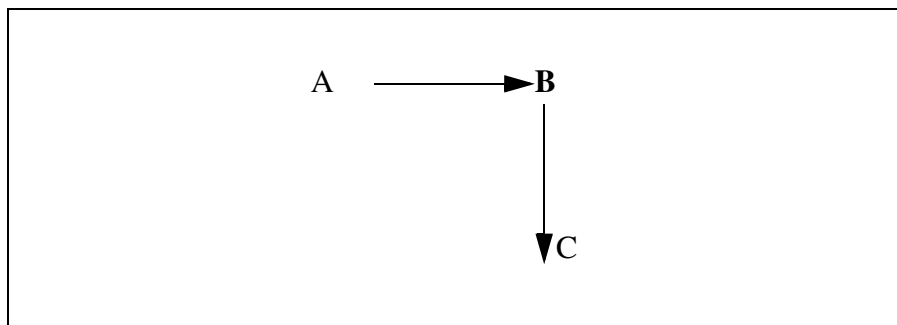
Three Way Calling feature allows a subscriber to establish a three way conference.

In this scenario, A calls B. B has the Three Way Call feature. B puts A on HOLD, and calls C. Later B flashes (holds C) and conferences A and C into a three way conference by dialing corresponding R-code. The A-B conversation is completed, in due to realization of supplementary service. Then the conference ends.

In this scenario, MCL connection suspends after flashes, and resumes when Conference/speech is established. When all parties are in conference, MCL speech path contains voice from ALL parties.

For IBN lines, I3WC line option provide this functionality.

#### Three Way Calling Scenario



#### A is under surveillance

|                             | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 |
|-----------------------------|-----|-----|-----|-----|-----|
| Calling DN                  | A   | A   | B   | B   | A   |
| Called DN                   | B   | B   | A   | C   | B   |
| SOSM Call #                 | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 04  | 40  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04  | 04  | 00  |
| MCL #                       | 1   | 1   | 1   | 1   | 1   |



|                   | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-------------------|-----|-----|------|------|-----|
| Code of operation | 00  | 00  | 00   | 00   | 05  |
| Feature Code      | FF  | FF  | HOLD | 3PTY | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|------|------|-----|-----|
| Calling DN                  | A   | A   | B    | B   | B   | B    | B    | A   | B   |
| Called DN                   | B   | B   | A    | C   | C   | C    | A    | B   | C   |
| SOSM Call #                 | 1   | 1   | 1    | 2   | 2   | 2    | 2    | 1   | 2   |
| Attribute of choice         | 04  | 04  | 01   | 01  | 01  | 01   | 01   | 04  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  | 1C   | 1C   | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 00  | 00  | 04   | 04   | 00  | 00  |
| MCL #                       | 1   | 1   | 1    | 2   | 2   | 2    | 2    | 1   | 2   |
| Code of operation           | 00  | 00  | 00   | 00  | 00  | 00   | 00   | 05  | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  | FF  | HOLD | 3PTY | FF  | FF  |

**C is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|-----|
| Calling DN                  | B   | B   | B    | B    | B   |
| Called DN                   | C   | C   | C    | A    | C   |
| SOSM Call #                 | 1   | 1   | 1    | 1    | 1   |
| Attribute of choice         | 04  | 04  | 04   | 40   | 04  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | 3PTY | FF  |

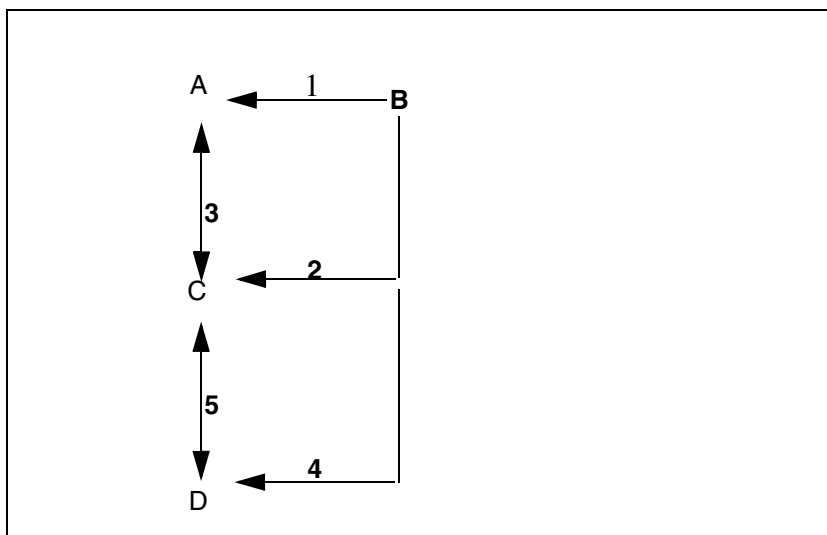
## Six Way Calling

The Six Way Calling feature allows a subscriber to establish a six way conference. I6WC option provides this functionality.

In this scenario the controller of a six way call (B) calls A. A answers. B puts A on HOLD and calls C. C answers. B flashes (puts C on hold) and dials R-code for 6WC to CONFerence A and C. The B-A conversation is completed, in due to realization of supplementary service. Then B puts the conference on HOLD and calls D. D answers. B flashes (puts D on hold) and dials 6 to conference all parties. Again due to realization of supplementary service, B-C conversation is disconnected. Then the conference is disconnected.

In this scenario, MCL connection suspends after flashes, and resumes when Conference/speech is established. When all parties are in conference, MCL speech path contains voice from ALL parties.

### Six Way Calling Scenario



### A is under surveillance

|                          | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|-----|
| Calling DN               | B   | B   | B   | B   | B   | B   |
| Called DN                | A   | A   | A   | C   | D   | A   |
| SOSM Call #              | 1   | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice      | 04  | 04  | 04  | 40  | 40  | 04  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  |

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|------|-----|
| Code of supp. service phase | 00  | 00  | 04   | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | CONF | CONF | FF  |

**B(IBN) is under surveillance**

|                             | 1.1 | 1.2 | 1.4   | 1.1 | 1.2 | 1.4   | 1.4   | 1.3 | 1.4   | 1.1 | 1.2 | 1.4   | 1.4   | 1.3 | 1.3 |
|-----------------------------|-----|-----|-------|-----|-----|-------|-------|-----|-------|-----|-----|-------|-------|-----|-----|
| Calling DN                  | B   | B   | B     | B   | B   | B     | B     | B   | B     | B   | B   | B     | B     | B   | B   |
| Called DN                   | A   | A   | A     | C   | C   | C     | A     | A   | C     | D   | D   | D     | C     | C   | D   |
| SOSM Call #                 | 1   | 1   | 1     | 2   | 2   | 2     | 2     | 1   | 2     | 3   | 3   | 3     | 3     | 2   | 3   |
| Attribute of choice         | 01  | 01  | 01    | 01  | 01  | 01    | 01    | 01  | 01    | 01  | 01  | 01    | 01    | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C    | 1C  | 1C  | 1C    | 1C    | 1C  | 1C    | 1C  | 1C  | 1C    | 1C    | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04    | 00  | 00  | 04    | 04    | 00  | 04    | 00  | 00  | 04    | 04    | 00  | 00  |
| MCL #                       | 1   | 1   | 1     | 2   | 2   | 2     | 2     | 1   | 2     | 3   | 3   | 3     | 3     | 2   | 3   |
| Code of operation           | 00  | 00  | 00    | 00  | 00  | 00    | 00    | 05  | 00    | 00  | 00  | 00    | 00    | 05  | 05  |
| Feature Code                | FF  | FF  | HO LD | FF  | FF  | HO LD | CO NF | FF  | HO LD | FF  | FF  | HO LD | CO NF | FF  | FF  |

**C is under surveillance**

|                     | 1.1 | 1.2 | 1.4 | 1.4 | 1.4 | 1.3 |
|---------------------|-----|-----|-----|-----|-----|-----|
| Calling DN          | B   | B   | B   | B   | B   | B   |
| Called DN           | C   | C   | C   | A   | D   | C   |
| SOSM Call #         | 1   | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice | 04  | 04  | 04  | 40  | 40  | 04  |

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|------|-----|
| Parameters of connection    | 1C  | 1C  | 1C   | 1C   | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | CONF | CONF | FF  |

**D is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.4  | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|------|------|-----|
| Calling DN                  | B   | B   | B    | B    | B    | B   |
| Called DN                   | D   | D   | D    | C    | A    | D   |
| SOSM Call #                 | 1   | 1   | 1    | 1    | 1    | 1   |
| Attribute of choice         | 04  | 04  | 04   | 40   | 40   | 04  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C   | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04   | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | 1    | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | 00   | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | CONF | CONF | FF  |

**Call Transfer**

Call Transfer feature allows to hold the current party, calling a new party (C), and transferring the Held party to the new party. After the transfer, the controller is no longer involved in the call.

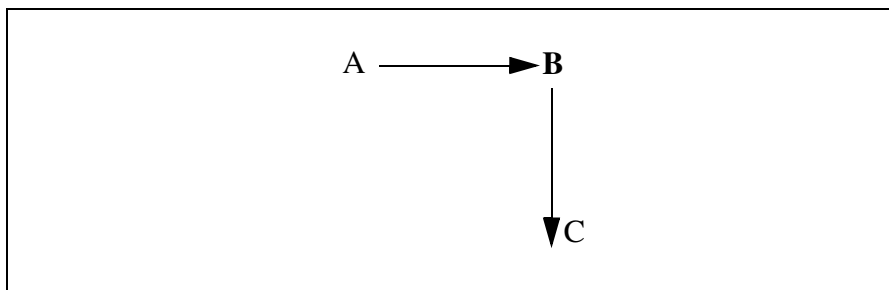
If the controller in a Call Transfer is a SOSM agent, the SOSM call ends when the call is transferred. If the party being transferred is the SOSM agent, monitoring continues until the call completes.

The following scenarios provide more details regarding call transfer.

In this scenario, B has the Call Transfer feature. A calls B. B puts party A on HOLD, and dials C. B flashes (puts C on hold) and dials R-code to transfer A to C. A-B and B-C conversations are completed, in due to realization of

supplementary service. Then the transferred call ends. ICT line option provides this functionality.

#### Call Transfer Scenario



#### A is under surveillance

|                             | 1.1 | 1.2 | 1.4  | 1.4 | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|
| Calling DN                  | A   | A   | B    | B   | A   |
| Called DN                   | B   | B   | A    | C   | C   |
| SOSM Call #                 | 1   | 1   | 1    | 1   | 1   |
| Attribute of choice         | 01  | 01  | 04   | 40  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04  | 00  |
| MCL #                       | 1   | 1   | 1    | 1   | 1   |
| Code of operation           | 00  | 00  | 00   | 00  | 05  |
| Feature Code                | FF  | FF  | HOLD | ICT | FF  |

#### B is under surveillance

|                          | 1.1 | 1.2 | 1.4 | 1.1 | 1.2 | 1.4 | 1.4 | 1.3 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Calling DN               | A   | A   | B   | B   | B   | B   | B   | A   | B   |
| Called DN                | B   | B   | A   | C   | C   | C   | A   | B   | C   |
| SOSM Call #              | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 1   | 2   |
| Attribute of choice      | 04  | 04  | 01  | 01  | 01  | 01  | 01  | 04  | 01  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  | 1C  |

|                             | 1.1 | 1.2 | 1.4  | 1.1 | 1.2 | 1.4  | 1.4 | 1.3 | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|------|-----|-----|-----|
| Code of supp. service phase | 00  | 00  | 04   | 00  | 00  | 04   | 04  | 00  | 00  |
| MCL #                       | 1   | 1   | 1    | 2   | 2   | 2    | 2   | 1   | 2   |
| Code of operation           | 00  | 00  | 00   | 00  | 00  | 00   | 00  | 05  | 05  |
| Feature Code                | FF  | FF  | HOLD | FF  | FF  | HOLD | ICT | FF  | FF  |

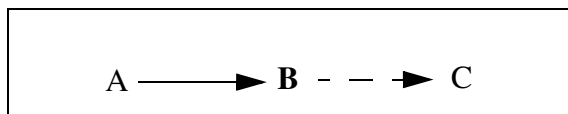
**C is under surveillance**

|                             | 1.1 | 1.2 | 1.4  | 1.4 | 1.3 |
|-----------------------------|-----|-----|------|-----|-----|
| Calling DN                  | B   | B   | B    | B   | A   |
| Called DN                   | C   | C   | C    | A   | C   |
| SOSM Call #                 | 1   | 1   | 1    | 1   | 1   |
| Attribute of choice         | 04  | 04  | 04   | 40  | 04  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 04  | 00  |
| MCL #                       | 1   | 1   | 1    | 1   | 1   |
| Code of operation           | 00  | 00  | 00   | 00  | 05  |
| Feature Code                | FF  | FF  | HOLD | ICT | FF  |

**Call Forward (Busy, Unconditional, Do Not Answer)**

Call Forward allows a subscriber to divert a call to another agent. If one of the parties is SOSM agent in a diverted call, monitoring continues in the new call formed after diversion. If the forwarded agent is a SOSM agent, the call is also monitored.

In this scenario, subscriber A calls B. B has Call Diversion Feature programmed to divert the call to C. CFU, CFB and CFD line options are used for IBN lines.



**A is under surveillance**

|                             | <b>1.1</b> | <b>1.4</b>        | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|-------------------|------------|------------|
| Calling DN                  | A          | B                 | A          | A          |
| Called DN                   | B          | C                 | C          | C          |
| SOSM Call #                 | 1          | 1                 | 1          | 1          |
| Attribute of choice         | 01         | 40                | 01         | 01         |
| Parameters of connection    | 1C         | 1C                | 1C         | 1C         |
| Code of supp. service phase | 00         | 04                | 00         | 00         |
| MCL #                       | 1          | 1                 | 1          | 1          |
| Code of operation           | 00         | 00                | 00         | 05         |
| Feature Code                | FF         | Cfu<br>Cfb<br>Cfd | FF         | FF         |

**B is under surveillance**

|                             | <b>1.1</b> | <b>1.4</b>        | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|-------------------|------------|------------|
| Calling DN                  | A          | B                 | A          | A          |
| Called DN                   | B          | C                 | C          | C          |
| SOSM Call #                 | 1          | 1                 | 1          | 1          |
| Attribute of choice         | 04         | 01                | 40         | 40         |
| Parameters of connection    | 1C         | 1C                | 1C         | 1C         |
| Code of supp. service phase | 00         | 04                | 00         | 00         |
| MCL #                       | 1          | 1                 | 1          | 1          |
| Code of operation           | 00         | 00                | 00         | 05         |
| Feature Code                | FF         | Cfu<br>Cfb<br>Cfd | FF         | FF         |

**C is under surveillance**

|            | <b>1.1</b> | <b>1.4</b> | <b>1.2</b> | <b>1.3</b> |
|------------|------------|------------|------------|------------|
| Calling DN | A          | B          | A          | A          |
| Called DN  | C          | C          | C          | C          |

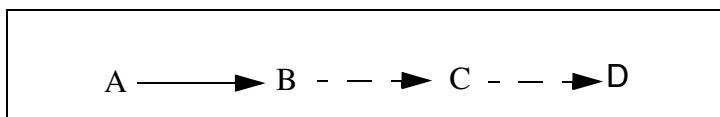
|                             | 1.1 | 1.4               | 1.2 | 1.3 |
|-----------------------------|-----|-------------------|-----|-----|
| SOSM Call #                 | 1   | 1                 | 1   | 1   |
| Attribute of choice         | 04  | 04                | 04  | 04  |
| Parameters of connection    | 1C  | 1C                | 1C  | 1C  |
| Code of supp. service phase | 00  | 04                | 00  | 00  |
| MCL #                       | 1   | 1                 | 1   | 1   |
| Code of operation           | 00  | 00                | 00  | 05  |
| Feature Code                | FF  | Cfu<br>Cfb<br>Cfd | FF  | FF  |

**Note 1:** The message sequence for CDTO (Call Diversion To Operator) feature is as same as CFU, and feature code field in Msg.1.4 is sent as “**CFU - 21H**” to control point.

**Note 2:** The message sequence for CFF (Call Diversion Fixed) feature is as same as CFU, and feature code field in Msg.1.4 is sent as “**CFU - 21H**” to control point.

**Note 3:** No service usage notification is sent to CP if the call is diverted to a vacant (blank) DN for CFX scenarios.

### Call Forward Chaining



**A is under surveillance**

|                          | 1.1 | 1.4 | 1.4 | 1.2 | 1.3 |
|--------------------------|-----|-----|-----|-----|-----|
| Calling DN               | A   | B   | C   | A   | A   |
| Called DN                | B   | C   | D   | D   | D   |
| SOSM Call #              | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice      | 01  | 40  | 40  | 01  | 01  |
| Parameters of connection | 1C  | 1C  | 1C  | 1C  | 1C  |



|                             | 1.1 | 1.4               | 1.4               | 1.2 | 1.3 |
|-----------------------------|-----|-------------------|-------------------|-----|-----|
| Code of supp. service phase | 00  | 04                | 04                | 00  | 00  |
| MCL #                       | 1   | 1                 | 1                 | 1   | 1   |
| Code of operation           | 00  | 00                | 00                | 00  | 05  |
| Feature Code                | FF  | Cfu<br>Cfb<br>Cfd | Cfu<br>Cfb<br>Cfd | FF  | FF  |

**B is under surveillance**

|                             | 1.1 | 1.4               | 1.4               | 1.2 | 1.3 |
|-----------------------------|-----|-------------------|-------------------|-----|-----|
| Calling DN                  | A   | B                 | C                 | A   | A   |
| Called DN                   | B   | C                 | D                 | D   | D   |
| SOSM Call #                 | 1   | 1                 | 1                 | 1   | 1   |
| Attribute of choice         | 04  | 01                | 40                | 40  | 40  |
| Parameters of connection    | 1C  | 1C                | 1C                | 1C  | 1C  |
| Code of supp. service phase | 00  | 04                | 04                | 00  | 00  |
| MCL #                       | 1   | 1                 | 1                 | 1   | 1   |
| Code of operation           | 00  | 00                | 00                | 00  | 05  |
| Feature Code                | FF  | Cfu<br>Cfb<br>Cfd | Cfu<br>Cfb<br>Cfd | FF  | FF  |

**C is under surveillance**

|                             | 1.1 | 1.4 | 1.4 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|-----|-----|
| Calling DN                  | A   | B   | C   | A   | A   |
| Called DN                   | C   | C   | D   | D   | D   |
| SOSM Call #                 | 1   | 1   | 1   | 1   | 1   |
| Attribute of choice         | 04  | 04  | 01  | 40  | 40  |
| Parameters of connection    | 1C  | 1C  | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 04  | 04  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 00  | 00  | 05  |

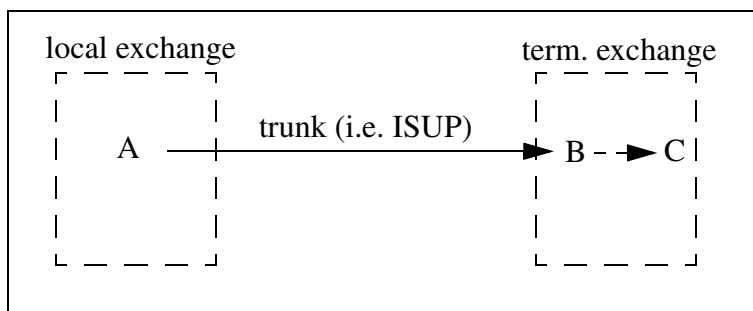
|              | 1.1 | 1.4               | 1.4               | 1.2 | 1.3 |
|--------------|-----|-------------------|-------------------|-----|-----|
| Feature Code | FF  | Cfu<br>Cfb<br>Cfd | Cfu<br>Cfb<br>Cfd | FF  | FF  |

**D is under surveillance**

|                             | 1.1 | 1.4               | 1.4               | 1.2 | 1.3 |
|-----------------------------|-----|-------------------|-------------------|-----|-----|
| Calling DN                  | A   | B                 | C                 | A   | A   |
| Called DN                   | D   | C                 | D                 | D   | D   |
| SOSM Call #                 | 1   | 1                 | 1                 | 1   | 1   |
| Attribute of choice         | 04  | 40                | 04                | 04  | 04  |
| Parameters of connection    | 1C  | 1C                | 1C                | 1C  | 1C  |
| Code of supp. service phase | 00  | 04                | 04                | 00  | 00  |
| MCL #                       | 1   | 1                 | 1                 | 1   | 1   |
| Code of operation           | 00  | 00                | 00                | 00  | 05  |
| Feature Code                | FF  | Cfu<br>Cfb<br>Cfd | Cfu<br>Cfb<br>Cfd | FF  | FF  |

**Trunk Implementation**

In local exchange, if the monitored call is routed over trunk then service usage notification messages (Msg.1.4) are not generated when call diversion (including call forward chain) takes place in other exchange.



**A is under surveillance (Local Exchange)**

|                             | <b>1.1</b> | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|------------|------------|
| Calling DN                  | A          | A          | A          |
| Called DN                   | B          | B          | B          |
| SOSM Call #                 | 1          | 1          | 1          |
| Attribute of choice         | 01         | 01         | 01         |
| Parameters of connection    | 11         | 11         | 11         |
| Code of supp. service phase | 00         | 00         | 00         |
| MCL #                       | 1          | 1          | 1          |
| Code of operation           | 00         | 00         | 05         |
| Feature Code                | FF         | FF         | FF         |

**B is under surveillance (Terminating Exchange)**

|                             | <b>1.1</b> | <b>1.4</b>        | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|-------------------|------------|------------|
| Calling DN                  | A          | B                 | A          | A          |
| Called DN                   | B          | C                 | C          | C          |
| SOSM Call #                 | 1          | 1                 | 1          | 1          |
| Attribute of choice         | 04         | 01                | 40         | 40         |
| Parameters of connection    | 12         | 1C                | 12         | 12         |
| Code of supp. service phase | 00         | 04                | 00         | 00         |
| MCL #                       | 1          | 1                 | 1          | 1          |
| Code of operation           | 00         | 00                | 00         | 05         |
| Feature Code                | FF         | Cfu<br>Cfb<br>Cfd | FF         | FF         |

**C is under surveillance (Terminating Exchange)**

|                     | <b>1.1</b> | <b>1.4</b> | <b>1.2</b> | <b>1.3</b> |
|---------------------|------------|------------|------------|------------|
| Calling DN          | A          | B          | A          | A          |
| Called DN           | C          | C          | C          | C          |
| SOSM Call #         | 1          | 1          | 1          | 1          |
| Attribute of choice | 04         | 04         | 04         | 04         |

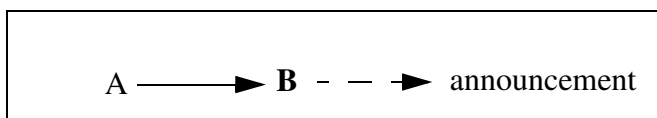
|                             | 1.1 | 1.4               | 1.2 | 1.3 |
|-----------------------------|-----|-------------------|-----|-----|
| Parameters of connection    | 12  | 1C                | 12  | 12  |
| Code of supp. service phase | 00  | 04                | 00  | 00  |
| MCL #                       | 1   | 1                 | 1   | 1   |
| Code of operation           | 00  | 00                | 00  | 05  |
| Feature Code                | FF  | Cfu<br>Cfb<br>Cfd | FF  | FF  |

### Call Forward to Announcement

This feature allows a subscriber to divert a call to the announcement. This feature can be activated either before or during a call.

If one of the parties is SOSM agent in a diverted call, monitoring continues in the new call formed after diversion.

In this scenario, subscriber A calls B. B has Call Diversion Feature programmed to divert the call to announcement.



For IBN lines, CDTA line option provide this functionality.

### A is under surveillance

|                             | 1.1 | 1.3 |
|-----------------------------|-----|-----|
| Calling DN                  | A   | A   |
| Called DN                   | B   | B   |
| SOSM Call #                 | 1   | 1   |
| Attribute of choice         | 01  | 01  |
| Parameters of connection    | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  |
| MCL #                       | 0   | 0   |
| Code of operation           | 00  | 05  |
| Feature Code                | FF  | FF  |

**B is under surveillance**

|                             | <b>1.1</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   | B          | B          |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 04         | 04         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         |
| MCL #                       | 0          | 0          |
| Code of operation           | 00         | 05         |
| Feature Code                | FF         | FF         |

In line-to-line calls, SOSM stops monitoring the call when the originating subscriber starts to receive the announcement.

However, if the call is established via trunk, call content (announcement) is sent to control point via MCL channel(s).

**Speed Call**

Speed Call allows a subscriber to make calls dialing abbreviated codes which were programmed before by the subscriber. This feature can be programmed either before or during a call.

Party A dials the abbreviated digits to call B.

For IBN lines, SCL line option provides this functionality.

**A is under surveillance**

|                             | <b>1.1</b> | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|------------|------------|
| Calling DN                  | A          | A          | A          |
| Called DN                   | B          | B          | B          |
| SOSM Call #                 | 1          | 1          | 1          |
| Attribute of choice         | 01         | 01         | 01         |
| Parameters of connection    | 1C         | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         | 00         |
| MCL #                       | 1          | 1          | 1          |

|                   | 1.1 | 1.2 | 1.3 |
|-------------------|-----|-----|-----|
| Code of operation | 00  | 00  | 05  |
| Feature Code      | FF  | FF  | FF  |

**B is under surveillance**

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | A   | A   | A   |
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 04  | 04  | 04  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

**Call Completion to Busy Subscriber**

This feature allows the subscriber to activate himself against the called party that is busy at the moment. A dials B which is busy. A activates CCBS against B. When B on-hooks, A rings. When A off-hooks, the call is setup automatically established between A and B. SOSM interaction for network CCBS will be supported only over ISUP V2 trunks.

In this scenario, A is SOSM agent. A calls B which is busy at that time. A activates CCBS against B. Then A goes on-hook.

Note that a SOSM call arises due to the activation of CCBS feature; because A is a SOSM agent. After a while, B finishes his conversation and goes on-hook. After B on-hooks, A rings and call is setup between A and B automatically. This is a normal SOSM call between A and B. CCBS line option provides this functionality.

**A is under surveillance**

|            | 1.1 | 1.3 | 1.4 | 1.3 | 1.4 | 1.1 | 1.2 | 1.3 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Calling DN | A   | A   | A   | A   | A   | A   | A   | A   |
| Called DN  | B   | B   | B   | B   | B   | B   | B   | B   |

|                             | 1.1 | 1.3 | 1.4  | 1.3 | 1.4  | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|------|-----|------|-----|-----|-----|
| SOSM Call #                 | 1   | 1   | 2    | 2   | 3    | 3   | 3   | 3   |
| Attribute of choice         | 01  | 01  | 01   | 01  | 01   | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C  | 1C   | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 01   | 00  | 04   | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | FF   | FF  | FF   | 2   | 2   | 2   |
| Code of operation           | 00  | 03  | FF   | 05  | FF   | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | CCBS | FF  | CCBS | FF  | FF  | FF  |

### Malicious Call Trace

This feature allows a subscriber to detect a continuously disturbing number by using double FLASH during the call. If a subscriber activates feature against a calling agent, that agent stays held and a log is produced for the operator to detect the number.

In this scenario, A calls B. B activates feature against A.

For IBN lines, CLF line option provide this functionality.

#### A is under surveillance

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | A   | A   | A   |
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

**B is under surveillance**

|                             | <b>1.1</b> | <b>1.2</b> | <b>1.4</b> | <b>1.3</b> |
|-----------------------------|------------|------------|------------|------------|
| Calling DN                  | A          | A          | B          | A          |
| Called DN                   | B          | B          | A          | B          |
| SOSM Call #                 | 1          | 1          | 1          | 1          |
| Attribute of choice         | 04         | 04         | 01         | 04         |
| Parameters of connection    | 1C         | 1C         | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         | 04         | 00         |
| MCL #                       | 1          | 1          | 1          | 1          |
| Code of operation           | 00         | 00         | 00         | 05         |
| Feature Code                | FF         | FF         | CLF        | FF         |

**Note:** If terminating line is monitored and has MCT option (CEPT and CLF) then call clearing (Msg.1.3) message is not sent as the originator on-hooks unless MCT is activated.

**Post Disconnection**

Definition: If calling party on hooks before called party has activated MCT, and if called party activates MCT by double flash within post disconnection timer then MCT logs will be printed like a normal activation in case of terminating office has calling DN information.

If the terminating line is monitored and has MCT option (CEPT and CLF) then service usage notification (Msg.1.4) and call clearing (Msg.1.3) messages are sent after terminator activates MCT.

**International Line Restriction**

International Line Restriction allows subscribers to restrict some of their own calls.

**Activation from translations**

In this scenario, A has ILR option. A activates ILR feature directly from the translations. The message sequence is shown in the following table.

For IBN lines, ILR line option provides this functionality.

**A is under surveillance**

|            | <b>1.4</b> | <b>1.3</b> |
|------------|------------|------------|
| Calling DN | A          | A          |



|                             | 1.4 | 1.3 |
|-----------------------------|-----|-----|
| Called DN                   |     |     |
| SOSM Call #                 | 1   | 1   |
| Attribute of choice         | 01  | 00  |
| Parameters of connection    | 1C  | 1C  |
| Code of supp. service phase | 01  | 00  |
| MCL #                       | FF  | FF  |
| Code of operation           | FF  | 02  |
| Feature Code                | ILR | FF  |

### Activation during a call

In this scenario, A calls B. During the call, A activates ILR feature. The message sequence is shown in the following table.

#### A is under surveillance

|                             | 1.1 | 1.2 | 1.4  | 1.4                         | 1.4  | 1.3 |
|-----------------------------|-----|-----|------|-----------------------------|------|-----|
| Calling DN                  | A   | A   | A    | A                           | A    | A   |
| Called DN                   | B   | B   | B    | ILR<br>activation<br>digits | B    | B   |
| SOSM Call #                 | 1   | 1   | 1    | 1                           | 1    | 1   |
| Attribute of choice         | 01  | 01  | 01   | 01                          | 01   | 01  |
| Parameters of connection    | 1C  | 1C  | 1C   | 1C                          | 1C   | 1C  |
| Code of supp. service phase | 00  | 00  | 04   | 01                          | 04   | 00  |
| MCL #                       | 1   | 1   | 1    | FF                          | 1    | 1   |
| Code of operation           | 00  | 00  | 00   | FF                          | 00   | 05  |
| Feature Code                | FF  | FF  | HOLD | ILR                         | HOLE | FF  |

### ILR Usage

In this scenario, A calls a restricted number. The message sequence is shown in the following table.

#### A is under surveillance

|            | 1.1 | 1.4 | 1.3 |
|------------|-----|-----|-----|
| Calling DN | A   | A   | A   |

|                             | 1.1 | 1.4 | 1.3 |
|-----------------------------|-----|-----|-----|
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 04  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 01  |
| Feature Code                | FF  | ILR | FF  |

### Last Number Re-dial

Last Number Re-dial allows the subscriber to repeat the last dialled number by using a defined code. There is no interaction with SOSM.

In this scenario, A calls B using LNR service. The message sequence is shown in the following table. No usage message is reported to control point for LNR service.

#### A is under surveillance

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | A   | A   | A   |
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

If B is under surveillance, the message sequence is the same with the basic call where called party is under surveillance.

## Automatic Line

Automatic line allows a subscriber to have a direct connection to a DN which was programmed before by the office personnel as soon as the subscriber goes off-hook. The subscriber does not have effect in activating or deactivating this feature.

If a SOSM agent has this feature and uses it, a SOSM call arises. The message sequence is shown in the following table. AUL line option provide this functionality.

### A is under surveillance

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | A   | A   | A   |
| Called DN                   | B   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

If B is under surveillance, the message sequence is the same with the basic call where called party is under surveillance.

## Warm-Line

WML (Warm Line) feature is similar to HTL except for CEPT\_WML\_DEFAULT\_TMO parameter in table OFCVAR. If the subscriber does not make a call within this time interval, a direct connection to a determined DN is made. This feature can be activated by the subscriber.

SOSM interacts with this feature when a direct feature access is made to activate the feature. The message sequence for activation is shown in the following table. WML line option provide this functionality.

### A is under surveillance

|            | 1.4 | 1.3 |
|------------|-----|-----|
| Calling DN | A   | A   |

|                             | <b>1.4</b>     | <b>1.3</b>     |
|-----------------------------|----------------|----------------|
| Called DN                   | Dialled digits | Dialled digits |
| SOSM Call #                 | 1              | 1              |
| Attribute of choice         | 01             | 01             |
| Parameters of connection    | 1C             | 1C             |
| Code of supp. service phase | 01             | 00             |
| MCL #                       | FF             | FF             |
| Code of operation           | FF             | 05             |
| Feature Code                | WML            | FF             |

When the call is being placed automatically, WML has the same behavior as AUL feature.

If B is under surveillance, the message sequence is the same with the basic call where called party is under surveillance.

### **CEPT Do Not Disturb**

While CDND is active for IBN lines, no calls will be routed to this subscriber.

SOSM only interacts with this feature when direct feature access is made to activate or deactivate the feature. The message sequence for activation is shown in the following table.

#### **A is under surveillance**

|                             | <b>1.4</b>     | <b>1.3</b>     |
|-----------------------------|----------------|----------------|
| Calling DN                  | A              | A              |
| Called DN                   | Dialled digits | Dialled digits |
| SOSM Call #                 | 1              | 1              |
| Attribute of choice         | 01             | 01             |
| Parameters of connection    | 1C             | 1C             |
| Code of supp. service phase | 01             | 00             |
| MCL #                       | FF             | FF             |
| Code of operation           | FF             | 05             |
| Feature Code                | CDND           | FF             |

A → B (CDND active)

**A is under surveillance**

|                             | <b>1.1</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   | B          | B          |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 01         | 01         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         |
| MCL #                       | 1          | 1          |
| Code of operation           | FF         | 03         |
| Feature Code                | FF         | FF         |

**B is under surveillance**

|                             | <b>1.1</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   | B          | B          |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 04         | 04         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         |
| MCL #                       | 1          | 1          |
| Code of operation           | 00         | 03         |
| Feature Code                | FF         | FF         |

## Wake-up Call

This feature allows the subscriber to ring his/her telephone set at a specified time which can be programmed by the subscriber himself/herself.

SOSM only interacts with this feature when direct feature access is made. The message sequence for IWUC activation is shown in the following table.

For IBN lines, IWUC line option provide this functionality.

**A is under surveillance**

|                             | <b>1.4</b>     | <b>1.3</b>     |
|-----------------------------|----------------|----------------|
| Calling DN                  | A              | A              |
| Called DN                   | Dialled digits | Dialled digits |
| SOSM Call #                 | 1              | 1              |
| Attribute of choice         | 01             | 01             |
| Parameters of connection    | 1C             | 1C             |
| Code of supp. service phase | 01             | 00             |
| MCL #                       | FF             | FF             |
| Code of operation           | FF             | 05             |
| Feature Code                | IWUC           | FF             |

If wakeup call arises through party A, message 1.4 should be sent for IWUC usage.

**A is under surveillance**

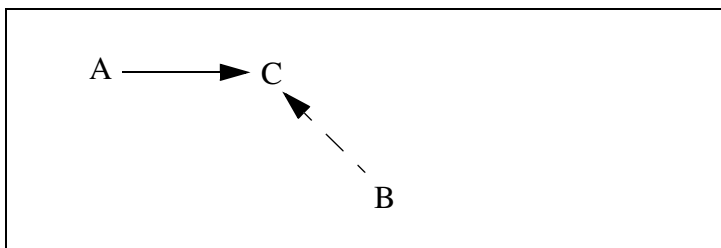
|                             | <b>1.4</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   |            |            |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 01         | 01         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 04         | 00         |
| MCL #                       | FF         | FF         |

|                   | 1.4  | 1.3 |
|-------------------|------|-----|
| Code of operation | FF   | 05  |
| Feature Code      | IWUC | FF  |

### Call Pickup

This feature allows the subscriber to answer an incoming call at any station in call pickup group.

SOSM only interacts with this feature when direct feature access is made. The message sequence for CPU activation is shown in the following table.



### A is under surveillance

|                             | 1.1 | 1.2 | 1.3 |
|-----------------------------|-----|-----|-----|
| Calling DN                  | A   | A   | A   |
| Called DN                   | C   | B   | B   |
| SOSM Call #                 | 1   | 1   | 1   |
| Attribute of choice         | 01  | 01  | 01  |
| Parameters of connection    | 1C  | 1C  | 1C  |
| Code of supp. service phase | 00  | 00  | 00  |
| MCL #                       | 1   | 1   | 1   |
| Code of operation           | 00  | 00  | 05  |
| Feature Code                | FF  | FF  | FF  |

**B is under surveillance**

|                             | <b>1.1</b> | <b>1.4</b> | <b>1.2</b> | <b>1.3</b> |
|-----------------------------|------------|------------|------------|------------|
| Calling DN                  | A          | B          | A          | A          |
| Called DN                   | B          | C          | B          | B          |
| SOSM Call #                 | 1          | 1          | 1          | 1          |
| Attribute of choice         | 04         | 01         | 04         | 04         |
| Parameters of connection    | 1C         | 1C         | 1C         | 1C         |
| Code of supp. service phase | 00         | 04         | 00         | 00         |
| MCL #                       | 1          | 1          | 1          | 1          |
| Code of operation           | 00         | 00         | 00         | 05         |
| Feature Code                | FF         | CPU        | FF         | FF         |

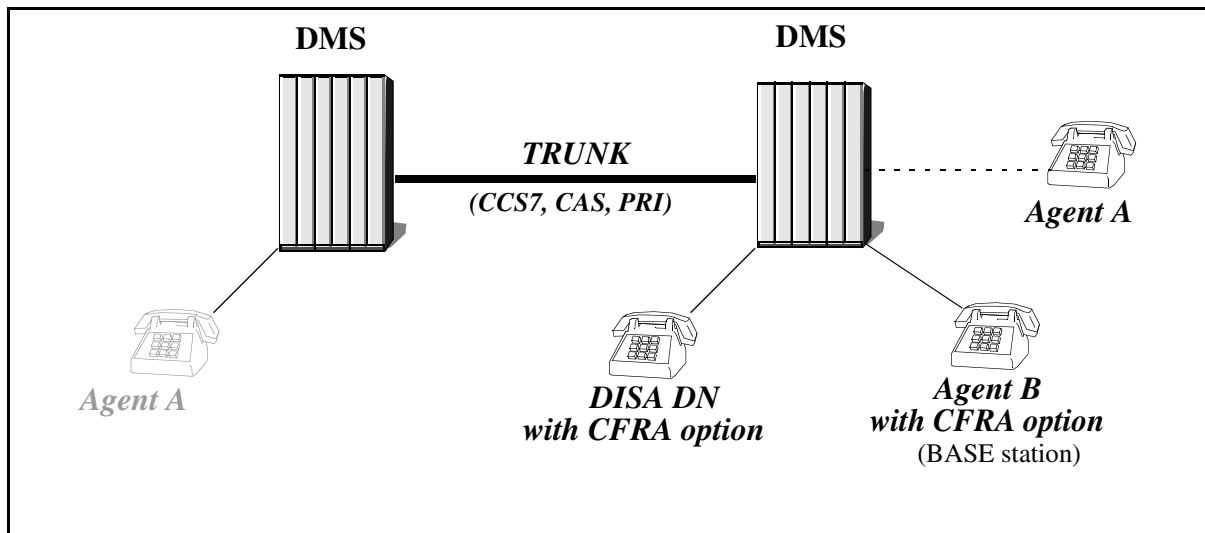
**C is under surveillance**

|                             | <b>1.1</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   | C          | C          |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 04         | 04         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         |
| MCL #                       | 1          | 1          |
| Code of operation           | 00         | 04         |
| Feature Code                | FF         | FF         |

**Call Forward Remote Access (CFRA)**

CFRA allows user to (de)activate Call Forward and enter the forward-to number by remotely dialling a DISA number and entering a PIN. This feature is implemented by activity A59019083 (MMP14).



**CF Remote Access successful call scenario****A is under surveillance**

|                             | <b>1.1</b> | <b>1.3</b> |
|-----------------------------|------------|------------|
| Calling DN                  | A          | A          |
| Called DN                   | DISA       | DISA       |
| SOSM Call #                 | 1          | 1          |
| Attribute of choice         | 01         | 01         |
| Parameters of connection    | 1C         | 1C         |
| Code of supp. service phase | 00         | 00         |
| MCL #                       | 1          | 1          |
| Code of operation           | 00         | 05         |
| Feature Code                | FF         | FF         |

**Note:** For Line (A) to DISA calls where call is established over trunk, the parameter of connection is set as “**outgoing call - 11H**”, and code of operation is set as “**no answer - 04H**” in Msg.1.3.

**B is under surveillance**

|             | <b>1.4</b> | <b>1.4</b> |
|-------------|------------|------------|
| Calling DN  | A          | A          |
| Called DN   | B          | B          |
| SOSM Call # | 1          | 1          |

|                             |            |                 |
|-----------------------------|------------|-----------------|
|                             | <b>1.4</b> | <b>1.4</b>      |
| Attribute of choice         | 04         | 04              |
| Parameters of connection    | 1C         | 1C              |
| Code of supp. service phase | 04         | 01/02/03        |
| MCL #                       | FF         | FF              |
| Code of operation           | FF         | FF              |
| Feature Code                | CFRA       | CFU/CFB<br>/CFD |

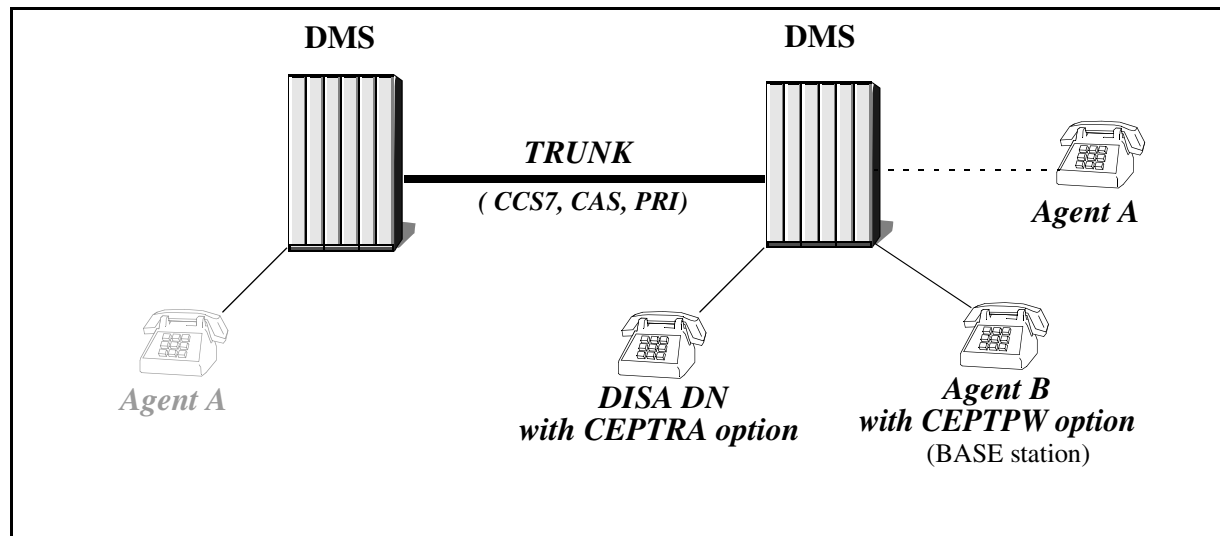
**Note:** Since no MCL(s) are assigned during act/deact/inter via CFRA, MCL# field is always set to FFH within Msg.1.4s.

### CEPT Remote Access (CEPTRA)

CEPTRA (CEPT Features Remote Access) feature allows subscribers to control some CEPT feature functionalities of IBN lines from remote agents. CEPTRA allows activation/programming, deactivation or interrogation of CEPT features on end user's phone from a remote location.

The below figure show the functionality of CEPTRA in MMP.

#### CEPT Features Remote Access successful call scenario



**A is under surveillance**

|            |            |            |
|------------|------------|------------|
|            | <b>1.1</b> | <b>1.3</b> |
| Calling DN | A          | A          |

|                             | 1.1  | 1.3  |
|-----------------------------|------|------|
| Called DN                   | DISA | DISA |
| SOSM Call #                 | 1    | 1    |
| Attribute of choice         | 01   | 01   |
| Parameters of connection    | 1C   | 1C   |
| Code of supp. service phase | 00   | 00   |
| MCL #                       | 1    | 1    |
| Code of operation           | 00   | 05   |
| Feature Code                | FF   | FF   |

**Note:** For Line (A) to DISA calls where call is established over trunk, the parameter of connection is set as “**outgoing call - 11H**”, and code of operation is set as “**no answer - 04H**” in Msg.1.3.

#### **B is under surveillance**

|                             | 1.4    | 1.4      |
|-----------------------------|--------|----------|
| Calling DN                  | A      | A        |
| Called DN                   | B      | B        |
| SOSM Call #                 | 1      | 1        |
| Attribute of choice         | 04     | 04       |
| Parameters of connection    | 1C     | 1C       |
| Code of supp. service phase | 04     | 01/02/03 |
| MCL #                       | FF     | FF       |
| Code of operation           | FF     | FF       |
| Feature Code                | CEPTRA | Feat.    |

**Note:** Since no MCL(s) are assigned during act/deact/inter via CFRA, MCL# field is always set to FFH within Msg.1.4s.

### **ONP, Restart and Swact Interactions**

When a software upgrade is taking place via a One Night Process (ONP), all static SOSM data (data in tables SOSMTRK, SOSMMPC and SOSMPARM) is transferred to the new software load automatically.

However, dynamic SOSM data such as monitoring orders, MCL definitions are cleared, MCL's are disconnected and effective system password is initialized at CM swact (during ONP).

During TABXFR, The commands received are rejected with the reason of “dump restore in progress”.

In PRESWACT step of ONP, SOSM is stopped. The commands received are rejected with the reason of “**dump restore in progress**” until SWACT is completed. When SWACT is completed, CP is notified via Exchange Restart message.

Upon any system restart (Warm, Cold or Reload) SOSM data is cleared and the CP is notified via Exchange Restart message. Since active calls survive warm restarts, any active call under surveillance will have its MCLs disconnected.

## Restrictions/Limitations

### Ring tone

During ringing, mechanical voice is listened from MCL connected to the called DN due to the relay switching because there will be physical connection between MCL and the ring relay in line card of called dn.

### Conference circuits usage

The conference ports added to the exchange for SOSM are not pre-allocated to the SOSM system. If all ports are used by normal 3-way or 6-way calls, SOSM will be unable to allocate a conference bridge, and a monitored call will become statistically monitored. Upon conference bridge shortage, CP is informed by an clearing of MCL message (Msg.2.2) after reception of called party number (Msg.1.1).

Similarly, if all conference circuits are used by SOSM, local subscribers will be unable to use 3-way call features.

### The restriction of Analog Line cards

By design, analog line cards contain a bridge which causes an echo on the backward speech path. If a party in a monitored call is off an analog line card, the party's MCL will contains a combination of his transmit and receive signals. The transmit signal predominates the other by approximately 20db.

### Monitoring of network subscribers

SOSM triggers monitoring for “**telephone network subscriber with complete telephone number**” and “**telephone network subscriber with incomplete telephone number**” type of objects only in line-to-trunk calls where the specified number within the object is dialled.

In overlap outpulsed calls, SOSM starts monitoring the calls for complete network numbers as the received digits matches a DN within the corresponding monitoring order. SOSM does not make any further checks to verify whether the total number of the dialled digits are equal to the number of the digits in monitoring order.

### **Incoming group of connecting lines**

The Incoming group concept is not supported in DMS MMP. DMS MMP always expects to receive FFFFH value for this field, otherwise the message will be rejected.

Additionally, DMS MMP sets this field to FFFFH in all call information messages from SOSM to CP, where ANI is available. Otherwise, incoming trunk number is sent within “Conditional number of incoming group”.

### **SOSM under traffic**

Under heavy SOSM traffic, it is possible that the conference circuits may fail. This is a limitation of the 3X67 conference circuit card on the MTM or CTM shelf. In those rare cases, failure message will be sent to the CP reporting Conference Circuit Failure, and the MCL using that conference port card will be released with message 52 (MCL cleared) reported to CP.

In addition, NET102 logs (not SOSM specific) will be generated in the office, reporting the card problem (Integrity Failure).

### **Image Dump and Restore**

During the process of an Image Dump or Restore (when the DMS saves its active image to disk, or restores it from disk) the SOSM system operates in a LIMITED fashion. All Control Point commands are rejected:

- During DS dumping phase of load image,
- During TABXFR phase of ONP,
- After Preswact is started.

If any commands are received during a dump/restore, the command is rejected with negative reception confirmation code “**dump restore in progress**” with value **59H**.

### **IN Interaction**

IN interaction is not supported.

### **Interaction with digit collection methods**

DMS MMP has a flexible digit collection mechanism which means that user dialled digits can be reported to CM as provisioned in digit collection tables. In partial dialling cases, only collected digits that are reported from monitored

line's XPM are sent to the control point within call clearing message (Msg.1.3).

### **Failures in ISUP-Line call scenarios**

SOSM does not monitor the unsuccessful calls when the call setup fails due incoming trunk (i.e. COT failures, ANI failure,...etc).

### **PM Swact (warm) interactions**

If warm swact is applied on the PLGC/GPP of a monitored line in call setup phase, DMS MMP takes down the call. If the subscriber remains off-hook until completion of warm swact, the peripheral prepares the line for a new call origination.

If subscriber on-hooks after PLGC/GPP recovery is over, SOSM sends a call clearing message (Msg.1.3) to the control point with "partial dialling - 02H" operation code for the completion of the new origination.

If the subscriber is a V5.2 agent, GPP sends an additional origination message for this agent during recovery phase (please refer to GPPPRODS document in FMDOC library for detailed information about GPP recovery after warm swact), therefore SOSM reports an extra call clearing message (Msg.1.3) to the control point with "partial dialling - 02H" operation code.

### **Monitoring of SUSPended agents**

SUSPended agents are not monitored by SOSM, although they exist in monitoring order database.

### **SOSM starting after restarts**

After restarts, the recovering of X25 hardware does not complete, right away. So, SOSM cannot be started until X25 hardware is ready to work after restarts.

## **Service Codes mapping**

### **Subscriber services codes**

These codes are reported to the CP in responses to Monitored object information request and anywhere else where a Service code appears in a message.

A set of codes was supplied by ZNIIS and is used wherever possible. For services which are not covered in that list, the DMS service code is used.

The following table provides the complete list of services available in the Russia market, and their LONIIS code equivalent.

For services where mapping is possible between DMS codes and LONIIS codes, the LONIIS code is used (in field "Service Code"). For those services

with no equivalent code in the LONIIS specification, the DMS code is used and placed in the “Service Code”.

Note that some services defined by LONIIS do not exist on the DMS MMP in the Russia market. Other services may have two flavors in DMS MMP, but map to a single LONIIS code.

#### Subscriber Services Codes

| <b>Feature Name<br/>DMS / LONIIS</b> | <b>Service<br/>Code</b> | <b>Description</b>          |
|--------------------------------------|-------------------------|-----------------------------|
| SCL,SCS,SCU                          | 10H                     | Abbreviated Dialing         |
| APS                                  | 74H                     | Attendant Pay Station       |
| ACD                                  | 3BH                     | Automatic Call Distribution |
| ACRJ                                 | 18H                     | Anonymous Caller Rejection  |
| AR                                   | 19H                     | Automatic Recall            |
| BNN                                  | 25H                     | Bridged Night Number        |
| CPC (RSRVD)                          | 71H                     | CIS Subscriber Category 0   |
| CPC (UNKNOWN)                        | 53H                     | CIS Subscriber Category 1   |
| CPC (ORD)                            | 72H                     | CIS Subscriber Category 1   |
| CPC (MAINT)                          | 54H                     | CIS Subscriber Category 1   |
| CPC (OPER)                           | 55H                     | CIS Subscriber Category 1   |
| CPC (VIS)                            | 56H                     | CIS Subscriber Category 1   |
| CPC (CNDB)                           | 57H                     | CIS Subscriber Category 1   |
| CPC (AU_ORD)                         | 58H                     | CIS Subscriber Category 1   |
| CPC (AU_PRIO)                        | 59H                     | CIS Subscriber Category 1   |
| CPC (HOTEL)                          | 73H                     | CIS Subscriber Category 2   |
| CPC (LOCAL)                          | 2CH                     | CIS Subscriber Category 3   |
| CPC (PRIOR)                          | 2DH                     | CIS Subscriber Category 4   |
| CPC (FOC)                            | 2EH                     | CIS Subscriber Category 5   |
| CPC (SPM)                            | 2FH                     | CIS Subscriber Category 6   |
| CPC (ITDN)                           | 30H                     | CIS Subscriber Category 7   |
| CPC (TRAN)                           | 76H                     | CIS Subscriber Category 8   |
| CPC (METER)                          | 34H                     | CIS Subscriber Category 9   |

**Subscriber Services Codes**

| <b>Feature Name<br/>DMS / LONIIS</b> | <b>Service<br/>Code</b> | <b>Description</b>                  |
|--------------------------------------|-------------------------|-------------------------------------|
| CPU / CP                             | 32H                     | Call Pick Up                        |
| CBIL                                 | 35H                     | Centralized Billing                 |
| CCW                                  | 3AH                     | Cancel Call Waiting                 |
| CFWANN/CFU                           | 21H                     | Call Forward With Announcement      |
| CFU/CFU                              | 21H                     | Call Forward Unconditional          |
| CFF/CFU                              | 21H                     | Call Forward Fixed                  |
| CFI/CFU                              | 21H                     | Call Forward Intragroup             |
| CHD                                  | 42H                     | Call Hold                           |
| CFB / CFB                            | 29H                     | Call Diversion on Busy              |
| CFD/CFNRY                            | 2AH                     | Call Diversion on No Answer         |
| CEPT                                 | 15H                     | CEPT                                |
| CEPTPW                               | 16H                     | CEPT Password                       |
| CDTA/ All CF                         | 20H                     | Call Diversion to Announcement      |
| CDTO/All CF                          | 20H                     | Call Diversion to Operator          |
| CDS / CFU                            | 21H                     | Call Diversion to Subscriber        |
| - / CFNRC                            | 2BH                     | Call diversion on mobil unreachable |
| - / CONDF                            | 28H                     | All conditional forwarding          |
| CIR / CUG                            | 61H                     | Circular Hunt                       |
| CWT, ICWT / CWT                      | 41H                     | Call Waiting                        |
| Flash / HOLD                         | 42H                     | Hold for Enquiry                    |
| HOLE                                 | 40H                     | Hold End                            |
| RAG / CCBS                           | 43H                     | Ring Again                          |
| CCBS / CCBS                          | 43H                     |                                     |
| MPTY                                 | 51H                     | All Multi-Party Services            |
| 6WC, I6WC / CONF                     | 50H                     | Six Way Calling                     |
| 3WC, I 3WC / TPTY                    | 52H                     | Three Way Calling                   |
| CNAMD / CLIP                         | 11H                     | Calling Name Display                |
| CND/CLIP                             | 11H                     | Calling Name Display                |



**Subscriber Services Codes**

| <b>Feature Name<br/>DMS / LONIIS</b> | <b>Service<br/>Code</b> | <b>Description</b>                     |
|--------------------------------------|-------------------------|----------------------------------------|
| CNAB/CLIR                            | 12H                     | Calling Name Display Blocking          |
| CNDB/CLIR                            | 12H                     | Calling Name Display Blocking          |
| CNDBO                                | 1EH                     | Calling Name Display Blocking Override |
| COIN                                 | 3EH                     |                                        |
| - / COLP                             | 13H                     | Connected Line Identification          |
| - / COLR                             | 14H                     | Connect Line ID. Blocking              |
| DLH / CUG                            | 61H                     | Distributed Line Hunting               |
| DNH / CUG                            | 61H                     | Directory Number Hunting               |
| MLH / CUG                            | 61H                     | Multi-Line Hunting                     |
| CFRA                                 | 80H                     | Call Forward Remote Access             |
| CEPTRA                               | 81H                     | CEPT Remote Access                     |
| ILR / BOC                            | 91H                     | International Line Restrictions (ALL)  |
| DOR/ BAOC                            | 92H                     | Denied Origination                     |
| CDND / BIC                           | 99H                     | International Do Not Disturb           |
| DTM / BAIC                           | 9AH                     | Denied Termination                     |
| - / BICRoam                          | 9BH                     | Barring INcoming when PLMN, Country    |
| ICT, ECT, CXR/ CXR                   | 31H                     | International Call Transfer            |
| TBI / -                              | 98H                     | Toll Break In                          |
| DCF                                  | 38H                     | Denied Call Forwarding                 |
| DTBI                                 | A9H                     | Denied Toll Break-In                   |
| ELN                                  | B0H                     | Essential Line                         |
| EMW                                  | D0H                     | Executive Message Waiting (Voice Mail) |
| ENQ                                  | 33H                     | Enquiry Calling                        |
| ESG                                  | B3H                     | Emergency Service Groups               |
| FDN                                  | BAH                     | Features Denied                        |
| FNO                                  | BEH                     | Free Number Origination                |
| FNT                                  | BFH                     | Free Number Terminating                |
| GIC                                  | 3CH                     | Group Intercom                         |

**Subscriber Services Codes**

| <b>Feature Name<br/>DMS / LONIIS</b> | <b>Service<br/>Code</b> | <b>Description</b>                |
|--------------------------------------|-------------------------|-----------------------------------|
| HOT                                  | CFH                     | Hotel or Motel                    |
| ICR                                  | D1H                     | International Call Recording      |
| HTL, AUL / AUL                       | D7H                     | Hot Line/Automatic Line           |
| LNR                                  | D9H                     | International Last Number Re-dial |
| INDC                                 | DDH                     | International No Double Connect   |
| NDC                                  | DDH                     | No Double Connect                 |
| WML                                  | E4H                     | Warm Line                         |
| LOR                                  | F0H                     | Line Overflow to Route            |
| LDA                                  | 1AH                     | Long Distance Alert               |
| LROA                                 | F2H                     | Line Reversal on Answer           |
| LRS                                  | F4H                     | Line Reversal on Seizure          |
| CLF                                  | FCH                     | Malicious Call Trace              |
| MCT2                                 | FDH                     | Malicious Call Trace 2            |
| MWT                                  | D0H                     | Message Waiting (Voice Mail)      |
| OFR                                  | C1H                     | Overflow Hardware Register        |
| OFS                                  | C2H                     | Overflow Software Register        |
| ONI                                  | C3H                     | Operator Number Identification    |
| PILOT                                | C4H                     | Pilot of a Hunt Group             |
| PLP                                  | C5H                     | Plug Up                           |
| PMC                                  | C6H                     | Printed Meter Check               |
| PR1                                  | C7H                     | Priority 1 Subscriber             |
| PR2                                  | C8H                     | Priority 2 Subscriber             |
| RCVD                                 | CAH                     | Type of Terminating Billing       |
| RESL                                 | 36H                     | Restricted Line                   |
| REV                                  | 27H                     | Reverse Charging                  |
| SCR                                  | CBH                     | Selective Call Recording          |
| SMDR                                 | 37H                     |                                   |
| SPM                                  | CCH                     | Subscriber Premise Meter          |

**Subscriber Services Codes**

| <b>Feature Name<br/>DMS / LONIIS</b> | <b>Service<br/>Code</b> | <b>Description</b>        |
|--------------------------------------|-------------------------|---------------------------|
| SUS                                  | CDH                     | Suspended Service         |
| SUPPRESS/CLIR                        | 12H                     | Suppress                  |
| TFO                                  | CEH                     | Terminating Fault Option  |
| UCD                                  | 39H                     | Uniform Call Distribution |
| VM                                   | D0H                     | Voice Mail                |
| IWUC                                 | D4H                     | Wake-Up Call              |

**Negative confirmation of command reception codes**

The following table describes the expanded error codes for “confirmation of command reception” messages. For a detailed explanation of what causes each code to be sent, please refer to the relevant command in section “CP to SOSM Command Processing” on page 1305.

**Command reception result codes**

| <b>Code name</b>                   | <b>Value</b> |
|------------------------------------|--------------|
| command accepted                   | 00H          |
| incorrect preamble                 | 01H          |
| incorrect sosm number              | 02H          |
| invalid message code               | 03H          |
| message too long                   | 04H          |
| incorrect message length           | 05H          |
| unsupported command                | 06H          |
| invalid type and sign              | 07H          |
| invalid MCL group number           | 08H          |
| invalid MCL group type             | 09H          |
| invalid MCL number                 | 0AH          |
| invalid object type                | 0BH          |
| invalid sign of telephone number   | 0CH          |
| incorrect sign of telephone number | 0DH          |

**Command reception result codes**

| <b>Code name</b>               | <b>Value</b> |
|--------------------------------|--------------|
| invalid category of monitoring | 0FH          |
| invalid priority code          | 10H          |
| invalid digit                  | 11H          |
| invalid number of digits       | 12H          |
| number of digits mismatch      | 13H          |
| invalid MCL B for group        | 14H          |
| invalid password character     | 15H          |
| unsupported parameter          | 16H          |
| invalid group for category     | 17H          |
| password mismatch              | 18H          |
| command out of sequence        | 19H          |
| invalid_conditional_number     | 1AH          |
| dump restore in progress       | 1BH          |
| command rejected               | FFH          |

**Negative confirmation of command execution**

The following table describes the expanded error codes for “confirmation of command execution” messages. For a detailed explanation of what causes each code to be sent, please refer to the relevant command in section “CP to SOSM Command Processing” on page 1305.

**Command execution result codes**

| <b>Code name</b>                       | <b>Value</b> |
|----------------------------------------|--------------|
| command executed                       | 00H          |
| duplicate MCL group                    | 40H          |
| MCL in use                             | 41H          |
| duplicate conditional number of object | 42H          |
| invalid parameter                      | 43H          |
| non-unique object                      | 44H          |
| object not found                       | 45H          |

**Command execution result codes**

| <b>Code name</b>                 | <b>Value</b> |
|----------------------------------|--------------|
| invalid call number              | 46H          |
| invalid object number            | 47H          |
| invalid object type              | 48H          |
| invalid MCL group                | 49H          |
| invalid MCL number               | 4AH          |
| MCL information not found        | 4BH          |
| command out of sequence          | 4CH          |
| invalid number of digits         | 4DH          |
| call already monitored           | 4EH          |
| max num of objects exceeded      | 4FH          |
| missing PCM-30 group data        | 50H          |
| duplicate MCL number             | 51H          |
| wrong MCL type for group         | 52H          |
| sosm missing trkmem datafill     | 53H          |
| object type mismatch             | 54H          |
| digits mismatch                  | 55H          |
| sign of dn mismatch              | 56H          |
| no services found                | 57H          |
| invalid dn for exchange          | 58H          |
| command not allowed during dump  | 59H          |
| unsupported agent type           | 5AH          |
| invalid MCL B for group          | 5BH          |
| priority code mismatch           | 5CH          |
| type and sign mismatch           | 5DH          |
| unsupported parameter            | 5EH          |
| invalid sign of telephone number | 5FH          |
| no data exists in database       | 60H          |
| invalid MCL group type           | 61H          |

**Command execution result codes**

| <b>Code name</b>            | <b>Value</b> |
|-----------------------------|--------------|
| max num MCL exceeded        | 62H          |
| object transfer in progress | 63H          |
| mcl transfer in progress    | 64H          |
| invalid digit failure       | 65H          |
| technical_problem           | 66H          |
| sosm command failed         | FFH          |

**Expanded codes for MCL connection problem reporting**

The following table describes the expanded error codes for “mcl unconnection code” in call related messages.

**MCL unconnection result codes**

| <b>Code name</b>                | <b>Value</b> |
|---------------------------------|--------------|
| Normal connection               | 0H           |
| no free mcl                     | 01H          |
| mcl not idle (not ready)        | 1CH          |
| mcl releasing failed            | 1DH          |
| missing PCM-30 group data       | 1EH          |
| no free conf. circuit           | 1FH          |
| conf. circuit connection failed | 20H          |
| sosm hardware out of service    | 22H          |
| invalid agent for connection    | 23H          |
| Other failure (unknown)         | FEH          |
| for statistical monitoring      | FFH          |

## Applicable customer facing sections

### Fault Management

Logs \_\_\_\_\_

Alarms \_\_\_\_\_

### Configuration

Data Schema \_\_\_\_\_X\_\_\_\_\_

User Interface \_\_\_\_\_X\_\_\_\_\_

Element Management \_\_\_\_\_

Security \_\_\_\_\_

Service Order \_\_\_\_\_

Office Parameters \_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_

## References

[1] NTP 297-8991-500, Maintenance and Operations Manual.

[2] NTP 297-1001-592, DMS-100 Family Peripheral Modules Maintenance Guide.

[3] A00001919 - CEPT SERVICES PASSWORD ENHANCEMENT

[4] A59019083 - CEPT Call Diversion and CEPT Do Not Disturb

## Glossary

| Term | Description                            |
|------|----------------------------------------|
| SOSM | System of Operative-Searching Measures |
| DMS  | Digital Multiplexing System            |
| MMP  | Multi Market Product                   |
| CP   | Control Point                          |
| CFB  | Call Forward Busy                      |
| CFD  | Call forward Do Not Answer             |
| CFU  | Call Forward Unconditional             |

| Term | Description                         |
|------|-------------------------------------|
| ICWT | International Call Waiting          |
| I3WC | International Three Way Calling     |
| I6WC | International Six Way Calling       |
| NBD  | Network Broadcast Delivery          |
| MPC  | Multi Protocol Controller           |
| AMA  | Automatic Message Accounting        |
| PCM  | Pulse Code Modulation               |
| MCL  | Monitoring Connecting Line          |
| MTM  | Maintenance Trunk Module            |
| PDTC | Peripheral Digital Trunk Controller |
| LCC  | Line Class Code                     |
| ONP  | One Night Process                   |
| DTC  | Data Transmission Channel           |

## APPENDIX for A00002173

### Tests for checking commands and messages transmitted via channel 1 between SOSM and CP

| No | Commands to be checked  | No of tests | No of command sent from CP | Answer messages of exchange SOSM     |
|----|-------------------------|-------------|----------------------------|--------------------------------------|
| 1  |                         | 1.1         | Exchange start, SW restart | No2                                  |
| 2  | No1<br>SOSM start       | 2.1         | No3 (before SOSM start)    | No7-NOK                              |
|    |                         | 2.2         | No1 with wrong password    | No7-NOK, No6                         |
|    |                         | 2.3         | No1 with right password    | No7-OK, No8-OK                       |
|    |                         | 2.4         | No1 (repeatedly)           | No7-OK, No8-NOK or<br><b>No7-NOK</b> |
| 3  | No3<br>Password setting | 3.1         | No3 with wrong password    | No7-NOK, No6                         |
|    |                         | 3.2         | No3 with wrong SOSM No     | No7-NOK                              |
|    |                         | 3.3         | No3 with right password    | No7-OK, No8-OK                       |
|    |                         | 3.4         | No4 with factory password  | NO7-NOK, No6                         |



**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>     | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                                                                           | <b>Answer messages of exchange SOSM</b> |
|-----------|-----------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 4         | No4<br>Assignment of MCL to group | 4.1                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLA=NoMCLB                                                                                                        | No7-OK, No8-OK                          |
|           |                                   | 4.2                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLB=FF                                                                                                            | No7-OK, No8-OK                          |
|           |                                   | 4.3                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLA in unadjacent time interval. That is if in test 4.2, MCLA=3 then in test 4.3, MCLA $\neq$ 4                   | No7-OK, No8-OK                          |
|           |                                   | 4.4                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLA $\neq$ NoMCLB                                                                                                 | No7-OK, No8-NOK<br>or <b>No7-NOK</b>    |
|           |                                   | 4.5                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLA is distributed. That is it has been already assigned to the group.                                            | No7-OK, No8-NOK                         |
|           |                                   | 4.6                | No4, Nogr=1, gr.type-01H (combined)<br>NoMCLA from inexisting PCM primary group.                                                                            | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
|           |                                   | 4.7                | No4, Nogr=2, gr.type-11H (separate)<br>NoMCLA $\neq$ NoMCLB (in adjacent time interval. That is if for example MCLA is 5 then MCLB is 6)                    | No7-OK, No8-OK                          |
|           |                                   | 4.8                | No4, Nogr=2, gr.type-11H (separate)<br>NoMCLA $\neq$ NoMCLB (in unadjacent time interval. That is if for example MCLA is 5 then MCLB is value other than 6) | No7-OK, No8-OK                          |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>         | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                                    | <b>Answer messages of exchange SOSM</b> |
|-----------|---------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|           |                                       | 4.9                | No4, Nogr=2, gr.type-11H (separate)<br>oMCLA $\neq$ NoMCL<br>(different PCM primary groups)                          | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
|           |                                       | 4.10               | No11, all parameters=FF                                                                                              | No7-OK, No4, No8-OK                     |
|           |                                       | 4.11               | No4, Nogr=1, gr.type-11H (separate)<br>NoMCLA, NoMCLB                                                                | No7-OK, No8-NOK                         |
|           |                                       | 4.12               | No4, Nogr=2, gr.type-01H (combined)<br>NoMCLA =NoMCLB                                                                | No7-OK, No8-NOK                         |
|           |                                       | 4.13               | No4, Nogr=2, gr.type-11H (separate)<br>NoMCLA is distributed. (That is it has been<br>already assigned to the group) | No7-OK, No8-NOK                         |
|           |                                       | 4.14               | No4, Nogr=2, gr.type-11H (separate)<br>NoMCLB is distributed. (That is it has been<br>already assigned to the group) | No7-OK, No8-NOK                         |
|           |                                       | 4.15               | No4, Nogr=2, gr.type-11H (separate)<br>NoMCLA=NoMCLB                                                                 | No7-OK, No8-NOK or<br><b>No7-NOK</b>    |
|           |                                       | 4.16               | No4, Nogr=254(inexisting), gr.type- 01H<br>(combined) NoMCLA=NoMCLB                                                  | No7-OK, No8-NOK<br>or <b>No7-NOK</b>    |
|           |                                       | 4.17               | No4, Nogr=3, gr.type-inexisting<br>NoMCLA=NoMCLB                                                                     | No7-OK, No8-NOK<br>or <b>No7-NOK</b>    |
|           |                                       | 4.18               | No4, Nogr=3, gr.type-01 NoMCLA - inexisting                                                                          | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
| 5         | No9<br>Exclusion of MCL<br>from group | 5.1                | No9, Nogr=1, NoMCLA=NoMCLB                                                                                           | No7-OK, No8-OK                          |
|           |                                       | 5.2                | No9, Nogr=1, NoMCLB=FF                                                                                               | No7-OK, No8-OK                          |
|           |                                       | 5.3                | No9, Nogr=2, NoMCLA, NoMCLB                                                                                          | No7-OK, No8-OK                          |
|           |                                       | 5.4                | No11, all parameters=FFH                                                                                             | No7-OK, No4, No8-OK                     |
|           |                                       | 5.5                | No9, Nogr=1, oMCLA $\neq$ NoMCL and<br>NoMCLB $\neq$ FFH                                                             | No7-OK, No8-NOK<br>or <b>No7-NOK</b>    |
|           |                                       | 5.6                | No9, Nogr=1, NoMCLA not defined in TR for<br>links                                                                   | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
|           |                                       | 5.7                | No9, Nogr=1, NoMCLA is not assigned to a<br>group                                                                    | No7-OK, No8-NOK                         |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b> | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                                                                                                                              | <b>Answer messages of exchange SOSM</b>                                                                                                 |
|-----------|-------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|           |                               | 5.8                | No9, Nogr=1, NoMCLA is from another group.                                                                                                                                                                     | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.9                | No9, Nogr=1, MCLA is engaged with conversation                                                                                                                                                                 | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.10               | No9, Nogr=2, NoMCLA=NoMCLB                                                                                                                                                                                     | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.11               | No9, Nogr=2 NoMCLA not defined in TR for links.                                                                                                                                                                | <b>No7-OK, No8-NOK</b><br>or No7-NOK                                                                                                    |
|           |                               | 5.12               | No9, Nogr=2, NoMCLB not defined in TR for links.                                                                                                                                                               | <b>No7-OK, No8-NOK</b><br>or No7-NOK                                                                                                    |
|           |                               | 5.13               | No9, Nogr=2, NoMCLA is not assigned to a group                                                                                                                                                                 | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.14               | No9, Nogr=2, NoMCLB is not assigned to a group.                                                                                                                                                                | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.15               | No9, Nogr=2, MCLA and MCLB are engaged with conversation                                                                                                                                                       | No7-OK, No8-NOK                                                                                                                         |
|           |                               | 5.16               | No9, Nogr is not defined, MCLA and MCLB are really distributed. (It means that MCLA and MCLB are assigned to a certain group in practice, but in this test case, number of a non-existent group is indicated.) | <b>No7-OK, No8-NOK</b><br>or No7-NOK                                                                                                    |
|           |                               | 5.17               | No4, Nogr=3, gr.type=01 NoMCLA=5 from primary group 0,<br><br>No4, Nogr=3, gr.type=01 NoMCLA=5 from primary group 1<br><br>No9, Nogr=3, NoMCLA=5 from primary group 1,<br><br>No11, all parameters=FFH         | No7-OK, No8-OK<br><br>No7-OK, No8-OK<br>No7-OK, No8-OK<br><br>No7-OK, No4, No8-OK<br>observation of<br>MCLA=5 in the primary<br>group 0 |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>             | <b>No of tests</b> | <b>No of command sent from CP</b>                   | <b>Answer messages of exchange SOSM</b> |
|-----------|-------------------------------------------|--------------------|-----------------------------------------------------|-----------------------------------------|
| 6         | No5<br>Taking a subject under observation | 6.1                | No5, subject type-01H                               | No7-OK, No8-OK                          |
|           |                                           | 6.2                | No5, subject type-02H                               | No7-OK, No8-OK                          |
|           |                                           | 6.3                | No5, subject type-12H,<br>FH in the end of phone No | No7-OK, No8-OK                          |
|           |                                           | 6.4                | No5, subject type-03H<br>(not for toll exchange)    | No7-OK, No8-NOK                         |
|           |                                           | 6.5                | No5, subject type-03H<br>(for toll exchange)        | No7-OK, No8-OK                          |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b> | <b>No of tests</b> | <b>No of command sent from CP</b>                                                       | <b>Answer messages of exchange SOSM</b>                                                                 |
|-----------|-------------------------------|--------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|           |                               | 6.6                | No5, conditional No is busy, subject type-01H                                           | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.7                | No5, conditional No is busy, subject type-02H                                           | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.8                | No5, phone No is already under observation                                              | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.9                | No5, phone No (complete) is already under observation in the list for incomplete number | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.10               | No5, phone No (incomplete) is already under observation in the list for complete number | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.11               | No5, phone No and incoming group conditional number are set.                            | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.12               | No5, Nogr. does not comply with observation category.                                   | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.13               | No5, inexisting Nogr. (inexisting MCL group)                                            | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.14               | No5, amount of digits in phone No does not comply with the mentioned in byte 5          | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.15               | No5, subject type does not comply with phone No.                                        | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.16               | No5, number attribute does not comply with phone No.                                    | No7-OK, No8-NOK                                                                                         |
|           |                               | 6.17               | No5, subject type not defined TR for links.                                             | No7-OK, No8-NOK or <b>No7-NOK</b>                                                                       |
|           |                               | 6.18               | No5, phone No attribute not defined in TR for links.                                    | No7-OK, No8-NOK or <b>No7-NOK</b>                                                                       |
|           |                               | 6.19               | No5, observation category not defined in TR for links                                   | No7-OK, No8-NOK or <b>No7-NOK</b>                                                                       |
|           |                               | 6.20               | No5, group No not defined in TR for links                                               | No7-OK, No8-NOK or <b>No7-NOK</b>                                                                       |
|           |                               | 6.21               | No5, priority mark not defined in TR for links                                          | No7-OK, No8-NOK or <b>No7-NOK</b>                                                                       |
|           |                               | 6.22               | No5, during conversation of subscriber with statistical observation category            | No7-OK, No8-OK observation since the next call (That is monitoring will begin with the first next call) |
|           |                               | 6.23               | No5, during conversation of subscriber with full observation category                   | No7-OK, No8-OK observation since the next call (That is monitoring will begin with the first next call) |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>      | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                                                          | <b>Answer messages of exchange SOSM</b>                                           |
|-----------|------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 7         | No6<br>Cancellation of observation | 7.1                | No6, subject type-01H                                                                                                                      | No7-OK, No8-OK                                                                    |
|           |                                    | 7.2                | No6, subject type-02H                                                                                                                      | No7-OK, No8-OK                                                                    |
|           |                                    | 7.3                | No6, subject type-12H                                                                                                                      | No7-OK, No8-OK                                                                    |
|           |                                    | 7.4                | No6, subject type-03H<br>(for toll exchange)                                                                                               | No7-OK, No8-OK                                                                    |
|           |                                    | 7.5                | No6 during conversation of subject who is under statistical observation                                                                    | No7-OK, No8-OK                                                                    |
|           |                                    | 7.6                | No6 during conversation of subject who is under full observation                                                                           | No7-OK, No8-OK<br>No2.2 (Channel 2)                                               |
|           |                                    | 7.7                | No6, condition No and phone No not inserted into SOSM data base (That is we have correct conditional No and a non-existing phone No)       | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.8                | No6, phone No and conditional number not inserted into SOSM data base (That is we have correct phone No and a non-existing conditional No) | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.9                | No6, conditional No of CL (incoming) group not inserted into SOSM data base                                                                | No7-OK, No8-NOK<br><br>(for toll only, local exchanges will always receive FFFFH) |
|           |                                    | 7.10               | No6, phone No does not comply with conditional No (both parameters are inserted into data base)                                            | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.11               | No6, subject type not defined in TR for links.                                                                                             | No7-OK, No8-NOK<br>or <b>No7-NOK</b>                                              |
|           |                                    | 7.12               | No6, number attribute does not comply with phone No                                                                                        | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.13               | No6, subject type does not comply with phone No                                                                                            | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.14               | No6, amount of digits in phone does not comply with the mentioned in byte 5                                                                | No7-OK, No8-NOK                                                                   |
|           |                                    | 7.15               | No6, phone No and No of CL group are set                                                                                                   | No7-OK, No8-NOK<br>or <b>No7-NOK</b>                                              |
|           |                                    | 7.16               | No6, cancellation of observation from network subscriber by full number (taking under observation was provided by not full number)         | No7-OK, No8-NOK                                                                   |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| No | Commands to be checked           | No of tests | No of command sent from CP                                                                                                                                                                                                                                                                                                                              | Answer messages of exchange SOSM                                                   |
|----|----------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|    |                                  | 7.17        | No6, cancellation of observation from network subscriber by not full number (taking under observation was provided by full number)                                                                                                                                                                                                                      | No7-OK, No8-NOK                                                                    |
| 8  | No7<br>Connection to speech path | 8.1         | No7 during conversation of subject with observation category - statistical, Nogr.=1 (combined observation)                                                                                                                                                                                                                                              | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |
|    |                                  | 8.2         | No7 during conversation of subject with observation category - statistical, Nogr.=2 (separate observation)                                                                                                                                                                                                                                              | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |
|    |                                  | 8.3         | during conversation of subject with observation category - full the MCL was not separated due to absence of free ones; No7 after MCL release.                                                                                                                                                                                                           | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |
|    |                                  | 8.4         | during conversation of subject with observation category - full the MCL was not separated due to absence of free ones;<br>No7 when MCL are seized. <i>(That is Command 7 is executed while all MCLs are busy, and due to the higher priority of Command No7, MCLs used by another conversation are released and assigned to the corresponding call)</i> | No7-OK, No8-OK<br>No2.1 (channel 2)<br>No2.2(channel 2)<br>MCL release by priority |
|    |                                  | 8.5         | No7 during conversation of subject with observation category - statistical, inexistent Nogr.                                                                                                                                                                                                                                                            | No7-OK, No8-NOK                                                                    |
|    |                                  | 8.6         | No7 during conversation of subject with observation category - full combined, Nogr.=1 (after command No8)                                                                                                                                                                                                                                               | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |
|    |                                  | 8.7         | No7 during conversation of subject with observation category - full combined, Nogr.=2 (after command No8)                                                                                                                                                                                                                                               | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |
|    |                                  | 8.8         | No7 during conversation of subject with observation category - full combined and inexistent Nogr. Not coinciding with the mentioned in command No5 (after command No8)                                                                                                                                                                                  | No7-OK, No8-OK<br>No2.1 (channel 2)                                                |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| No | Commands to be checked    | No of tests | No of command sent from CP                                                                                                                   | Answer messages of exchange SOSM    |
|----|---------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|    |                           | 8.9         | No7 during conversation of subject with observation category - full separate, Nogr.=1 (after command No8)                                    | No7-OK, No8-OK<br>No2.1 (channel 2) |
|    |                           | 8.10        | No7 during conversation of subject with observation category - full separate, Nogr.=2 (after command No8)                                    | No7-OK, No8-OK<br>No2.1 (channel 2) |
|    |                           | 8.11        | No7 during conversation of subject with observation category - full separate, inexistent Nogr (after command No8)                            | No7-OK, No8-OK<br>No2.1 (channel 2) |
|    |                           | 8.12        | No7 during conversation of subject with observation category - full (combined or separate) with separate MCL ( <i>already assigned MCL</i> ) | No7-OK, No8-NOK                     |
|    |                           | 8.13        | No7 during conversation of subject with observation category - statistical subject type 03H, Nogr.=1 (combined observation)                  | No7-OK, No8-OK<br>No2.1 (channel 2) |
|    |                           | 8.14        | No7 during conversation of subject with observation category - statistical subject type 03H, Nogr.=2 (separate observation)                  | No7-OK, No8-OK<br>No2.1 (channel 2) |
| 9  | No8 Release of monitoring | 9.1         | No8 according to call identifier during conversation of subject with observation category - statistical, (after command No7)                 | No7-OK, No8-OK<br>No2.2 (channel 2) |
|    |                           | 9.2         | No8 according to No MCL during conversation of subject with observation category - statistical, (after command No7)                          | No7-OK, No8-OK<br>No2.2 (channel 2) |
|    |                           | 9.3         | No8 according to inexistent NoMCL during conversation of subject with observation category - statistical, (after command No7)                | No7-OK, No8-NOK                     |
|    |                           | 9.4         | No8 according to call identifier during conversation of subject with observation category - statistical                                      | No7-OK, No8-NOK                     |
|    |                           | 9.5         | No8 according to call identifier during conversation of subject with observation category - full combined                                    | No7-OK, No8-OK<br>No2.2 (channel 2) |
|    |                           | 9.6         | No8 according to No MCL during conversation of subject with observation category - full combined                                             | No7-OK, No8-OK<br>No2.2 (channel 2) |



**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b> | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                                                            | <b>Answer messages of exchange SOSM</b>                                             |
|-----------|-------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|           |                               | 9.7                | No8 according to call identifier during conversation of subject with observation category - full combined and not assigned No MCL.           | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |
|           |                               | 9.8                | No8 according to not assigned No MCL during conversation of subject with observation category - full combined                                | No7-OK, No8-NOK                                                                     |
|           |                               | 9.9                | No8 when MCL is not separated during conversation of subject (due to seizure) with observation category - full combined.                     | No7-OK, No8-NOK                                                                     |
|           |                               | 9.10               | No8 according to call identifier during conversation of subject with observation category - full separate                                    | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |
|           |                               | 9.11               | No8 according to NoMCLA and NoMCLB during conversation of subject with observation category - full separate                                  | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |
|           |                               | 9.12               | No8 according to call identifier during conversation of subject with observation category - full separate and not assigned NoMCLA and NoMCLB | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |
|           |                               | 9.13               | No8 according to NoMCLA and NoMCLB set wrong during conversation of subject with observation category - full separate.                       | No7-OK, No8-NOK                                                                     |
|           |                               | 9.14               | A and B - subscribers are subjects with observation category - full combined. No8 according to one out of two separate MCL                   | No7-OK, No8-OK<br>No2.2 (channel 2)<br>observation of conversation via another MCL. |
|           |                               | 9.15               | No8 according to call identifier during conversation of subject with observation category -full combined. Subject type 03H.                  | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |
|           |                               | 9.16               | No8 according to NoMCL during conversation of subject with observation category -statistical; subject type 03H (after command No7)           | No7-OK, No8-OK<br>No2.2 (channel 2)                                                 |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>                                          | <b>No of tests</b> | <b>No of command sent from CP</b>                                                | <b>Answer messages of exchange SOSM</b> |
|-----------|------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------|-----------------------------------------|
| 10        | No10<br>Request for transmission of data about subject to be observed. | 10.1               | No10 with all parameters besides No of CL group                                  | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.2               | No10 according to No of CL group (for ATS)                                       | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.3               | No10 according to conditional No                                                 | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.4               | No10 according to object type                                                    | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.5               | No10 according to attribute, digits amount and phone No                          | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.6               | No10, all parameters=FFH                                                         | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.7               | No10, conditional No does not comply with phone No                               | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.8               | No10, conditional No, unreal phone No                                            | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.9               | No10, phone No and unreal conditional No                                         | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.10              | No10, subject type not defined in TR for links                                   | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.11              | No10, phone No attribute not defined in TR for links                             | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.12              | No10, number attribute does not comply with phone No                             | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.13              | No10, amount of digits in phone No does not comply with the mentioned in byte 5. | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.14              | No10, phone No and No of CL group are set                                        | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.15              | No10, phone No is not a subject to be observed                                   | No7-OK, No3, No8-NOK                    |
|           |                                                                        | 10.16              | No10 with all FF parameters, there is no subscriber under observation            | No7-OK, No3, No8-OK                     |
|           |                                                                        | 10.17              | No10 with all set parameters, there is no subscriber under observation           | No7-OK, No3, No8-NOK                    |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>                                                           | <b>No of tests</b> | <b>No of command sent from CP</b>                                                   | <b>Answer messages of exchange SOSM</b> |
|-----------|-----------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|-----------------------------------------|
| 11        | No11<br>Request for transmission of information about compliance between MCL and groups | 11.1               | No11, all parameters=FFH                                                            | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.2               | No11 according to Nogr.                                                             | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.3               | No11 according to type of MCL group                                                 | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.4               | No11 according to NoMCLA for gr.type-01H (combined)                                 | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.5               | No11 according to NoMCLA for gr.type-11H (separate)                                 | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.6               | No11 according to NoMCLB for gr.type-11H (separate)                                 | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.7               | No11, Nogr.=1, gr.type-01H(combined)<br>MCLA is engaged with conversation           | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.8               | No11, Nogr.=2, gr.type-11H(separate)<br>MCLA and MCLB are engaged with conversation | No7-OK, No4, No8-OK                     |
|           |                                                                                         | 11.9               | No11, Nogr.=1, gr.type-11H(separate)                                                | No7-OK, No8-NOK                         |
|           |                                                                                         | 11.10              | No11, Nogr.=2, gr.type-01H(combined)                                                | No7-OK, No8-NOK                         |
|           |                                                                                         | 11.11              | No11, Nogr.=1, gr.type-01H(combined)<br>oMCLA ≠ NoMCL                               | No7-OK, No8-NOK                         |
|           |                                                                                         | 11.12              | No11, Nogr.=1, gr.type-01H(combined)<br>NoMCLA not assigned                         | No7-OK, No8-NOK                         |
|           |                                                                                         | 11.13              | No11, Nogr.=1, gr.type-01H(combined)<br>NoMCLA is from another group                | No7-OK, No8-NOK                         |
|           |                                                                                         | 11.14              | No11, Nogr.=2, gr.type-11H(separate)<br>NoMCLA=NoMCLB                               | No7-OK, No8-NOK                         |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b> | <b>No of tests</b> | <b>No of command sent from CP</b>                                                                            | <b>Answer messages of exchange SOSM</b> |
|-----------|-------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|           |                               | 11.15              | No11, Nogr.=2, gr.type-11H(separate)<br>NoMCLA not assigned                                                  | No7-OK, No8-NOK                         |
|           |                               | 11.16              | No11, Nogr.=2, gr.type-11H(separate)<br>NoMCLB not assigned                                                  | No7-OK, No8-NOK                         |
|           |                               | 11.9 - 11.16       | For these tests, the answer of EATS SOSM is admissible according to the first real parameters in the command | No7-OK, No8-NOK                         |
|           |                               | 11.17              | No11, Nogr. not defined in TR for links                                                                      | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
|           |                               | 11.18              | No11, type of MCL group not defined in TR for links                                                          | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |
|           |                               | 11.19              | No11, NoMCL for a given capacity of EATS not defined in TR for links                                         | <b>No7-OK, No8-NOK</b><br>or No7-NOK    |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>                                   | <b>No of tests</b> | <b>No of command sent from CP</b>                                               | <b>Answer messages of exchange SOSM</b>                                          |
|-----------|-----------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| 12        | No15<br>Change of observation subject parameters                | 12.1               | No15, change of observation category                                            | No7-OK, No8-OK                                                                   |
|           |                                                                 | 12.2               | No10 according to conditional No                                                | No7-OK, No3, No8-OK                                                              |
|           |                                                                 | 12.3               | No15, change of No MCL gr.                                                      | No7-OK, No8-OK                                                                   |
|           |                                                                 | 12.4               | No10 according to conditional No                                                | No7-OK, No3, No8-OK                                                              |
|           |                                                                 | 12.5               | No15, change of priority mark                                                   | No7-OK, No8-OK                                                                   |
|           |                                                                 | 12.6               | No10 according to conditional No                                                | No7-OK, No3, No8-OK                                                              |
|           |                                                                 | 12.7               | No15, inexisting conditional No                                                 | No7-OK, No8-NOK                                                                  |
|           |                                                                 | 12.8               | No15, Nogr.does not comply with observation category                            | No7-OK, No8-NOK                                                                  |
|           |                                                                 | 12.9               | No15, observation category not defined in TR for links                          | No7-OK, No8-NOK or No7-NOK                                                       |
|           |                                                                 | 12.10              | No15, not distributed Nogr (That is non-existing number of group).              | No7-OK, No8-NOK                                                                  |
|           |                                                                 | 12.11              | No15, of priority mark not defined in TR for links                              | No7-OK, No8-NOK or No7-NOK                                                       |
|           |                                                                 | 12.12              | No10 according to conditional No                                                | No7-OK, No3, No8-OK                                                              |
|           |                                                                 | 12.13              | No15, change of observation category during conversation                        | No7-OK, No8-OK<br>observation of changed parameters since the next conversation. |
|           |                                                                 | 12.14              | No15, change of NoMCL gr. during conversation                                   | No7-OK, No8-OK<br>observation of changed parameters since the next conversation. |
|           |                                                                 | 12.15              | No15, change of priority mark during conversation                               | No7-OK, No8-OK<br>observation of changed parameters since the next conversation. |
| 13        | No12<br>Request for transmission of supplementary services list | 13.1               | No12                                                                            | No7-OK, No5, No8-OK                                                              |
|           |                                                                 | 13.2               | No12, phone No is not a subject to be observed                                  | No7-OK, No5, No8-OK                                                              |
|           |                                                                 | 13.3               | No12, phone No of another exchange                                              | No7-OK, No8-NOK                                                                  |
|           |                                                                 | 13.4               | No12, amount of digits in phone No does not comply with the mentioned in byte 2 | No7-OK, No8-NOK                                                                  |
|           |                                                                 | 13.5               | No12 with attribute of phone No different from 01H                              | No7-OK, No8-NOK or No7-NOK                                                       |

**Tests for checking commands and messages transmitted via channel 1 between SOSM and CP**

| <b>No</b> | <b>Commands to be checked</b>                                    | <b>No of tests</b> | <b>No of command sent from CP</b>                    | <b>Answer messages of exchange SOSM</b>         |
|-----------|------------------------------------------------------------------|--------------------|------------------------------------------------------|-------------------------------------------------|
| 14        | No13<br>Interruption of output of messages about tables contents | 14.1               | No10, all parameters=FFH                             | No7-OK, No3                                     |
|           |                                                                  | 14.2               | No13                                                 | No7-OK, No8-NOK, No8-NOK(c.No10)                |
|           |                                                                  | 14.3               | No11, all parameters=FFH                             | No7-OK, No4                                     |
|           |                                                                  | 14.4               | No13                                                 | No7-OK, No8-NOK, No8-NOK(c.No11)                |
|           |                                                                  | 14.5               | No10, all parameters=FFH                             | No7-OK, No3                                     |
|           |                                                                  | 14.6               | No9, Nogr.=1, gr.type-01H(combined)<br>NoMCLA=NoMCLB | No7-NOK<br>No8-OK(c.No10)                       |
| 15        | No14<br>Testing of data transfer channels                        | 15.1               | No14 over one of channels 1                          | No9 over channels 1,<br>No2.3 over channels 2   |
|           |                                                                  | 15.2               | No14 over one of channels 1 with wrong SOSM No       | No answer                                       |
|           |                                                                  | 15.3               | No10, all parameters=FFH                             | No7-OK, No3                                     |
|           |                                                                  | 15.4               | No14 over one of channels 1                          | No3, No9, No3,<br>No2.3, No3,<br>No8-OK(c.No10) |
| 16        | No17<br>SW release request                                       | 16.1               | No17                                                 | No7-OK, No11, No8-OK                            |
| 17        | No2<br>SOSM stop                                                 | 17.1               | No2 with wrong SOSM No                               | No7-NOK                                         |
|           |                                                                  | 17.2               | No2 with wrong password                              | No7-NOK, No6                                    |
|           |                                                                  | 17.3               | No2 with right password                              | No7-OK, No8-OK                                  |
|           |                                                                  | 17.4               | No2 repeatedly with initial password                 | No7-NOK                                         |
|           |                                                                  | 17.5               | No1 with initial password                            | No7-OK, No8-OK                                  |
|           |                                                                  | 17.6               | No10, all parameters=FFH                             | No7-OK, No3-NOK<br>No8-NOK (No8-OK)             |

***Configuration for A00002173*****Hardware and Software Requirements**

Software requirements in order to work with this activity are as follows:

- SOC SOSM0001 must be activated.

- Tables MPCLINK, TRKGRP, SOSMMPC, SOSMTRK and SOSMPARM must have been datafilled before receiving START SOSM command from CP.

Hardware Requirements are as follows:

- SOSM system uses conference ports from a common pool in the DMS MMP. If all ports are used by SOSM, normal 3-way or 6-way calls will be denied. Similarly, if all ports are used by 3-way or 6-way calls, SOSM monitored calls will be unable to obtain an MCL connection.
- For X25 Messaging Interface, MPC cards must have been installed in DMS office (IOC (NT1x89) or IOM).
- Maximum 224 SPC trunks are needed for transmission of call content.

### **Initial Configuration**

- Turn on SOC SOSM0001.
- Install MPC cards to the DMS MMP office.
- Datafill SPC trunks and SPC lines.
- If X25 messages will be sent over trunk, make the hardware connection of MPC links to the SPC trunks over modems and datafill the table SPCCON based on hardware connection that is used for SOSM.
- Datafill table SOSMMPC.
- Datafill table SOSMTRK appropriately.
- Modify parameters in SOSMPARM table if required.

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

None

### **Upgrade Impact**

#### **Dump and Restore**

When a software upgrade is taking place via a One Night Process (ONP), all static SOSM data (data in tables SOSMTRK, SOSMMPC, MPCLINK, MPC, SOSMPARM and TRKGRP) is transferred to the new software load automatically. Dynamic tables are not transferred. After SWACT, appropriate message is sent to CP and SOSM is stopped.

#### **Element Management Upgrade**

NA.

## Data schema (DS) (CM, MIBS, RDB)

### New tables Schema

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| SOSMMPC        | NEW                      | NEW                               |
| SOSMTRK        | NEW                      | NEW                               |
| SOSMPARM       | NEW                      | NEW                               |

### Table Schema information

#### Name: SOSMMPC

System of Operative Searching Measures (SOSM) MPC table

#### Functional description

This table provides the mechanism to allocate MPC cards for the DMS-Control Point X.25 Interface of SOSM feature. For each pair of channels, a tuple is added to this table.

#### Usage sequence and implications (CM Only)

Tables must be datafilled in the following sequence:

Table MPC

Table MPCLINK

Table SOSMMPC

#### Size

##### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                                     |
|------------------------|----------------|----------------|-----------------------------------------------------------------------------------------------------------|
| SOSMMPC                | 0              | 8              | This table is dynamically sized at tuple add time. Memory is automatically allocated for 8 SOSMMPC entry. |



## Fields

Table SOSMMPC field descriptions

| Field          | New or Changed | Subfield or refinement | Entry                              | Explanation and action                                                                                                                                                                |
|----------------|----------------|------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key (SOSMLINK) | New            | None                   | 0 to 7                             | The name of the key field is SOSMLINK. None default value.<br><br>This field is used to index the table by the SOSM X.25 application. Up to eight pairs of channels may be datafilled |
| DATACH1        | New            | None                   | MPCNO (0 to 255)<br>LNKNO (0 to 3) | None default value. Specifies the MPC card and Link number to be used for DMS to CP Data Channel 1 (CP Command Interface)                                                             |
| DATACH2        | New            | None                   | MPCNO (0 to 255)<br>LNKNO (0 to 3) | None default value. Specifies the MPC card and Link number to be used for DMS to CP Data Channel 2 (Call Information Channel)                                                         |

## Datafill example

The following example shows sample datafill for table SOSMMPC. Accessible only via SOSMCONF CI increment with a valid password

Table SOSMMPC example datafill

| RNBDLINK | CHNL1 | CHNL2 |
|----------|-------|-------|
| 0        | 3 2   | 3 3   |
| 1        | 4 2   | 4 3   |

SOSMMPC table entries can be edited only if the following criteria are met:

- SOSM0001 is ON,
- SOSMCONF CI increment is accessed with a valid password, and
- SOSM system is inactive (not activated by a CP command).

**Table release history update**

This table is added to the system by activity A00002173 in ISN07 context.

**Supplementary information**

NA.

**Translation verification other tools**

SOSMMPC does not use translation verification tools.

**Name: SOSMTRK**

System of Operative Searching Measures (SOSM) Trunk table

**Functional description**

This table is used by the SOSM system for mapping generic trunk groups into dedicated SOSM trunks. Each entry identifies a trunk group to be used for the PCM-30 group of MCLs.

**Usage sequence and implications (CM Only)**

Tables must be datafilled in the following sequence:

Table CLLI

Table TRKGRP

Table TRKSGRP

Table TRKMEM

Table SOSMTRK

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                                    |
|------------------------|----------------|----------------|----------------------------------------------------------------------------------------------------------|
| SOSMTRK                | 0              | 8              | Memory is statistically allocated for 8 SOSMMPC entry. This table consumes 16 bytes in protected memory. |

## Fields

Table SOSMTRK field descriptions

| Field        | New or Changed | Subfield or refinement | Entry                       | Explanation and action                                                                                                                                                  |
|--------------|----------------|------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key: SOSMGRP | New            | None                   | 0 to 7                      | This field identifies the PCM-30 group number.                                                                                                                          |
| CLLI         | New            | None                   | Common Language Name (CLLI) | This field identifies the trunk group to be used by SOSM. The CLLI entered here must correspond to a valid trunk datafilled in tables CLLI, TRKGRP, TRKSGRP and TRKMEM. |

## Datafill Example

The following example shows sample datafill for table SOSMTRK. SOSMTRK table is accessible only via SOSMCONF CI increment with a valid password.

Table SOSMTRK example datafill

| SOSMGRP | CLLI     |
|---------|----------|
| 0       | SOSMGRP0 |
| 1       | SOSMGRP1 |

SOSMTRK table entries can be edited only if the following criteria are met:

- SOSM0001 is ON,
- SOSMCONF CI increment is accessed with a valid password, and
- SOSM system is inactive (not activated by a CP command).

## Table release history update

This table is added to the system by activity A00002172 in ISN07 context.

## Supplementary information

NA.

## Translation verification other tools

The following example shows the output from FINDREF when it is used to verify SOSMTRK.

**Name: SOSMPARM**

System of Operative Searching Measures (SOSM) Parameters

**Functional description**

Table SOSMPARM is used by SOSM system for saving SOSM specific parameters.

**Usage sequence and implications (CM Only)**

SOSMPARM is not referenced by any other tables.

SOSMPARM does not use any other tables.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                  |
|------------------------|----------------|----------------|----------------------------------------------------------------------------------------|
| SOSMPARM               | 3              | 3              | This table currently contains three tuples, and its memory is allocated statistically. |

## Fields

**Table SOSMPARM field descriptions**

| Field             | New or Changed | Subfield or refinement                  | Entry                                                                 | Explanation and action                                                                                                                                                                                                                                                   |
|-------------------|----------------|-----------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PARMNAME<br>(Key) | New            | None                                    | TOLL_EXIT_CODE<br><br>INTRAZONAL_CODE<br><br>or<br><br>INTERNTNL_CODE | This is the name of the SOSM specific parameter.                                                                                                                                                                                                                         |
| PARMVAL           | New            | PARMSEL                                 | TOLL,<br><br>INTRAZONAL,<br><br>INTERNTNL                             | This subfield is the selector which determines the refinement used for the corresponding SOSM parameter.<br><br>TOLL is valid only for TOLL_EXIT_CODE.<br><br>INTRAZONAL is valid only for INTRAZONAL_CODE<br><br>INTERNTNL is valid only for INTERNTNL_CODE parameters. |
|                   |                | PARMSEL:<br>TOLL<br><br>EXIT_CODE       | Digit {0 to 9}                                                        | Toll exit code consists of a single digit between 0-9.                                                                                                                                                                                                                   |
|                   |                | PARMSEL:<br>INTRAZONAL<br><br>EXIT_CODE | Digit {0 to 9}                                                        | Zonal exit code consists of a single digit between 0-9.                                                                                                                                                                                                                  |
|                   |                | PARMSEL:<br>INTERNTNL<br><br>EXIT_CODE  | 2 digits of each {0 to 9}                                             | International exit code consists of two digits, each between 0-9.                                                                                                                                                                                                        |

**Datafill example**

The following table shows default datafill for table SOSMPARM. This table is accessible only via SOSMCONF CI increment with a valid password.

**Default SOSMPARM tuples**

| PARMNAME        | PARMVAL    |                                                  |
|-----------------|------------|--------------------------------------------------|
|                 | PARMSEL    | EXIT_CODE                                        |
| TOLL_EXIT_CODE  | TOLL       | 8 (1 digit is allowed for this parameter)        |
| INTRAZONAL_CODE | INTRAZONAL | 2 (1 digit is allowed for this parameter)        |
| INTERNTNL_CODE  | INTERNTNL  | 10 (1-2 digit(s) are allowed for this parameter) |

Data in SOSMPARM table can not be deleted. Furthermore, addition of new tuples with table editing commands is prevented by SOSM software.

It is not permitted to change PARMSEL for the default parameters (TOLL\_EXIT\_CODE, INTRAZONAL\_CODE and INTERNTNL\_CODE) by table editing commands.

SOSMPARM table entries can be edited only if the following criteria are met:

- SOSM0001 is ON,
- SOSMCONF CI increment is accessed with a valid password, and
- SOSM system is inactive (not activated by a CP command).

**Table release history update**

This table is added to the system by activity A00002172 in ISN07 context.

**Supplementary information**

NA.

**Translation verification other tools**

NA.

**Service Orders (SO) (CM & SESM)**

NA.

## Software optionality control (SOC)

### SOC

|                          |                                               |
|--------------------------|-----------------------------------------------|
| SOC option name:         | SOSM - System of Operative-Searching Measures |
| SOC option title:        | System of Operative-Searching Measures        |
| SOC option control type: | STATE                                         |
| New SOC option?          | YES                                           |
| SOC option order code    | SOSM0001                                      |
| Option defined in DRU:   | WT                                            |
| Affected products:       | MMP                                           |

Software Optionality Control is provided for SOSM feature. SOC order code is SOSM0001.

While SOSM0001 is OFF:

- Any message received from CP are ignored. (DMS MMP neither executes the command nor sends response to the control point at this state.)
- Access to SOSM configuration CI level is not permitted even if the valid password is entered.
- SOSM configuration tables SOSMMPC, SOSMTRK and SOSMPARM can be reached only within SOSMCONF CI level. Since access to SOSMCONF CI level is not permitted at this state, access to SOSM configuration tables is not possible while SOSM0001 is OFF.

Activation of SOSM0001:

- It is not allowed to turn SOSM0001 to ON state, while there is any other active NBD flavor (DNBD, etc....) on the switch.

While SOSM0001 is ON:

- Activation of any other Network Broadcast Delivery (NBD) application is not allowed after turning SOSM0001 to ON state.
- Access to SOSM configuration tables via SOSMCONF CI level is possible.
- Commands received from CP are processed as described in the previous sections.

Deactivation of SOSM0001:

- Turning SOSM0001 OFF deactivates all SOSM applications on the exchange. SOSM is stopped, and all dynamic data within MCL and monitoring order databases are cleared.
- SOSM system password is reset with the initial password.
- Data in SOSMMPC, SOSMTRK and SOSMPARM tables remains unchanged. However, access to these tables are prevented as indicated above.

## **Element Management**

None.

## **Command Interface changes**

### **Directory: SOSMCONF**

System of Operative Searching Measures (SOSM) Configuration

#### **Directory description**

Access to SOSM configuration tables, namely, SOSMMPC, SOSMTRK and SOSMPARM is restricted. The only way to reach these tables is with this new CI level called SOSMCONF (SOSM Configuration).

#### **Accessing directory: CI**

Command Interface

#### **Access to directory or MAP level and return to CI**

To access SOSMCONF from CI level, enter SOSMCONF.

While accessing to SOSMCONF, the user is asked for the access password. Appropriate access password should be provided when it is requested.

To return to the CI environment, enter quit.

## ***Product = World Trade***

### **A00002319 - MWI Control via ISUP (Succession on DMS)**

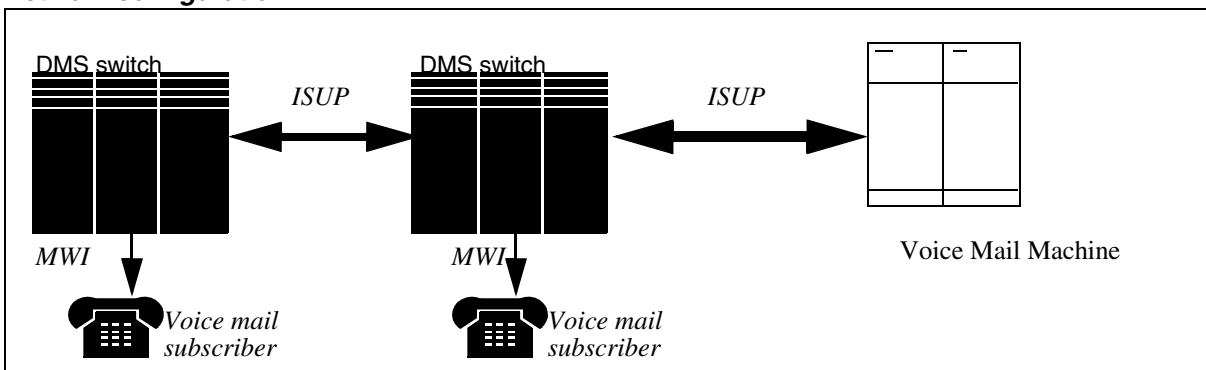
This feature provides Message Waiting Indication functionality via ETSI ISUP V2 protocol.

How this mechanism works:



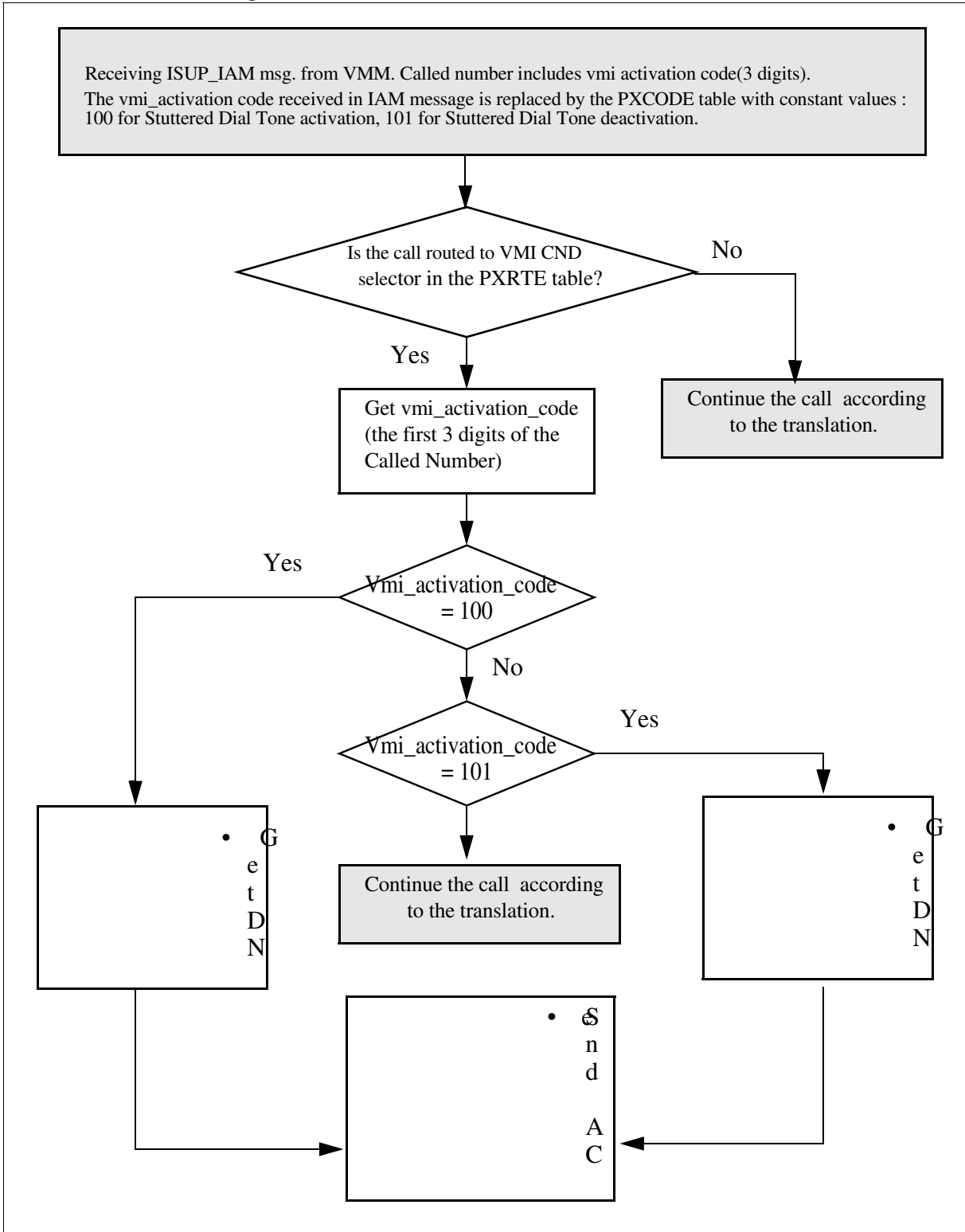
- The MWT option is assigned to an IBN subscriber line with Voice Mail defined on it. The VMI option is assigned to a BRI subscriber line with Voice Mail defined on it.
- The ISUP IAM message with special activation code is sent from VMM to the DMS-100 switch (See Figure , "Network configuration"). The activation code includes 3 digits and may be defined in translation in according to customer requirements.

#### Network configuration



- For flexibility of the Vmi\_Activation\_Code definition, the code received in IAM message is replaced by the PXC CODE table with constant values: 100 for Stuttered Dial Tone activation, 101 for Stuttered Dial Tone deactivation.
- To allow the MWI control via ISUP, the system invokes the Universal Translation using new 'VMI' conditional route selector from the PXRTE table (For details please refer the Configuration document).
- After VMI Activation Code (the first 3 digits in the Called Number field of the IAM msg) is replaced in the PXC CODE and the call pass translation via 'VMI' conditional route selector in the PXRTE table, the SDT is set ON/OFF. The SDT is set for DN that is received in the IAM msg (The Called Number digits without first 3 digits of activation code).
- After SDT tone is set, the ISUP ACM, ISUP ANM and ISUP REL with cause Normal\_Clearing messages are sent to VMM. ISUP\_REL message is sent as result of NORMCLR (Normal Clearing) defined in the TMTMAP table (For details please refer the Configuration document).
- If the call is not routed to the 'VMI' conditional route selector, the call is transferred according to defined translation.

## Functional Behavior Diagram



## Hardware Requirements or Dependencies

PDTC with SX05 processor or Shrink CPM.

## Software Requirements or Dependencies

QDT20xx or QCI20xx load files for PDTC.

## Limitations and restrictions

- The feature supports only PDTC with SX05 processor(QDT20xx or QCI20xx load files) or Shrink CPM.

## Interactions

Not applicable.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|                    |     |
|--------------------|-----|
| Data Schema        | X   |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description                  |
|------|------------------------------|
| MWI  | Message Waiting Indication   |
| SDT  | Stuttered Dial Tone          |
| VMM  | Voice Mail Machine           |
| ISUP | Integrated Service User Part |
| DN   | Dialled Number               |

| Term | Description                 |
|------|-----------------------------|
| IBN  | Integrated Business Network |
| BRI  | Basic Rate Interface        |
| MWT  | Message Waiting line option |
| VMI  | Voice Mail Indication       |

## Configuration

### Hardware and Software Requirements

- MMP20.
- PDTC (with the ETSI ISUP Hardware configuration) or Shrink CPM are required.

### Initial Configuration

The following initial definitions should be supported:

#### Datafill for IBN and BRI subscribers

#### Datafill for IBN subscriber without LAMP

```
SERVORD:
ADO $ 3220070 CFD N 15043220070 A CFB N 15043220070 A MWT STD N N N$ YY

QDN 3220070
DN:      3220070
TYPE: SINGLE PARTY LINE
SNPA: 071 SIG: DT LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST 00 0 03 10
LINE CLASS CODE:      IBN
IBN TYPE: STATION
CUSTGRP:      RESGRP      SUBGRP: 0 NCOS: 8
CARDCODE: 6K17AC GND: N PADGRP: STDLN BNV: NL MNO: N
PM NODE NUMBER      :      23
PM TERMINAL NUMBER :      107
OPTIONS:
DGT CFD N 15043220070 A CFB N 15043220070 A MWT STD N N N
```

**Note:** To support MWI functionality for busy or does not answer line, Call Forward Busy Line (CFB) or Call Forward Don't Answer (CFD) features should be defined correspondingly in addition to MWT line option.

**Datafill for IBN subscriber with LAMP**

```
SERVORD:
ADO $ 3220070 CFD N 15043220070 A CFB N 15043220070 A MWT CMWI Y N N N$ YY

QDN 3220070
DN:      3220070
TYPE: SINGLE PARTY LINE
SNPA: 071   SIG: DT   LNATTIDX: N/A
LINE EQUIPMENT NUMBER:      HOST  00 0 03 10
LINE CLASS CODE:           IBN
IBN TYPE: STATION
CUSTGRP:      RESGRP      SUBGRP: 0  NCOS: 8
CARDCODE: 6K17AC   GND: N  PADGRP: STDLN  BNV: NL  MNO: N
PM NODE NUMBER      :      23
PM TERMINAL NUMBER :      107
OPTIONS:
DGT CFD N 15043220070 A CFB N 15043220070 A MWT CMWI Y N N N
```

**Datafill for BRI subscriber**

```

SERVORD:
>ADO $ ISDN1 381 1 VMI N N $ Y Y
>ADO $ ISDN1 381 1 CFD N 15063381010 $ 1 CFB N 15263381010 $ $ Y Y

QLT ISDN1 381
LTID: ISDN1 381
SNPA: 306
DIRECTORY NUMBER: 3381010
LT GROUP NO: 1
LTCLASS: BRAFS DEFAULT LOGICAL TERMINAL: Y
EKTS: N CACH: N
SLBRI: N
BEARER SERVICE ALLOWED: VOICE VBD CMD
CS: Y PS: N
ELN: N
VERSION: ETSI ISSUE: 0
LEN: HOST 03 0 16 12 TEI: UNATEI
CUSTGRP: ISDNGRP SUBGRP: 0 NCOS: 72 RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 32
OPTIONS:
AFC
CFB N 15263381010 A $ CFD N 15063381010 A $ COT NOAMA $ VMI N N SFC PROVHLC
VBINFO CMDATA COLP HOLD PROVCGS VBINFO CMDATA PROVCDs VBINFO CMDATA PROVLLC
VBINFO CMDATA

KEY      DN
---      --
1        DN      3063381010
4        DN      3063381011
7        DN      3063381012
10       DN      3063381013
14       DN      3083791099

KEY      FEATURE
---      -
1        HOLD
1        CFB N      15263381010      A $
1        CFD N      15063381010      A $
1        COT NOAMA $
1        VMI N N
2        AFC
5        AFC
8        AFC
11       AFC
15       AFC

```

**Note:** To support MWI functionality for busy or does not answer line, Call Forward Busy Line (CFB) or Call Forward Don't Answer (CFD) features should be defined correspondingly in addition to VMI line option.

**Datafill for BRI subscriber with secondary DN**

SERVORD:  
 >ADO \$ ISDN 500 1 CFK \$ 1 CFD P \$ 1 CFB P \$ 1 VMI N N 4 VMI N N \$ YY

QLT ISDN 500  
 LTID: ISDN 500  
 SNPA: 700  
 DIRECTORY NUMBER: 5003500  
 LT GROUP NO: 0  
 LTCLASS: BRAFS DEFAULT LOGICAL TERMINAL: Y  
 EKTS: N CACH: N  
 SLBRI: N  
 BEARER SERVICE ALLOWED: VOICE VBD CMD  
 CS: Y PS: N  
 ELN: N  
 VERSION: ETSI ISSUE: 0  
 LEN: HOST 00 0 05 00 TEI: UNATEI  
 CUSTGRP: ISDNGRP SUBGRP: 0 NCOS: 30 RING: N  
 LINE CLASS CODE: ISDNKSET  
 MAXKEYS: 64  
 OPTIONS:  
 AFC  
 CFK \$ I \$ CFB P \$ I \$ CFD P \$ I \$ VMI N N SFC

| KEY | DN            |
|-----|---------------|
| --- | --            |
| 1   | DN 7005003500 |
| 4   | DN 7005003510 |

| KEY | FEATURE |    |    |      |
|-----|---------|----|----|------|
| --- | -----   |    |    |      |
| 1   | CFK     | \$ | I  | \$   |
| 1   | CFB P   |    | \$ | I \$ |
| 1   | CFD P   |    | \$ | I \$ |
| 4   | CFK     | \$ | I  | \$   |
| 4   | CFB P   |    | \$ | I \$ |
| 4   | CFD P   |    | \$ | I \$ |
| 1   | VMI N N |    |    |      |
| 2   | AFC     |    |    |      |
| 3   | AFC     |    |    |      |
| 4   | VMI N N |    |    |      |
| 5   | AFC     |    |    |      |
| 6   | AFC     |    |    |      |

## Table Control

### Datafill example for setting SDT on / turning LAMP on

```
TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F

TABLE: PXCODE
ISDN 5553 5553 DMOD ( INSRT 100) ( DEL 3) ( XLT PX MWICR)$

TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F

TABLE: PXCODE
MWICR 1003 1003 RTE MM 10 10 DEST 1003 CLASS NATL
MWICR 1006 1006 RTE MM 10 10 DEST 125 CLASS NATL

TABLE: PXRTE
MWICR 1003 CND VMI T OFRT 88
MWICR 125 S TRISUP1

TABLE: OFRT
88 TRMT CONF

TABLE: TMTMAP
Q767 CONF ALLBC ISUP NOLOCAL NORMCLR LOCLNET N
```



**Datafill example for setting SDT off / turning LAMP off**

```

TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F

TABLE: PXCODE
ISDN 7773 7773 DMOD ( INSRT 101) ( DEL 3) ( XLT PX MWICR)$

TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F

TABLE: PXCODE
MWICR 1013 1013 RTE MM 10 10 DEST 1003 CLASS NATL
MWICR 1016 1016 RTE MM 10 10 DEST 125 CLASS NATL

TABLE: PXRTE
  MWICR    1003  CND  VMI    T   OFRT   88
  MWICR    125 S              TRISUP1

TABLE: OFRT
88 TRMT CONF

TABLE: TMTMAP
Q767 CONF ALLBC  ISUP  NOLOCAL  NORMCLR  LOCLNET N

```

**Additional datafill for MWI feature**

```

TABLE FEATOPTS
VMI VMI
MWT MWT N $
TABLE LCCOPT
IBN      (MWT)
ISDNKSET (VMI)
TABLE DNREVLXLA
CLD2FLXD 0338 0338  DEFAULT 1 306

The following tuple should be defimed only for subscribers with LAMP:
TABLE RESOFC
CMWI Y SUBSCR CMWI SINGLE 5 $

```

## Upgrade Impact

### Dump and Restore

No DUMP and Restore reformat algorithm is required for this feature.

### Element Management Upgrade

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

The PXRTE table will be modified. The CNDSEL of the CND route selector will be enhanced with VMI CND route condition.

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| PXRTE          | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

#### Name: PXRTE

Prefix code Route.

#### Functional description

Table PXRTE is a member of the universal translation tables. The universal translation tables are organized to translate the incoming digit string in segments. Table PXRTE translates the prefix code digit segment, together with tables PXHEAD and PXCODE.

#### Usage sequence and implications (CM Only)

Current datafill order unchanged.

#### Size

The table size is not changed.

Memory is allocated dynamically. When the first tuple for a given XLANAME is added, table size is allocated to accommodate the given route reference. As tuples are added, the table increases to accommodate the largest route reference index.

## Fields/OIDs

### Table field descriptions

| Field  | New or Changed | Subfield or refinement | Entry | Explanation and action                                 |
|--------|----------------|------------------------|-------|--------------------------------------------------------|
| CNDSEL | Changed        | refinement             | VMI   | The CND_RTE_CONDITION type is extended with VMI value. |

### Datafill example

#### The PXRTE datafill example

```
XLANAME RTEREF RTELIST
-----
ISDN 100 (CND VMI T OFRT 88) $
```

Where RTELIST includes the following selectors and subfields:

RTESEL - the type is route\_selector {S, N, T, **CND**, RT, SO, NOT, DCRT, NODE, SG}

CNDSEL - the type is cnd\_rte\_condition {ALWAYS, RND, SNPA, EA, TOD, NARS, COSMAP, NRR, SITE, CALLCHR, **VMI**}

RTETYPE - the type is cnd\_rte\_type {ST,T,SK}

TABNAME - the type is rter\_id {OFRT, OFR2, OFR3, OFR4, IRTE, RRTE, IBNRTE, IBNRT2, IBNRT3, IBNRT4, TOPS}

INDEX - type is extended\_route\_ref\_index {0 TO 1023}

### Supplementary information

None.

### Translation verification other tools

- The following examples shows the output from TRAVER when it is used to verify the PXRTE table (**CND VMI tuple is defined**).

**Example of STD activation**

```

>traver tr ORISUP2 5553650006 b
TABLE TRKGRP
ORISUP2 IBNT2 0 LCO NCRT TRKPSTN 0 LIDL 0 N ANSDISC 0 N N N N N N N 0 0 N 0 0
0 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP EINGRP
TABLE NCOS
TRKPSTN 0 0 0 TRK ( XLAS PRTRK0 NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TRKPSTN NXLA CXTRK NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PRTRK0
TUPLE NOT FOUND
Default from table XLANAME:
PRTRK0
      (NET N N 0 N POTS N N GEN (LATTR 1000 454_NPRT_0 NLCA_NILLA_0) $ $)$ 9
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
1000 NLCC NONE NT 1000 0 NILSFC 7 PX ISDN NIL 00 454_NPRT_0 NLCA_NILLA_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
454_NPRT_0 NSCR 454 NPRT NONE N $
TABLE RATEAREA
NLCA_NILLA_0 NLCA NIL NILLATA $
TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                    5553650006
TABLE PXCODE
ISDN 5553 5553 DMOD ( INSRT 100) ( DEL 3) ( XLT PX MWICR)$
TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:                    1003650006
TABLE PXCODE
MWICR 1003 1003 RTE ( MM 10 10) ( DEST 101) ( CLASS NATL)$
TABLE: PXRTE
KEY:      MWICR 101
.  CND VMI T OFRT 100
.  .  TABLE OFRT
.  .  100 TRMT CONF
TABLE TMTCNTL
TITRKGPR ( 0)
.  SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 60)
.  SUBTABLE TREAT
.  CONF N S BST5
.  .  EXIT TABLE OFRT
EXIT TABLE PXRTE
TABLE TRIGGRP
EINGRP INFOANAL
.  GENTRIG (CDPN EINDIG)$ NIL

```

**Example of STD deactivation**

```

>traver tr ORISUP2 7773650006 b
TABLE TRKGRP
ORISUP2 IBNT2 0 LCO NCRT TRKPSTN 0 LIDL 0 N ANSDISC 0 N N N N N N N 0 0 N 0 0 0
0 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP EINGRP
TABLE NCOS
TRKPSTN 0 0 0 TRK ( XLAS PRTRK0 NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TRKPSTN NXLA CXTRK NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PRTRK0
TUPLE NOT FOUND
Default from table XLANAME:
PRTRK0
(NET N N 0 N POTS N N GEN (LATTR 1000 454_NPRT_0 NLCA_NILLA_0) $ $)$ 9
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
1000 NLCC NONE NT 1000 0 NILSFC 7 PX ISDN NIL 00 454_NPRT_0 NLCA_NILLA_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
454_NPRT_0 NSCR 454 NPRT NONE N $
TABLE RATEAREA
NLCA_NILLA_0 NLCA NIL NILLATA $
TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7773650006
TABLE PXCODE
ISDN 7773 7773 DMOD ( INSRT 101) ( DEL 3) ( XLT PX MWICR)$
TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 1013650006
TABLE PXCODE
MWICR 1013 1013 RTE ( MM 10 10) ( DEST 101) ( CLASS NATL)$
TABLE: PXRTE
KEY: MWICR 101
. CND VMI T OFRT 100
. . TABLE OFRT
. . 100 TRMT CONF
TABLE TMTCNTL
TITRKGRP ( 0)
. SUBTABLE TREAT
KEY NOT FOUND
DEFAULT OFFTREAT IS USED
TABLE TMTCNTL
OFFTREAT ( 60)
. SUBTABLE TREAT
. CONF N S BST5
. . EXIT TABLE OFRT
EXIT TABLE PXRTE
TABLE TRIGGRP
EINGRP INFOANAL
. GENTRIG (CDPN EINDIG)$ NIL

```

- The following examples shows the output from TRAVER when it is used to verify the PXRTE table (**CND VMI tuple is not defined**).

#### Example of STD activation

```
>traver tr ORISUP2 5553650006 b
TABLE TRKGRP
ORISUP2 IBNT2 0 LCO NCRT TRKPSTN 0 LIDL 0 N ANSDISC 0 N N N N N N N 0 0 N 0 0 0
0 N N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP EINGRP
TABLE NCOS
TRKPSTN 0 0 0 TRK ( XLAS PRTRK0 NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TRKPSTN NXLA CXTRK NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PRTRK0
TUPLE NOT FOUND
Default from table XLANAME:
PRTRK0
(NET N N 0 N POTS N N GEN (LATTR 1000 454_NPRT_0 NLCA_NILLA_0) $ $)$ 9
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
1000 NLCC NONE NT 1000 0 NILSFC 7 PX ISDN NIL 00 454_NPRT_0 NLCA_NILLA_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
454_NPRT_0 NSCR 454 NPRT NONE N $
TABLE RATEAREA
NLCA_NILLA_0 NLCA NIL NILLATA $
TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 5553650006
TABLE PXCODE
ISDN 5553 5553 DMOD ( INSRT 100) ( DEL 3) ( XLT PX MWICR)$
TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 1003650006
TABLE PXCODE
MWICR 1003 1003 RTE ( MM 10 10) ( DEST 125) ( CLASS NATL)$
TABLE: PXRTE
KEY: MWICR 125
. S TRISUP1
EXIT TABLE PXRTE
TABLE TRIGGRP
EINGRP INFOANAL
. GENTRIG ( CDPN EINDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES
1 TRISUP1 1006012001 ST
TREATMENT ROUTES. TREATMENT IS: GNCT
1 BST6
```

**Example of STD deactivation**

```

>traver tr ORISUP2 7773650006 b
TABLE TRKGRP
ORISUP2 IBNT2 0 LCO NCRT TRKPSTN 0 LIDL 0 N ANSDISC 0 N N N N N N N 0 0 N 0 0 0
0 N N N N N N N N NATL $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP EINGRP
TABLE NCOS
TRKPSTN 0 0 0 TRK ( XLAS PRTRK0 NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
TRKPSTN NXLA CXTRK NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
INAP Info Collected TDP: no subscribed trigger.
TABLE IBNXLA: XLANAME PRTRK0
TUPLE NOT FOUND
Default from table XLANAME:
PRTRK0
(NET N N 0 N POTS N N GEN (LATTR 1000 454_NPRT_0 NLCA_NILLA_0) $ $)$ 9
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
1000 NLCC NONE NT 1000 0 NILSFC 7 PX ISDN NIL 00 454_NPRT_0 NLCA_NILLA_0 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
454_NPRT_0 NSCR 454 NPRT NONE N $
TABLE RATEAREA
NLCA_NILLA_0 NLCA NIL NILLATA $
TABLE PXHEAD
ISDN SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 7773650006
TABLE PXCODE
ISDN 7773 7773 DMOD ( INSRT 101) ( DEL 3) ( XLT PX MWICR)$
TABLE PXHEAD
MWICR SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 1013650006
TABLE PXCODE
MWICR 1013 1013 RTE ( MM 10 10) ( DEST 125) ( CLASS NATL)$
TABLE: PXRTE
KEY: MWICR 125
. S TRISUP1
EXIT TABLE PXRTE
TABLE TRIGGRP
EINGRP INFOANAL
. GENTRIG ( CDPN EINDIG)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES
1 TRISUP1 1016012001 ST
TREATMENT ROUTES. TREATMENT IS: GNCT
1 BST6
+++ TRAVER: SUCCESSFUL CALL TRACE +++

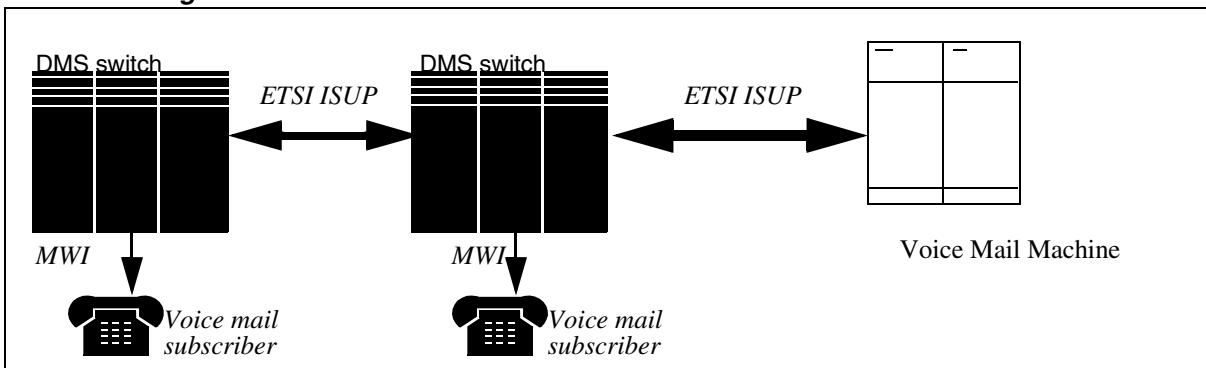
```

## Configuration Walkthrough

There are the provisioning steps for the “MWI control via ISUP” performance:

1. The following network configuration must be supported:

### Network configuration



1. Use Service Order tool to define the MWT line option for IBN Voice Mail subscribers (Figure “Datafill for IBN subscriber without LAMP” on page 1480, Figure “Datafill for IBN subscriber with LAMP” on page 1481).
2. Use Service Order tool to define the VMI line option for BRI Voice Mail subscribers (Figure “Datafill for BRI subscriber” on page 1482).
3. Use Service Order tool to define the appropriate Call Forward line option for subscribers that have MWT or VMI line option.
4. Datafill tables (Figure “Datafill example for setting SDT on / turning LAMP on” on page 1484, Figure “Datafill example for setting SDT off / turning LAMP off” on page 1485, Figure “Additional datafill for MWI feature” on page 1485).
5. Perform a successful call to a VM subscriber. Leave a voice message.
6. Off hook the subscriber.
7. Verify that SDT is heard/Lamp is turned on.
8. Clear the voice message.
9. On hook the subscriber.
10. Off hook the subscriber.
11. Verify that SDT is not heard/Lamp is turned off.

***Product = World Trade***



## A00002364 -- CLI/RDN/OCN capture in Billing Record (CDR) for ANSI ISUP and HK ISUP on DRU GSP20 (Succession on DMS)

### *Functional Description*

This feature provides the following functions:

1. Provide new option OCN in table CLICNTL
  - This feature adds a new option named OCN in table CLICNTL. This option is one of the selectors of BILLING\_OPTIONS.
2. CLI/RDN/OCN capture in CDR for ANSI ISUP and HK ISUP
  - This feature provides CLI/RDN/OCN and corresponding indicator within CDR records generated on calls whose originating physical port is ISUP trunk according to the capture logic. Refer to “[CLI, RDN, OCN capture logic](#)” on page 1494. OCN option, which is introduced by this feature, is available in table CLICNTL.

**Note:** Both CLI and RDN capture in CDR feature have already been implemented for ISUP trunks on DRU GSP.

**Note:** This feature is implemented on DRU GSP20 and patched back to GSP10.

### **Background**

CLI and RDN capture in CDR have been implemented for ISUP trunks according to the datafill of table CLICNTL.

The field BILLING\_OPTIONS of table CLICNTL specifies a list of numbers from:

- Screening Number (SCRN\_NUM)
- Calling Line Identity (CLI)
- Redirecting Number (RDN)
- Charge Number (CHARGE)
- Generic Number (GENERIC\_NO)
- Contractor Number (CONTRACTOR)
- Presentation Number (PN)

Table CLICNTL specifies a datafillable precedence order for the customer. The list of BILLING\_OPTIONS is checked from left to right, searching for an address that is present. Once an address is found that is presented in the call, then this address is selected for billing purposes.

## Detail Description

This feature provides the ability to enable CLI/RDN/OCN and corresponding indicator capture in CDR for ANSI ISUP and HK ISUP on DRU GSP20 according to the capture logic.

This feature is involved in ANSI ISUP and HK ISUP originating calls.

The following is the capture logic:

### CLI, RDN, OCN capture logic

| Situation                                | Number put in the CDR | Indicator set in the CDR |
|------------------------------------------|-----------------------|--------------------------|
| Both RDN and CLI exist from ISUP message | RDN                   | 10                       |
| Both OCN and CLI exist from ISUP message | OCN                   | 01                       |
| Only CLI exists from ISUP message        | CLI                   | 00                       |
| No RDN/OCN/CLI exists from ISUP message  | None                  | 11                       |
| None of the above                        | RDN/OCN/CLI *         | 10/01/00**               |

RDN/OCN/CLI \* means if RDN exists, put RDN, then OCN if OCN exists, otherwise put CLI.

10/01/00 \*\* means if RDN is captured, put 10, then 01 if OCN is captured, otherwise put 00 if CLI is captured.

Two spare bits in existing CDR are used as indicator in this feature.

The detailed information is listed in the following table:

### Spare bits usage information in CDR

| Situation            | Number put in CDR | Word 28/Bit |       |
|----------------------|-------------------|-------------|-------|
|                      |                   | 10          | 9     |
| RDN and CLI existing | RDN               | 1           | 0     |
| OCN and CLI only     | OCN               | 0           | 1     |
| CLI only             | CLI               | 0           | 0     |
| No RDN, OCN nor CLI  | None              | 1           | 1     |
| None of Above        | RDN/OCN/CLI*      | 1/0**       | 1/0** |

**Remark:** Word 28/Bit 8 is “Answer”

RDN/OCN/CLI\* means if RDN exists, put RDN, then OCN if OCN exists, otherwise put CLI.

1/0\*\* means if RDN is captured, put 10, then 01 if OCN is captured, otherwise put 00 if CLI is captured.

The following table shows the current structure of CDR.

#### The structure of CDR

| No | Field Name                                                       | Offset | Bytes/<br>Bits  | Encoding<br>Type | Field Contents                                                        |
|----|------------------------------------------------------------------|--------|-----------------|------------------|-----------------------------------------------------------------------|
| 1  | RECCD + Type of call + VPN Cust Type + INAP Call + EXPANSION_REC | 0      | 2               | BINARY           | Record Code + Type of Call + VPN Customer + INAP Call + EXPANSION_REC |
| 2  | ORIGDATE                                                         | 2      | 2               | BCD              | Origination Date                                                      |
| 3  | ORIGTIME                                                         | 4      | 3               | BCD              | Origination Time                                                      |
| 4  | DISCDATE                                                         | 7      | 2               | BCD              | Disconnect Date                                                       |
| 5  | DISCTIME                                                         | 9      | 3               | BCD              | Disconnect Time                                                       |
| 6  | CALLDUR                                                          | 12     | 4               | BINARY           | Call Duration Time                                                    |
| 7  | ORIGCLLI                                                         | 16     | 2               | BINARY           | Origination Trkgrp CLLI                                               |
| 8  | ORIGMEM                                                          | 18     | 2               | BINARY           | Origination Member Number                                             |
| 9  | TERMCLLI                                                         | 20     | 2               | BINARY           | Termination Trkgrp CLLI                                               |
| 10 | TERMMEM                                                          | 22     | 2               | BINARY           | Termination Member Number                                             |
| 11 | CLGNUM                                                           | 24     | 12              | TBCD             | Calling Number                                                        |
| 12 | TNSVALUE                                                         | 36     | 3               | TBCD             | TNS Value                                                             |
| 13 | CUSTCOST                                                         | 39     | 4               | TBCD             | Cost Center Account Code                                              |
| 14 | BILLTYP                                                          | 43     | 1               | BINARY           | Billing Type                                                          |
| 15 | DIALNUM                                                          | 44     | 12              | TBCD             | Dialed Number                                                         |
| 16 | SRVCODE                                                          | 56     | 7 bits          | BINARY           | Service Code                                                          |
| 17 | TNSSENT                                                          | 56.7   | 1 bit           | BINARY           | TNS Sent                                                              |
| 18 | ANSWER                                                           | 57.0   | 1 bit           | BINARY           | Answer flag                                                           |
| 19 | SPARE_1                                                          | 57.1   | 7 bits + 1 byte |                  | Spare, with a hex value of 0                                          |
| 20 | TRMTCD                                                           | 59     | 1               | BINARY           | Call Treatment Code                                                   |
| 21 | COMPCD                                                           | 60     | 2               | BCD              | Call Completion Code                                                  |
| 22 | CLASSMK                                                          | 62     | 2               | BINARY           | IMT ClassMarks                                                        |
| 23 | CLISAT                                                           | 64     | 2               | BINARY           | CLI Index + Disposition Qualifier + Satellite Indicator               |
| 24 | SEQNUM                                                           | 66     | 4               | BINARY           | Call Sequence Number                                                  |
| 25 | NODEID                                                           | 70     | 2               | BCD              | Node Identification                                                   |

**The structure of CDR**

| No | Field Name | Offset | Bytes/<br>Bits     | Encoding<br>Type | Field Contents                |
|----|------------|--------|--------------------|------------------|-------------------------------|
| 26 | DESTNUM    | 72     | 12                 | TBCD             | Destination Number            |
| 27 | SPARE_2    | 84     | 3                  |                  | Spare, with a hex value of 0  |
| 28 | BILLNUM    | 87     | 15                 | TBCD             | Billing Number                |
| 29 | T_FCI_NUM  | 102    | 1                  | BINARY           | Total Number of FCI           |
| 30 | CCD        | 103    | 2                  | BCD              | Carrier Connect Date          |
| 31 | CCT        | 105    | 3                  | BCD              | Carrier Connect Time          |
| 32 | CustID     | 108    | 1 byte + 4<br>bits | BINARY           | Customer Identification Value |
| 33 | TTON       |        | 4 bits             | BINARY           | Terminating Type of Number    |
| 34 | ACCT_EXT   | 110    | 5                  | TBCD             | Account Code Extension        |
| 35 | CPC        | 115    | 1                  | BINARY           | Calling Party Category        |
| 36 | OUTP_NUM   | 116    | 12                 | TBCD             | Outpulsed Number              |
|    | Total      |        | 128                |                  |                               |

**New option “OCN” in table CLICNTL**

OCN option is available for incoming direction in table CLICNTL by this feature. The OCN option can be assigned to any CLICTKEY whose direction is incoming, but only when the CLICTKEY with OCN option is assigned to an ANSI ISUP or HK ISUP trunk, the OCN option can work. If the OCN option is assigned to a CLICTKEY whose direction is outgoing, then an error is given. When the OCN option is datafilled with the highest priority for an ISUP trunk, then OCN is captured in CDR. Thus, CLI/RDN/OCN can be captured in CDR according to the datafill in table CLICNTL. As long as these 3 options are datafilled in the proper order, then CLI/RDN/OCN can be captured in CDR following the capture logic.

An example of these three options datafill is shown in the following figure.

**CLI/RDN/OCN datafill in table CLICNTL**

```

TABLE: CLICNTL

CLICTKEY DIRECTN
-----
NONE IC $ (RDN) (CLI) $ Y

CLI_ONLY IC (CLI) $ (CLI) $ Y

RDN_ONLY IC (RDN) $ (RDN) $ Y

CLI_THEN_RDN IC (CLI) (RDN) $ (SCRN_NUM) $ Y

RDN_THEN_CLI IC (RDN) (CLI) $ (SCRN_NUM) $ Y

RDN_OCN_CLI IC $ (RDN) (OCN) (CLI) $ Y

```

The following is the example of the error message and warning message:

error message: "OCN option cannot be used for outgoing direction!"

In table CLICNTL, BILLING\_OPTIONS and OUTPUTPULSE\_OPTIONS use the same list of selectors. So the OCN option is also one of the selectors of OUTPUTPULSE\_OPTIONS. But OCN option can not be datafilled as a OUTPUTPULSE\_OPTIONS because OUTPUTPULSE\_OPTIONS is only used for outgoing direction, but OCN option can only be used for incoming direction.

The following is the data structure of table CLICNTL:

**Data structure of table CLICNTL**

```

TABLE: CLICNTL
>ran
  1 CLICTKEY          CLICNTL_KEY
  2 DIRECTN           DIR_OPTION_AREA
LOGICAL TUPLE TYPE: CLICNTL_LOGTUPLE
>ran DIRECTN
  2 DIRECTN           DIR_OPTION_AREA
TYPE IS DIR_OPTION_AREA    MULTIPLE WITH
DIRECTN                   {IC,OG} REFINEMENTS:
{IC}                      MULTIPLE WITH
                           CLISCRN_OPTIONS VECTOR OF UP TO 16
CLISCRN_OPTION_RANGE'S
                           BILLING_OPTIONS VECTOR OF UP TO 16
                           BILL_AND_OUTP_OPTION_RANGE
                           CLIDELV          {Y,N}
{OG}                      MULTIPLE WITH
                           OUTPULSE_OPTIONS VECTOR OF UP TO 16
                           BILL_AND_OUTP_OPTION_RANGE
>ddedit
DDE:
>zz BILL_AND_OUTP_OPTION_RANGE
  TYPE BILL_AND_OUTP_OPTION_RANGE    STRING RANGE
    'SCRN_NUM'          0
    'CLI'               1
    'RDN'               2
    'CHARGE'            3
    'CONTRACTOR'        4
    'GENERIC_NO'        5
    'PN'               7
    'OCN'              8
END STRING RANGE

```

**Capture CLI/RDN/OCN for ANSI ISUP and HK ISUP**

On originating side, after receiving the IAM message, this feature puts CLI/RDN/OCN in existing CLG\_NUM field of CDR according to the capture logic. At the same time, set according indicator in the spare bits of the DMS-GSP-specific CDR unit structure.

If receiving the INF message, because only CLI will be contained in INF message, we have to consider the previous IAM message of this call to see if RDN or OCN exist, then capture corresponding number and set indicator in CDR according to the capture logic.

Furthermore, there is no indicator of the content of the CLG\_NUM field in the CDR601 log currently. This feature adds a new field named CLGNUM\_IND to CDR601 log report to include the corresponding indicator set in CDR, the new field is appended in the end of CDR601 log report. According to the capture logic, "00", "01", "10", "11" is displayed as the content of the indicator.

The following is an example of the new CDR601 log:

#### CDR601 log example

```

NORTEL      CDR601 SEP20 16:44:09 1700 INFO CDR LONG LOG

REC_CODE      F0
TYPE_CALL     1
INAP_CALL     0
VPN_CUST      0
CALL_DUR      00000000
ORIG_CLLI     0775
ORIG_MEM      0005
TERM_CLLI     0774
TERM_MEM      0005
CLG_NUM      1066020003
TNS_VALUE
CUST_COST
BILL_TYP      255
DIAL_NUM      6020024
SRV_CODE
TNS_SENT
ANSWER
TRMT_CODE     000
COMPL_CODE    125
CLASS_SERV    00
DATA_CALL     0
PART_NUM      0101
CLI_INDEX     000
DISP_QUAL     001
SATE_IND      0
SEQ_NUM       00000015
NODE_ID       000
DEST_NUM
BILL_NUM
T_EXT_NUM     00
CCD           263
CCT           60243
CUST_ID       0000
TTON          NAT
ACCT_EXT
CPC           255
OUTP_NUM      6020024
CLGNUM_IND   01

```

### Hardware Requirements or Dependencies

N/A

### Software Requirements or Dependencies

N/A

### Limitations and restrictions

Only ANSI ISUP and HK ISUP GSP trunks are supported in this feature.

## Interactions

N/A.

## Applicable customer facing sections

### Fault Management

Logs ☒ X ☐

Alarms ☐ N/A ☐

### Configuration

Data Schema ☒ X ☐

User Interface ☐ N/A ☐

Element Management ☐ N/A ☐

Security ☐ N/A ☐

Service Order ☐ N/A ☐

Office Parameters ☐ N/A ☐

Accounting (includes AMA billing) ☒ X ☐

Performance (includes operational measurements) ☐ N/A ☐

## Glossary

| Term | Description                        |
|------|------------------------------------|
| CDR  | Call Detail Record                 |
| CLI  | Calling Line Identification        |
| GSP  | Global Services Platform           |
| IAM  | Initial Address Message            |
| IC   | Incoming                           |
| INF  | Information                        |
| ISDN | Integrated Service Digital Network |
| ISUP | ISDN User Part                     |
| OCN  | Original Called Number             |
| OG   | Outgoing                           |
| RDN  | Redirecting Number                 |



## References

1. DMS-Global Services Platform Billing Records Reference Manual, NTP 297-2651-119
2. DMS-GSP Logs Reference Manual Vol . 2 of 6, NTP 297-2651-8402
3. CLI Screening Enhancements for International Applications, A59023556

## *Product = World Trade*

### **A00002641 -- CEPT PSTN: Analogue OCB (Intl UA-IP)**

#### ***Functional Description***

This activity covers the requirements stated in Telefonica General Specification “SERVICE OF RESTRICTION OF OUTGOING CALLS “GT.Eg.d4.017 1<sup>a</sup> 4-97

This activity addresses the Telefonica specific changes for the CEPT International Line Restriction” ILR supplementary service. It adds more flexibility to the original ILR activity 59019295.

#### **ILRCLASS table**

The ILRCLASS table stores the definition of the barring programs for the ILR service. The International Line Restriction line option references this table.

#### **Example entry in table ILRCLASS**

```
TABLE ILRCLASS
DIDD 02 (CNTL) (ICNTL) (INTL) $(09000) (09001)$
```

This entry indicates that the barring program DIDD or Deny International Direct Dial uses the code ‘02’ and bars the international translation classes CNTL, ICNTL and INTL. Additionally calls to the dialled DN’s ‘09000’ and ‘09001’ are restricted under this barring program. The dialled DN is in this context the DN dialled by the subscriber. The only option influencing this dialled DN string is the NO\_ACCODE\_DIGITS field in table IBNXLA for selectors like NET. This allows to use the DN barring in Centrex environment for public calls.

Table ILRCLASS can hold up to maximum of 100 tuples and the same should be the number of R-Codes, that is R-code range varies from 00 to 99. The R-Codes values are unique in table ILRCLASS, except 'NN'.

Table ILRCLASS entries with R-Code 'NN' can not be used in the ILR line option and NIL barring class tuple can't be deleted from the table ILRCLASS.

During ONP the ILRCLASS table is populated with the previously hard coded barring programs and the R-codes of the ILRCLS tuple in table ISERVOPT. The R-codes are not stored in the ILRCLS tuple in ISERVOPT any more.

During ONPs to this activity, the default tuples are restored.

### Privileged user access

Changing the barring programs in table ILRCLASS needs to be communicated to the subscriber base. Therefore this table should be only changeable for a limited number of operators. Therefore it is suggested to set fairly high values for the command classes to update this table. This can be achieved via table CUSTPROT datafill:

#### Example of ILRCLASS table in CUSTPROT table

```
TABLE CUSTPROT
ILRCLASS 15      25 25 OFF      OFF
```

Only operators with a command class of 25 can change existing tuples and delete and add tuples to this table

### ILRCLASS OM

The ILRCLASS OM are adopted to support the flexible definition of the barring programs in table ILRCLASS. The ILRCLASS OM provides per OM group the number of activations, deactivations, usages and unsuccessful deactivations:

**flexible ILRCLASS OM group**

```

ILRCLASS:    ACTIVE
START:2003/05/10 18:30:00 SAT; STOP: 2003/05/10 18:47:12 SAT;
SLOWSAMPLES:    11 ; FASTSAMPLES:    103 ;
      KEY (ILR_CLASS)
      ACT    DEACT USAGE UNDACT

02 DIDD
   10 1 25 5

```

The ILR1 OM group is deleted, because all information is stored in the flexible ILR OM group.

The example above shows an OMSHOW output for the new ILRCLASS OM group. It shows for the OM group DIDD with 10 activations, 1 deactivation, 25 times a call was barred due to this program and 5 times the deactivation failed.

**ILR OM**

ILR OM provides the following information.

**ILR OM group**

```

ILR:    ACTIVE
START:2003/05/10 18:30:00 SAT; STOP: 2003/05/10 18:47:12 SAT;
SLOWSAMPLES:    11 ; FASTSAMPLES:    103 ;
      ILRCERR    ILRUINT    ILRINTG    TEMPDAC
      TEMPUDAC
2
2          0          2          4

```

**Hardware Requirements or Dependencies**

This activity is available for MMP and CS2k product.

**Software Requirements or Dependencies**

N/A

**Limitations and restrictions**

- This table does not apply to the BRI line option OCB.
- The barring programs apply to the whole office. Different barring programs for different customer groups are not possible

- The option if the subscriber can change the barring program or not is set for the office. It is not possible that some subscribers may change their barring program and some are not allowed to change their barring program.
- Announcement is not supported for this activity.
- The table ILRCLASS DN restriction based is supported only for the following ILR feature interactions.
  - a. WML
  - b. CDX
  - c. SCS/SCL
  - d. I3WC
  - e. ICT
  - f. LNR
  - g. CND
  - h. AR
- DN digits in table ILRCLASS will be restricted on all endblock outpulsing calls (where translation has MIN and MAX of equal values).
- For overlap outpulsing calls, if the MIN is less than the number of digits in dialled DN, then the DN will not be restricted.
- The MIN restriction digits should be greater than the number of digits in dialled DN.
- As usual, DN digits as per the Telefonica General Specification “SERVICE OF RESTRICTION OF OUTGOING CALLS “GT.Eg.d4.017 1<sup>a</sup> 4-97” is 3 digits and MIN digits should be three.

## Interactions

Unchanged by this activity. Please refer to the NTPs for current interactions or ILR

## Applicable customer facing sections

### Fault Management

Logs

\_\_\_\_\_

Alarms

\_\_\_\_\_

### Configuration

Data Schema

\_\_\_X\_\_\_

User Interface

\_\_\_\_\_

Element Management

\_\_\_\_\_

|                                                 |       |
|-------------------------------------------------|-------|
| Security                                        | _____ |
| Service Order                                   | _____ |
| Office Parameters                               | _____ |
| Accounting (includes AMA billing)               | _____ |
| Performance (includes operational measurements) | _____ |

## Glossary

| Term | Explanation                                                                                                  |
|------|--------------------------------------------------------------------------------------------------------------|
| CEPT | Conference of European Posts and Telecommunications Administration                                           |
| CS2K | Call Server 2000 a super class soft switch                                                                   |
| GWC  | Gateway controller. One component in the CS2K which handles the messaging between the CSK2 and the gateways. |
| ILR  | International Line Restrictions.                                                                             |
| OM   | Operational Measurements. Statistics provided by applications on the CS2k                                    |

## *Configuration for A00002641*

### Hardware and Software Requirements

All software upgraded to the SN07 line up.

### Initial Configuration

All software upgraded to the SN07 line up.

### Upgrade Impact

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| ILRCLASS       | NEW                      | NEW                                |
| ISERVOPT       | CHANGED                  | UNCHANGED                          |

### Table Schema information

#### Name: ILRCLASS

International Line Restriction Class

#### Functional description

Table ILRCLASS contains the barring programs for the ILR line option

#### Usage sequence and implications (CM Only)

There is no requirement to datafill tables in a specific order.

#### Size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory          |
|------------------------|----------------|----------------|--------------------------------|
| ILRCLASS               | 0              | 100            | Memory is statically allocated |

#### Fields

The following table lists fields for ILRCLASS.

#### Table field descriptions

| Field | New or Changed | Subfield or refinement | Data dictionary type | Entry                     | Explanation and action                                                                          |
|-------|----------------|------------------------|----------------------|---------------------------|-------------------------------------------------------------------------------------------------|
| KEY   | New            | NIL                    | ILRCLASS_KEY         | VECTOR OF UP TO 16 CHAR'S | ILR_CLASS is the name of the barring program. It is used by the ILR line option                 |
| RCODE | NEW            | NIL                    | TWO_DIGIT_CODE       | VECTOR OF UP TO 2 DIGITS  | The RCODE identifies the barring program to the subscriber. It is unique in the table or empty. |

Table field descriptions

| Field   | New or Changed | Subfield or refinement | Data dictionary type     | Entry                                                     | Explanation and action                                                                        |
|---------|----------------|------------------------|--------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| IXLAOPT | NEW            | NIL                    | ILRCLASS_IXL<br>A_VECTOR | VECTOR OF<br>UP TO 32<br>IXLA_CLAS'S                      | Contains a list of international translation classes to be barred by this program             |
| DNOPT   | NEW            | NIL                    | ILRCLASS_DN_<br>VECTOR   | VECTOR OF<br>UP TO 10<br>VECTORS OF<br>UP TO 15<br>DIGITS | Contains a list of DNs which are barred additionally to the international translation classes |

**Datafill example**

The following example shows sample datafill for table ILRCLASS.

**Example entry in table ILRCLASS**

```
TABLE ILRCLASS
DIDD 02 (CNTL) (ICNTL) (INTL) $(09000) (09001)$
```

**Table release history update**

ISN07: Table was created

**Supplementary information**

Barring classes in this table can only be deleted if there is no line with ILR in the office referencing this tuple.

If during an ONP from a release before this activity there are no R-codes assigned in the ILRCLS tuple in table ISERVOPT the R-Code in table ILRCLASS is left empty.

**Translation verification other tools**

ILRCLASS does not use translation verification tools.

**Table/MIB/Remote Database Schema information****Name: ISERVOPT**

International Service Option

**Functional description**

unchanged

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

Unchanged

**Fields/OIDs**

The following table lists fields/OIDs for ISERVOPT.

SOPTSKEY = ILRCLS

If the entry in field SOPTSKEY is ILRCLASS, datafill field SOPTSVAR as shown in the field description table

**Table 1 Table field descriptions**

| Field    | New or Changed | Subfield or refinement | Entry   | Explanation and action                                                                                   |
|----------|----------------|------------------------|---------|----------------------------------------------------------------------------------------------------------|
| SOPTSVAR | Changed        | ILRCLS                 | OPTIONS | The options field is deleted. The information contained in this field is now available in table ILRCLASS |

**Datafill example**

The following example shows sample datafill for table ISERVOPT.

**Example entry in table ISERVOPT**

```
TABLE ISERVOPT
ILRCLS ILRCLS Y Y
```

**Table release history update**

ISN07: removed OPTIONS field in ILRCLS selector

**Supplementary information**

None

**Translation verification other tools**

ISERVOPT does not use translation verification tools.



## ***Product = World Trade***

### **A00002702 -- No Line Origination without Charging (Succession on DMS Int'l)**

#### ***Functional Description***

The purpose of this activity is to provide optionality for restricting line origination of the calls which does not have appropriate charging options. Required line options to originate a call when this functionality is enabled are:

- MOG option for IBN subscribers having CEPT option.
- SMDR line option for non-CEPT IBN subscribers
- SMDR line option for P-phone subscribers
- MOG or SMDR line option for ISDN (ISDNKSET) subscribers

For the cases where the originator line does not comply the above conditions, the call is sent to treatment at origination phase.

In addition, call origination is not allowed and sent to treatment for the below condition to avoid duplicate charging if this functionality is enabled:

- MOG and SMDR line options on the same IBN or ISDNKSET subscriber

#### **Functional behavior during call origination when NCW\_CHG is set to DISALLOWED**

| Line type | Has CEPT option | Has MOG option | Has SMDR option | SMDR datafill in XLA tables | Call origination | Charging method |
|-----------|-----------------|----------------|-----------------|-----------------------------|------------------|-----------------|
| IBN line  | Y               | Y              | Y               | N                           | Not allowed      | N/A             |
| IBN line  | Y               | Y              | Y               | Y                           | Not allowed      | N/A             |
| IBN line  | Y               | Y              | N               | N                           | Allowed          | Metering        |
| IBN line  | Y               | Y              | N               | Y                           | Not allowed      | N/A             |
| IBN line  | Y               | N              | Y               | N                           | Not allowed      | N/A             |
| IBN line  | Y               | N              | Y               | Y                           | Not allowed      | N/A             |
| IBN line  | Y               | N              | N               | N                           | Not allowed      | N/A             |
| IBN line  | Y               | N              | N               | Y                           | Not allowed      | N/A             |
| IBN line  | N               | N              | Y               | N                           | Allowed          | SMDR            |
| IBN line  | N               | N              | Y               | Y                           | Allowed          | SMDR            |
| IBN line  | N               | N              | N               | N                           | Not Allowed      | N/A             |

**Functional behavior during call origination when NCW\_CHG is set to DISALLOWED**

| Line type | Has CEPT option | Has MOG option | Has SMDR option | SMDR datafill in XLA tables | Call origination | Charging method |
|-----------|-----------------|----------------|-----------------|-----------------------------|------------------|-----------------|
| IBN line  | N               | N              | N               | Y                           | Not Allowed      | N/A             |
| IBN line  | N               | Y              | Y               | N                           | Not Allowed      | N/A             |
| IBN line  | N               | Y              | Y               | Y                           | Not Allowed      | N/A             |
| IBN line  | N               | Y              | N               | N                           | Not Allowed      | N/A             |
| IBN line  | N               | Y              | N               | Y                           | Not Allowed      | N/A             |
| P-Phone   | N/A             | N/A            | Y               | N                           | Allowed          | SMDR            |
| P-Phone   | N/A             | N/A            | Y               | Y                           | Allowed          | SMDR            |
| P-Phone   | N/A             | N/A            | N               | N                           | Not allowed      | N/A             |
| P-Phone   | N/A             | N/A            | N               | Y                           | Not allowed      | N/A             |
| BRI line  | N/A             | Y              | Y               | N                           | Not allowed      | N/A             |
| BRI line  | N/A             | Y              | Y               | Y                           | Not allowed      | N/A             |
| BRI line  | N/A             | Y              | N               | N                           | Allowed          | Metering        |
| BRI line  | N/A             | Y              | N               | Y                           | Not allowed      | N/A             |
| BRI line  | N/A             | N              | Y               | N                           | Allowed          | SMDR            |
| BRI line  | N/A             | N              | Y               | Y                           | Allowed          | SMDR            |
| BRI line  | N/A             | N              | N               | N                           | Not allowed      | N/A             |
| BRI line  | N/A             | N              | N               | Y                           | Not allowed      | N/A             |

In addition to usage of SMDR line option, SMDR may be activated during translation by setting the SMDR field to Y at the appropriate table IBNXLA tuple.

If SMDR is activated via translation option for an originator IBN or BRI line with MOG option during the call, then the call is sent to treatment to avoid duplicate charging. For this case, the call is sent to treatment after the digits were dialed.

For all mentioned cases where the call is sent to treatment because of using illegal charging method, an MTR 158 log is generated. Treatment type is “No\_software\_resource” NOSR. The existing treatment in DMS100 MMP is used.

The functionality is enabled by setting the metering system parameter NCW\_CHG in table MTRSYSPM to DISALLOWED. This parameter is renamed from the existing metering system parameter NCW\_MOG with no change in it's existing functionality.

Note that this activity does not cover successful generation of SMDR records or increasing of meter counts at the end of the call for the allowed calls.

### Changes in MTR 158 log format

For supporting the additional SMDR and MOG & SMDR interaction restrictions, existing MTR158 log text is enhanced. Also called DR field is added to log data text for SMDR activation from translation cases. For other log creation cases, there's no dialed digits since the call is sent to treatment during origination.

The new log output is given in the following figure:

#### Sample log report for MTR 158 log

```
RSNW4E07 MTR158 JUN12 15:17:50 9600 INFO INVALID CHARGING METHOD

HOST 02 0 00 06   DN 1027835476
CALLED DR 0
CALL RESULT: TRMT- No MOG option
```

Other possible call result texts printed within the log are:

- TRMT-MOG & SMDR on line
- TRMT- No MOG or SMDR on line
- TRMT- MOG option on a line without CEPT
- TRMT-SMDR activation during XLA

#### Possible call result texts in MTR 158 log

| Reason                                              | CALL RESULT:                            |
|-----------------------------------------------------|-----------------------------------------|
| No MOG option on a line with CEPT                   | TRMT- No MOG option                     |
| No SMDR or MOG option on a line without CEPT option | TRMT- No MOG or SMDR on line            |
| MOG option on a line without CEPT                   | TRMT- MOG option on a line without CEPT |
| SMDR and MOG options both exists on the line        | TRMT- MOG & SMDR on line                |

**Possible call result texts in MTR 158 log**

| Reason                                                       | CALL RESULT:                    |
|--------------------------------------------------------------|---------------------------------|
| SMDR activated during translation for a line with MOG option | TRMT-SMDR activation during XLA |

**Renaming of metering system parameter NCW\_MOG to NCW\_CHG**

Existing metering system parameter NCW\_MOG defined in table MTRSYSPM is renamed to NCW\_CHG within this activity.

NCW\_CHG has the same activation/ deactivation, ONP behavior with the old NCW\_MOG parameter. For the upgrades to ISN07 from older releases, the value of the NCW\_MOG parameter value will be transferred to NCW\_CHG.

**Complex call interactions for the feature**

Complex call interactions of this functionality is as below:

- For call forwarding scenarios, call diversion to another agent will not be allowed if diverting agent has no charging option.
- For conference calls (3WC, 6WC), when this feature is active, a call will not be originated after flash/add on leg of the complex call members without charging option. Agent will not get special dial tone after flash/add on leg and an MTR 158 log is generated.
- During enquiry call setup, flashing/ add on leg of an agent without charging option in the enquiry call is not allowed. The flash/ add on leg is ignored and the agent will not get special dial tone, also an MTR 158 log is generated.
- An IBN line with call waiting option and without charging option can get the call waiting tone during a call and use the feature.(Mentioned line is included in the first call as terminator).The restriction introduced for this case with the prior activity, 'No Line Origination Call Without Line Metering Option' (ACT.A59033820) is removed.

**SMDR Restrictions when NCW\_CHG is set to DISALLOWED**

In case an agent with SMDR option in IDLE state is involved in an active complex call (call diversion, call transfer) and an SMDR record generation for this agent is expected for that call, following operations are restricted:

- Usage of OUT, CLN, CDN, DEL SERVORD commands on the agent
- Removing of SMDR option from the agent via DEO SERVORD command or via table control operations.
- Removing of the agent from IBNLINES/KSETLINE tables via table control operations.

- Adding SUS, DOR, RESL options to the agent via SERVORD and table control operations.

Note that these restrictions are applicable if NCW\_CHG parameter in table MTRSYSPM is set to DISALLOWED.

### **MOG option restrictions when NCW\_CHG is set to DISALLOWED**

If a line with MOG option has active call forwarding or is not idle, then below operations are restricted:

- Addition of DOR SUS RESL options to the line via SERVORD.
- Deleting of MOG option from the line via servord or via table control operations.
- Removing the line with OUT command or via table control operations.

Note that these restrictions are applicable if NCW\_CHG parameter in table MTRSYSPM is set to DISALLOWED.

### **Hardware Requirements or Dependencies**

None

### **Software Requirements or Dependencies**

None

### **Limitations and restrictions**

This feature is not activated for trunk originated calls.

This function is available only for line origination types which are IBN, ISDNKSET or P-phone.

For MLH and DLH hunt groups, call origination is not allowed for members that have SMDR option if the pilot DN has MOG option assigned.

### **Interactions**

This feature is the enhancement of the existing ISN04 activity 'No Line Origination Call Without Line Metering Option' (ACT.A59033820). Except for the points stated in this document, 'No Line Origination Without Charging' feature provides the same functionality with the mentioned A59033820 feature.

QLT command for a MLH or DLH hunt group member BRI line does not display the MOG option assigned to the huntgroup pilot. This is a general behavior for QLT and pilot DN of the huntgroup should be checked for detecting MOG option existence on the hunt group.

## Applicable customer facing sections

### Fault Management

Logs ☒ X ☐

Alarms ☐ N/A ☐

### Configuration

Data Schema ☒ X ☐

User Interface ☐ N/A ☐

Element Management ☐ N/A ☐

Security ☐ N/A ☐

Service Order ☐ N/A ☐

Office Parameters ☐ N/A ☐

Accounting (includes AMA billing) ☐ N/A ☐

Performance (includes operational measurements) ☐ N/A ☐

## Glossary

| Term     | Description                                          |
|----------|------------------------------------------------------|
| ONP      | One Night Process                                    |
| MOG      | Meter Origination Group                              |
| ISDNKSET | Class of agents for BRI line type                    |
| IBN      | Integrated Business Network                          |
| NCW_MOG  | No call without MOG                                  |
| NCW_CHG  | No call without charging                             |
| ICR      | International Call Recording                         |
| P-phone  | Proprietary Phone                                    |
| CENTREX  | Centralized Exchange                                 |
| CEPT     | Conference of European Postal and Telecommunications |
| SMDR     | Station Message Detail Recording                     |

## ***Fault Management for A00002702***

### **Fault management strategy**

N/A

### **Fault management tools and utilities**

N/A

### **Logs**

#### **Explanation**

Log Title: ILLEGAL CHARGING METHOD

Name: MTR 158

Description: This log is generated when a line origination from IBN, ISDNKSET or P-phone without a valid charging option is attempted. This log is generated only if the 'No Line Origination Without Charging' feature is activated by setting NCW\_CHRG to DISALLOWED.

Event type: Information

#### **Format**

MTR158 <mmdd hh:mm:ss ssdd> INFO INVALID CHARGING METHOD

<cpid of origination> <DN of origination>

CALLED DR: <Dialed digits>

CALL RESULT: <Text about the call behavior>

#### **Example:**

RSNW4E07 MTR158 JUN12 15:17:50 9600 INFO INVALID CHARGING METHOD

HOST 02 0 00 06 DN 1027835476

CALLED DR 0

CALL RESULT: TRMT- No MOG option

## Field descriptions

### Field descriptions

| Field                        | Value         | Description                                  |
|------------------------------|---------------|----------------------------------------------|
| CPID of origination          | Host number   | Identifies the line CP_ID of the originator. |
| DN of origination            | DN number     | Identifies the DN number of the originator.  |
| Called DR                    | Digits        | Identifies the dialed digits                 |
| Text about the call behavior | Character set | Indicates why a call goes to treatment.      |

## Action

This log indicates a denied call attempt originating from an agent without valid charging option. The agent will be able to originate calls after a valid charging option is assigned to this agent by the operator.

## Associated Operational Measurements or Performance Measurements

N/A

## Additional information

### Possible call result texts in MTR 158 log

|                                                              |                                         |
|--------------------------------------------------------------|-----------------------------------------|
| No MOG option on a line with CEPT                            | TRMT- No MOG option                     |
| No SMDR or MOG option on a line without CEPT option          | TRMT- No MOG or SMDR on line            |
| MOG option on a line without CEPT                            | TRMT- MOG option on a line without CEPT |
| SMDR and MOG options both exists on the line                 | TRMT- MOG & SMDR on line                |
| SMDR activated during translation for a line with MOG option | TRMT-SMDR activation during XLA         |

## Alarms

N/A

## Related documentation

N/A



## Configuration for A00002702

### Data schema (DS) (CM, MIBS, RDB)

#### New/modified tables, MIBs, or Database Schema

##### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| MTRSYSPM       | CHANGED                  | UNCHANGED                         |

#### Table/MIB/Remote Database Schema information

Name: MTRSYSPM

##### Functional description

NCW\_MOG field of the table is renamed to NCW\_CHG.

##### Usage sequence and implications (CM Only)

Current datafill order unchanged.

##### Size

##### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                              |
|------------------------|----------------|----------------|----------------------------------------------------------------------------------------------------|
| MTRSYSPM               | 10             | 10             | One tuple is added to this table. That means 1 bit memory is allocated from the memory conception. |

##### Fields/OIDs

The following table lists fields/OIDs for MTRSYSPM.

##### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Entry                 | Explanation and action             |
|---------|----------------|------------------------|-----------------------|------------------------------------|
| NCW_CHG | Changed        | -                      | Allowed or Disallowed | Field name is renamed from NCW_MOG |

**Datafill example****Datafill example of table MTRSYSPM (function is inactive)**

```

TOP
MTRPARM MTRDATA
-----
MFP MFP SUCCEED
MAXPULSE MAXPULSE 2
MTRBCKUP MTRBCKUP 0 0 2
MTRAUDIT MTRAUDIT 0 0 2
PULMISTH PULMISTH 1
CRTCOUNT CRTCOUNT 500
EMD EMD NO 4 15 1 20000
NCW_CHG NCW_CHG ALLOWED
.....
BOTTOM

```

**Datafill example of table MTRSYSPM (function is active)**

```

TOP
MTRPARM MTRDATA
-----
MFP MFP SUCCEED
MAXPULSE MAXPULSE 2
MTRBCKUP MTRBCKUP 0 0 2
MTRAUDIT MTRAUDIT 0 0 2
PULMISTH PULMISTH 1
CRTCOUNT CRTCOUNT 500
EMD EMD NO 4 15 1 20000
NCW_CHG NCW_CHG DISALLOWED
.....
BOTTOM

```

**Table release history update**

NCW\_MOG field is renamed to NCW\_CHG

**Supplementary information**

None

**Translation verification other tools**

MTRSYSPM does not use translation verification tools.

***Product = WT***

**A00002754 -- China INAP Compliance Development Part 1 (Succession on DMS)**

***Functional Description***

This feature is to improve Nortel SSP's INAP functionality to comply with China INAP requirement.

### Functional Overview

The enhancement is based on the China INAP specification and China INAP test specification (see reference 1, 2). Following enhancement is provided:

- CallGap(CG) parameter support enhancement: gapInterval.
- Multiple CallGaps support enhancement.
- ResetTimer parameter support enhancement: timerValue.
- CallInformationRequest/Report parameter support enhancement: legID, calledAddress & releaseCause.
- ActiveServiceFiltering parameter support enhancement: sfBillingRecordCharacteristics.
- ApplicationContextName negotiation support.
- ApplyChargingReport enhancement: conversation time measurement
- Support CS-1R ICA.

This feature is developed for both TDM and IP platform.

These functions are not agent specific, they are supported on the originating agents with the condition: the originating agent <-> INAP interworking is ALREADY supported. For example, China ISUP, IBN lines, SIP-T (no ISUP), China PRI.

The office parameter: INAP\_Variant is used for China INAP specific enhancement: only when INAP\_Variant = Chinese, the China INAP specific enhancement will take effect.

Following sections give detail of this feature:

### CG parameter Support Enhancement: gapInterval

This enhancement is general for all INAP market.

This enhancement is to enhance the processing for gapInterval value '0'.

The CG parameter gapInterval specifies the minimum time between calls being allowed through. A CG with gapInterval = 0 indicates that calls matching the CG's gapCriteria are not to be rejected. An InitialDP is sent to SCP, with cGEncountered set to the value of this CG's controlType.

**Note:** InitialDP will carry the cGEncountered when 'CGE' is datafilled in INITDP\_PARMS of table SERVINFO.

### Multiple CGs Support Enhancement

This enhancement is to comply with China INAP specific rules for multiple CGs scenarios (please refer to reference 2):

Suppose: CG2 is received after CG1, within CG1's duration.

#### 1. Two CGs with same gapCriteria but different controlType

This enhancement is China INAP specific.

In this scenario:

- CG1's data should be overwritten by CG2 EXCEPT the controlType: the gapIndicator in CG1 is replaced by CG2's gapIndicator, gapTreatment in CG1 is replaced (or appended) by CG2's gapTreatment if it exists in CG2.
- The controlType is set to manuallyInitiated because its priority is higher.

As a result, there won't be a new CG data saved for CG2 but CG1's parameters are updated. For example: Following two CGs are received:

#### CG1 and CG2 with Same gapCriteria But Different controlType

|                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{<br/>    gapCriteria {gapOnService 200}<br/>    gapIndicator {duration=30000sec, gapInterval=30sec}<br/>    controlType=manuallyInitiated<br/>}</pre>                                           |
| <pre>CG2{<br/>    gapCriteria {gapOnService 200}<br/>    gapIndicator {duration=60000sec, gapInterval=60sec}<br/>    controlType= sCPOverloaded<br/>    gapTreatment {toneID=1, duration=10}<br/>}</pre> |

Then CG1 will be updated to:

#### Updated CG1

```
CG1{  
    gapCriteria {gapOnService 200}  
    gapIndicator {duration=60000sec, gapInterval=60sec}  
    controlType=manuallyInitiated  
    gapTreatment {toneID=1, duration=10}  
}
```

When next INAP calls comes in, the above CG data will be used.

In the above example, if CG1's controlType is sCPOverloaded and CG2's controlType is manuallyInitiated, the updated CG1 will be the same with that is shown in Table "Updated CG1" because manuallyInitiated has higher priority.

#### 2. Two CGs with different gapCriteria

This enhancement is general for all INAP market.

In this scenario, these two CGs co-exist in SSP. If an IN service is to be triggered and it meets both of these two CG's criteria, then the CG to be activated should be the one whose criteria is more specific.

"More specific" means: first, gapCriteria has a higher priority. Following list shows gapCriteria from high priority to low priority:

- calledAddressValueAndService
- calledAddressValue
- callingAddressValueAndService
- gapOnService

Second, if two CGs have a gapCriteria with same priority, "More specific" means the gapCriteria is more detail. Following are examples:

- a. For gapCriteria calledAddressValueAndService, calledAddressValue and callingAddressValueAndService, if two CGs are found in both control types (manuallyInitiated and sCPOverloaded), the CG, whose gapCriteria has higher priority, takes effect.

For example: Following two CGs are received:

**CG1 and CG2 with gapCriteria: calledAddressValue**

|                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{     gapCriteria{calledAddressValue, 8765}     gapIndicator {duration=60000sec, gapInterval=60sec}     controlType=manuallyInitiated }</pre> |
| <pre>CG2{     gapCriteria{calledAddressValue, 87654}     gapIndicator {duration=60000sec, gapInterval=60sec}     controlType=sCPOverloaded }</pre>    |

when an IN service with calledAddressValue is 876543 is to be triggered, CG2 should be activated because its matched address value is longer, in another word, it's more specific.

- a. For gapCriteria gapOnService, the one has an exact match takes effect. For example: Following two CGs are received:

**CG1 and CG2 with gapCriteria: gapOnService**

|                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{     gapCriteria{gapOnService, 1}     gapIndicator {duration=60000sec, gapInterval=60sec}     controlType=manuallyInitiated }</pre> |
| <pre>CG2{     gapCriteria{gapOnService, 10}     gapIndicator {duration=60000sec, gapInterval=60sec}     controlType=sCPOverloaded }</pre>    |

When an IN service is to be triggered and

- if the service key is 1, CG1 should be activated;
  - if the service key is 10, CG2 should be activated;
  - if the service key is 101, no CG should be activated.
- a. If the criteria is met in both control types and they are the same specific, the CG whose controlType is manuallyInitiated takes effect because its priority is higher. For example: the incoming call matches the criteria of two CGs (Table "CG1 and CG2 have the same

gapCriteria but different controlType”), in this case CG1 should take effect if both of them meet the gap criteria.

#### CG1 and CG2 have the same gapCriteria but different controlType

|                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>CG1{     gapCriteria{calledAddressValue, 8765}     gapIndicator {duration=60000sec, gapInterval=60sec}     controlType=manuallyInitiated }</pre> |
| <pre>CG2{     gapCriteria{calledAddressValue, 8765}     gapIndicator {duration=30000sec, gapInterval=60sec}     controlType=sCPOverloaded }</pre>     |

**Note:** This won't happen in China INAP because these two CGs can not coexist, see requirement (1).

#### RT Parameter Support Enhancement: timerValue

This enhancement is to extend the supported timerValue value.

In INAP call, timer Tssf is used to prevent the call from suspending too long, protect the dialogue between SSF and SCF. ResetTimer operation is sent from SCF to SSF, to restart Tssf timer using the timerValue, so that Tssf will not time out. It only takes effect in the following 3 states:

- waiting for instruction (WFI)
- waiting for end of user interaction (WFEOUI)
- waiting for end of temporary connection (WFEOTC)

This feature performs the following enhancement:

1. report UnexpectedDataValue error when the timerValue exceed 0-2047.

This enhancement is China INAP specific.

2. extend the supported timer values between 10 seconds & 60 seconds: 15, 20, 25, 30, 35, 40, 45, 50, 55 seconds support is added. For in-range value other than one of the above values, it is rounded up to the next supported value.

This enhancement is general for all INAP market.

3. extend the supported range for timerValue in WFI state to 1-60 seconds.

This enhancement is general for all INAP market.

## CIRQ/CIRP Parameter Support Enhancement: legID, calledAddress & releaseCause

This enhancement is general for all INAP market.

This enhancement is to:

1. support CS-1R CIRP: if CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included:

**Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                             |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200     | <pre>(INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$) (TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$) (CS1R ( CIRP) \$) \$</pre> |

2. add support for calledAddress and releaseCause parameters in CIRQ/CIRP:
  - calledAddress indicates the incoming called party address that was received by the SSF (i.e. before translation by the SCF) and is as available on the UNI or NNI and interpreted as per the numbering plan. The format is shown in Table “calledAddressValue Format (it uses the format of ISUP parameter: GenericNumber)”.
  - releaseCause is defined the same as Q.762, which is applied to the indicated or default party. The format is shown in Table “releaseCauseValue Encoding”. The diagnostics is not included in the releaseCauseValue of CIRP.

**Note:** for release cause, if the incoming release message is not in Q.762 format, then default value: ‘normal clearing’ is used.

**calledAddressValue Format (it uses the format of ISUP parameter: GenericNumber)**

|                            |                             |   |   |                    |   |                |   |
|----------------------------|-----------------------------|---|---|--------------------|---|----------------|---|
| 8                          | 7                           | 6 | 5 | 4                  | 3 | 2              | 1 |
| Number qualifier indicator |                             |   |   |                    |   |                |   |
| Odd/even                   | Nature of address indicator |   |   |                    |   |                |   |
| NI Ind.                    | Numbering plan Ind.         |   |   | Presentation Ind.  |   | Screening Ind. |   |
| 2nd address signal         |                             |   |   | 1st address signal |   |                |   |
| .....                      |                             |   |   | .....              |   |                |   |
| Filler(if necessary)       |                             |   |   | nth address signal |   |                |   |



**releaseCauseValue Format (same as ISUP parm: CauseIndicators)**

|                      |                 |   |       |              |   |   |   |
|----------------------|-----------------|---|-------|--------------|---|---|---|
| 8                    | 7               | 6 | 5     | 4            | 3 | 2 | 1 |
| Ext.                 | Coding standard |   | spare | Location ... |   |   |   |
| Ext.                 | Cause Value     |   |       |              |   |   |   |
| Diagnostics (if any) |                 |   |       |              |   |   |   |
| .....                |                 |   |       |              |   |   |   |
| Diagnostics (if any) |                 |   |       |              |   |   |   |

**ASF Parameter Support Enhancement: sFBillingRecordCharacteristics**

This enhancement is general for all INAP market.

This enhancement is to provide support the sFBillingChargingCharacteristics. Whatever received, this parameter and sub-parameter is treated as: noINCharging.

The following functions are provided for sFBillingChargingCharacteristics subparameter:

- noINCharging
- iNCharging
- sendChargeInformation

**Note:** the decoding of sFBillingChargingCharacteristics is not supported. When received correct sFBillingChargingCharacteristics, no handling, no reject or return error. When received sFBillingChargingCharacteristics with problems, no handling, no reject or return error.

Following table gives the definition of SFBCC (highlighted in bold):

**China INAP ActiveServiceFiltering Definition:**

```

ActiveServiceFiltering ::= SEQUENCE {
    filteredCallTreatment [0] IMPLICIT SEQUENCE {
        sFBillingChargingCharacteristics [0] CHOICE {
            noINCharging [0] IMPLICIT NULL,
            iNCharging [1] IMPLICIT SEQUENCE {
                .....} OPTIONAL },
        sendChargeInformation [2] IMPLICIT SEQUENCE {...} OPTIONAL,
        informationToSend [1] CHOICE {
            maximumNumberOfCounters [2] IMPLICIT INTEGER (1..100) OPTIONAL,
            releaseCause [3] IMPLICIT OCTET STRING (SIZE (2..20)) OPTIONAL},
        .....
    }

```

**ACN Negotiation Support**

This enhancement is to provide the following functions:

**1. Support China INAP ACNs**

This enhancement is China INAP specific.

The ACN definition of China INAP is shown in the following table:

**China INAP Specific Application Context Name (Based on ISO/IEC DIS 8824-1)**

```

ACN pattern:
D'00 - CCITT (ITU-TS)
D'03 - Network Operator
D'xxxx - DNIC (market based)
D'01 - INAP field
D'01 - INAP
D'01 - Application Context
D'xx - specific AC value (see below)
D'00 - market based version

```

**China INAP Specific Application Context Name (Based on ISO/IEC DIS 8824-1)**

ACN Values:

DNIC = D'4605

Specific AC values: xx = H'00 - H'07

00 - SSP uses InitialDP to initiate dialogue

01 - SSP uses AssistRequestInstruction to initiate dialogue

03 - SCP uses InitiateCallAttempt to initiate dialogue

04 - SCP uses CallGap to initiate dialogue

05 - SCP uses ActivateServiceFiltering to initiate dialogue

06 - SSP uses ServiceFilteringResponse to initiate dialogue

ACN coding: H'(03 a3 7d 01 01 01 xx 00)

## 2. Support ACN negotiation

This enhancement is general for all INAP market.

Following ACN negotiation rules for SSP are supported:

- a. when SSP sends TC-BEGIN package:
  - encode the correct ACN into the package and store the ACN value.
- b. when SSP receives TC-BEGIN package:
  - if the ACN is supported, go on processing the TC component.
  - else, response SCP with TC-U-ABORT. Abort reason is 'application context name not supported'.
  - when processing component, if the component contains a China INAP operation, verify the application context according to the operation code (please refer to Table "China INAP Specific Application Context Name (Based on ISO/IEC DIS 8824-1)"). If fails, response SCP with TC-U-ABORT, abort reason is 'application context name not supported'. Else, go on processing the component.
- c. when SSP receives the first response from SCP in TC-CONTINUE/TC-END:
  - if the ACN match the ACN value of previous TC-BEGIN, go on processing the TC component.
  - else, response SCP with TC-U-ABORT. Abort reason is 'application context name not supported'.

- d. when SSP receives the first response from SCP in TC-U-ABORT:
  - release the current dialogue.

### **ACR Enhancement: Conversation Time Measurement**

This enhancement is China INAP specific.

This enhancement is to fix the following problem: For INAP call being charged using AC operation, when the conversation is longer than 255 seconds, the duration value in ACR will go incorrect. This problem exists in max conversation time, duration, report interval measurement.

### **Support CS-1R ICA**

This enhancement is general for all INAP market.

This enhancement is to:

- support ICA in TC-BEGIN package
- support multiple components in TC-BEGIN package

The operation sequence must be: the first operation is ICA; the subsequence call processing operations could be RRBE, CONT, CWA, FCI, AC; the last operation must be CONT or CWA.

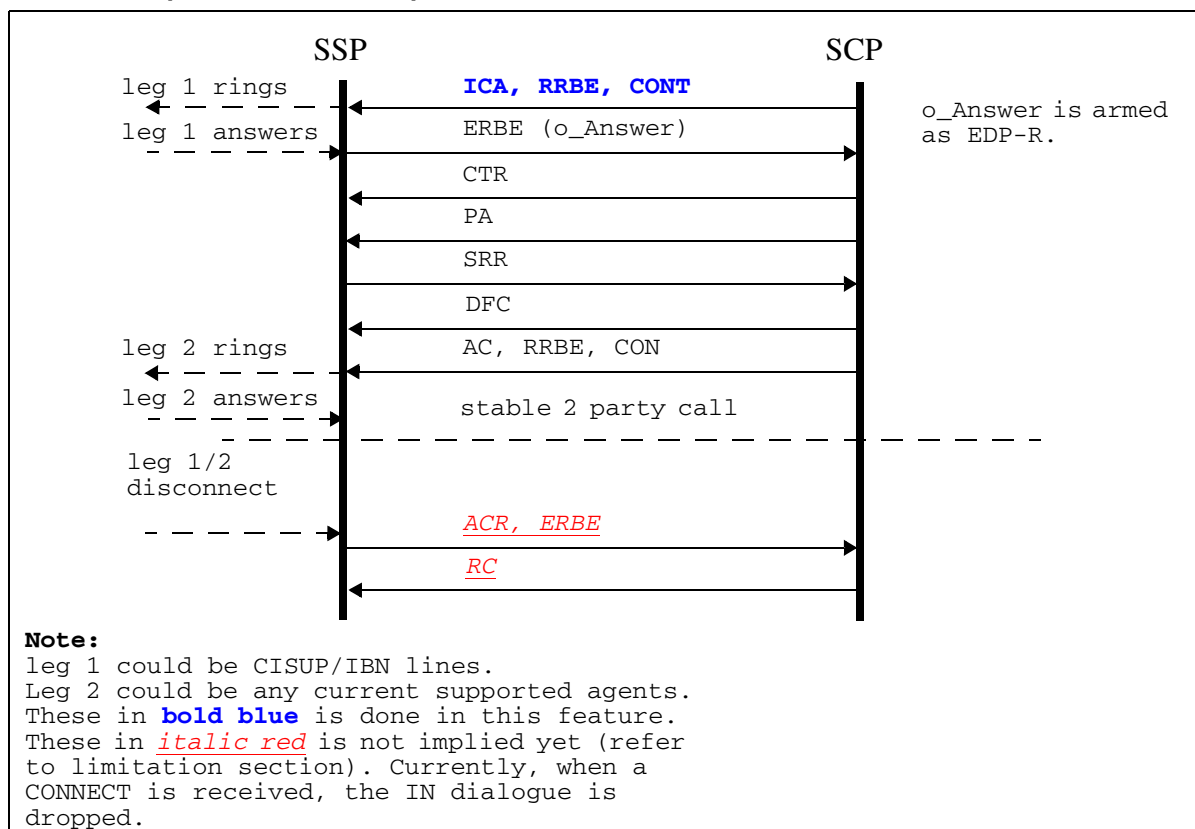
If the operations in the BEGIN package does not obey the rule, the package will be aborted.

If the package match the above rules but has logic conflict in the operations it carries, then it is out of this feature's scope. The existing handling will be used. Also the imply and handling of each operation except ICA is out of this feature's scope.

- support CS-1R ICA
- support virtual agent -> IBN line interworking.

Following figure shows an example for ICA usage:

## China ICA Implementation Example



### Data Requirement

Standard datafill for IN will be used.

### Hardware Requirements or Dependencies

N/A.

### Software Requirements or Dependencies

N/A.

### Limitations and restrictions

- This feature does not support the following ACN negotiation scenario: when SSP receives the first response from SCP in TC-U-ABORT, with abort reason is 'application context name not supported', then verify its ACN value, if it is valid, initiate a new dialogue using the new ACN, and release the current dialogue.
- This feature only accepts the Chinese ASF SfbillingChargeCharacteristics, does not handle it. In EINTRACE, this parms is displayed. There is no any handling on this parameter.

- For parameters not mentioned in this document, their implementation exceeds this feature's range.
- In the scenario that SCP originates a call to IBN lines, only the IBN lines use DGT are supported.
- In the scenario that SCP originates a call to IBN lines, after SCP sends CONNECT to SSP, the SSP setups the stable 2 party call and ends the IN dialogue using a pre-arranged end. The stable 2 party call is treated as non-IN call.

## Interactions

N/A.

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema X

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters N/A

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description              |
|------|--------------------------|
| AC   | ApplyCharging            |
| ACN  | Application Context Name |
| ACR  | ApplyChargingReport      |
| ASF  | ActiveServiceFiltering   |
| CIRP | CallInformationReport    |
| CIRQ | CallInformationRequest   |

| Term | Description                          |
|------|--------------------------------------|
| CG   | CallCap                              |
| CON  | Connect                              |
| CONT | Continue                             |
| CTR  | ConnectToResource                    |
| CWA  | ContinueWithArgument                 |
| DFC  | DisconnectForwardConnection          |
| DGT  | Digit Tone                           |
| ERBE | EventReportBCSMEvent                 |
| ICA  | InitialCallAttempt                   |
| IN   | Intelligent Network                  |
| INAP | Intelligent Network Application Part |
| ISUP | ISDN User Part                       |
| PA   | PlayAnnouncement                     |
| PCUI | PromptAndCollectUserInformation      |
| RC   | ReleaseCall                          |
| RRBE | RequestReportBCSMEvent               |
| RT   | ResetTimer                           |
| SCP  | Service Control Point                |
| SRR  | SpecialResourceReport                |
| SSP  | Service Switching Point              |

### Recommended Reading/References

1. GF017-1995 China INAP Specification
2. YDN107.2-1999, INAP test spec - SSP part
3. DMS Implementation of CS-n INAP (ITU-T Recommendations Q.12 n8), release PRE 10.0

### *Configuration for A00002754*

#### Hardware and Software Requirements

N/A.

**Initial Configuration**

N/A.

**Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A.

**Upgrade Impact**

N/A.

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| OFCENG         | Changed                  | Changed                            |
| SERVINFO       | Changed                  | Unchanged                          |

**Table/MIB/Remote Database Schema information****Name: OFCENG****Functional description**

The range of INAP\_TSSF\_WFI\_TIMER is changed from '1-10' to '1-60', and the datafillable value is changed from '1-10' to '1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60'.

Usage example: suppose the following datafill is supplied.

**Datafill Example:**

```
TABLE: OFCENG
PARMNAME PARMVAL
-----
INAP_TSSF_WFI_TIMER 15
```

The SSP will use value 15 as the default timer in the WFI state.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.



**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| OFCENG                 | no change      | no change      | N/A                   |

**Fields/OIDs**

The following table lists fields/OIDs for OFCENG.

**Table field descriptions**

| Field               | New or Changed | Subfield or refinement | Entry             | Explanation and action                     |
|---------------------|----------------|------------------------|-------------------|--------------------------------------------|
| INAP_TSSF_WFI_TIMER | Changed        | refinement             | OFFICE_PARM_VALUE | value range and datafillable value changed |

**Datafill example****Datafill Example:**

```
TABLE: OFCENG
PARMNAME PARMVAL
-----
INAP_TSSF_WFI_TIMER 15
```

**Table release history update**

The range of INAP\_TSSF\_WFI\_TIMER is changed from '1-10' to '1-60', and the datafillable value is changed from '1-10' to '1-10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60'.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Name: SERVINFO****Functional description**

A new selection: CIRP is introduced into CS1R option to indicate that: If CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included:

**Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                        |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -----   |                                                                                                                                                               |
| 200     | (INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$)<br>(TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$)<br>(CS1R ( CIRP) \$) \$ |

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | no change      | no change      | N/A                   |

**Fields/OIDs**

The following table lists fields/OIDs for SERVINFO.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry            | Explanation and action  |
|-------|----------------|------------------------|------------------|-------------------------|
| CS1R  | Changed        | refinement             | enumerated value | Add new selection: CIRP |

**Datafill example****Table SERVINFO**

| SERVIDX | OPTION                                                                                                                                                        |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -----   |                                                                                                                                                               |
| 200     | (INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (CPC) (EVENT_TYPE) \$)<br>(TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$) (TCAP_VERSION CCITT_V1) \$)<br>(CS1R ( CIRP) \$) \$ |

**Table release history update**

A new selection: CIRP is introduced into CS1R option to indicate that: If CIRP is datafilled in the CS1R option of table SERVINFO, the outgoing CIRP will use the CS-1R format, the legID will not be included.

**Supplementary information**

N/A.

**Translation verification other tools**

N/A.

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

N/A.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

N/A.

**Configuration Walkthrough**

N/A.

***Product = World Trade*****A00002761 -- ACRJ enhancement for Hong Kong (Succession on DMS)****Description**

This activity will enhance the existing ACRJ functionality in ISN07 to accept or reject the HKISUP to line calls with NI=1 in incoming HKISUP IAM/INF based on the new office parameter NI\_INCOMPL\_ACRJ in table OFCVAR.

**New office parameter NI\_INCOMPL\_ACRJ**

New office parameter NI\_INCOMPL\_ACRJ is introduced into table OFCVAR. This parameter can be one of the following values: 'OFF', 'REJECT', 'ACCEPT' and the default value is 'OFF'.

The following diagram shows the datafill example of new office parameter NI\_INCOMPL\_ACRJ in table OFCVAR.

```

TABLE: OFCVAR
>pos ni_incompl_acrj
  NI_INCOMPL_ACRJ                                OFF
>cha
PARMVAL: OFF
>reject
TUPLE TO BE CHANGED:
  NI_INCOMPL_ACRJ                                REJECT
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
JOURNAL FILE INACTIVE

```

### Enhance ACRJ function for HKISUP to line calls

The following table shows the enhanced ACRJ functionality for HKISUP to line calls.

#### Enhanced ACRJ functionality for HKISUP to line calls

| Datafill in table<br>OFCVAR | CGPN NI | CGPN PI    | Call is rejected by<br>ACRJ service in<br>ISN07? |
|-----------------------------|---------|------------|--------------------------------------------------|
| NI_INCOMPL_ACRJ=A<br>CCEPT  | 1       | -          | No                                               |
|                             | 0       | 01         | Yes                                              |
|                             | 0       | 00, 10, 11 | No                                               |
| NI_INCOMPL_ACRJ=R<br>EJECT  | 1       | -          | Yes                                              |
|                             | 0       | 01         | Yes                                              |
|                             | 0       | 00, 10, 11 | No                                               |
| NI_INCOMPL_ACRJ=<br>OFF     | -       | 01         | Yes                                              |
|                             | -       | 00, 10, 11 | No                                               |

*Note: HKISUP in this document refer to HongKong variant of ETSI ISUP v2*

### Hardware Requirements or Dependencies

N/A

### Software Requirements or Dependencies

N/A

## Limitations and restrictions

N/A

## Interactions

N/A

## Applicable customer facing sections

### Fault Management

Logs N/A

Alarms N/A

### Configuration

Data Schema N/A

User Interface N/A

Element Management N/A

Security N/A

Service Order N/A

Office Parameters X

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term | Description             |
|------|-------------------------|
| CGPN | Calling Party Number    |
| IAM  | Initial Address Message |
| INF  | Information Message     |
| NI   | Incomplete Indicator    |
| PI   | Presentation Indicator  |

## References

1. HongKong OFTA 2202 issue 3- Network connection specification for network-to-network connection of the public telecommunications networks (PTNs) in Hong Kong based on ITU-T signalling system NO. 7
2. CLI and CLI related service issue 4

## ***Product = World Trade***

### **A00002844 -- Excessive Metering Detection (EMD) support for Metered Trunks (Succession on DMS)**

#### ***Functional Description***

EMD detects and reports the lines and trunks whose meter counts reach a threshold value. The activation, start time, period and threshold values are provided by provisioning.

EMD functionality is enhanced for metered trunks with this ISN07 activity.

When the feature is activated, a process is scheduled to wake up at certain times defined by the start time and period. This process runs periodically and compares the current meters of trunk agents with the previously copied ones. The meter delta values obtained from the comparison are compared with a threshold value provisioned prior to the feature activation. The agents whose meter counts reach the threshold value are reported with a new log. After all meters of trunk agents are checked, these values are copied to be used by the next run of the process.

Any desired metered trunk agent can be excluded from EMD process by assigning NEMD (No Excessive Metering Detection) option to that agent in TRKOPTS table.

When the feature is deactivated, EMD process is disabled and allocated data store for the previous meter counts is freed.

This feature can be divided into 6 parts in terms of behavior:

- Provisioning
- Activation/deactivation
- Trunk option
- Log format
- Detection process
- Robustness
- ONP

#### **Provisioning**

Existing EMD tuple in MTRSYSPM table is enhanced to include a separate threshold value for trunks. All other fields are common for both line and trunk agents. Changed form of EMD tuple includes the following fields:

- **ACTIVATION**  
Identifies whether the feature is activated or not.
- **START\_TIME** (Hour and Minute)  
Indicates the start time of EMD process in terms of hour and minute.
- **PERIOD**  
Indicates running interval of EMD process in terms of days.
- **LINE\_THRESHOLD** (*renamed*)  
Indicates the expected maximum value of total delta between previous and current meter counts of a line.
- **TRUNK\_THRESHOLD** (*new*)  
Indicates the expected maximum value of total delta between previous and current meter counts of a trunk. If range of trunk threshold is calculated in the same logic with line, it is found as 0.7,999,999,999,992. But this value can not be supported in terms of coding/compile issues. The maximum value that can be supported is 2,147,483,647. According to this maximum value of trunk threshold is decided as 2,100,000,000.

Ranges of parameters of EMD tuple are as follows:

**EMD tuple with ranges**

| Field name      | Range              |
|-----------------|--------------------|
| ACTIVATION      | NO, YES            |
| HOUR            | 0 TO 23            |
| MINUTE          | 0 TO 59            |
| PERIOD          | 1 TO 30 (day)      |
| LINE_THRESHOLD  | 0 TO 799,999,992   |
| TRUNK_THRESHOLD | 0 TO 2,100,000,000 |

The default values of these fields are as follows:

**EMD tuple with default values**

| Field name     | Default Value |
|----------------|---------------|
| ACTIVATION     | NO            |
| HOUR           | 4             |
| MINUTE         | 15            |
| PERIOD         | 1             |
| LINE_THRESHOLD | 20,000        |

**EMD tuple with default values**

| Field name      | Default Value |
|-----------------|---------------|
| TRUNK_THRESHOLD | 200,000       |

With these default values, EMD process will start at 4:15 am and will be repeated every day.

It is restricted to add or delete a tuple to/from MTRSYSPM table. So EMD tuple can only be changed. The following is a change example of EMD tuple:

**Change example for EMD tuple in table MTRSYSPM**

```
>pos EMD
      EMD      EMD NO 10 30 2 300
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
MTRSEL: EMD
>EMD
ACTIVATION: NO
>yes
HOUR: 10
>4
MINUTE: 30
>15
PERIOD: 2
>1
LINE THRESHOLD: 300
>500
TRUNK THRESHOLD: 200
>400
TUPLE TO BE CHANGED:
      EMD      EMD YES 4 15 1      500 400
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
Store allocation is running.
Please wait...
EXCESSIVE METERING DETECTION process has been activated.
TUPLE CHANGED
JOURNAL FILE INACTIVE
>
```

**Trunk Option**

EMD process is run for all metered lines and trunks. In order to be excluded from this process, specified trunk is assigned with NEMD (No Excessive Metering Detection) option in TRKOPTS table.



Trunks must have ICMOG/OGMOG option in table TRKOPTS in order to assign NEMD option successfully.

#### NEMD Option Datafill Example in Table TRKOPTS

```
TABLE TRKOPTS
lis all
TOP
OPTKEY                      OPTINFO
-----
ICPRIBA ICMOG      ICMOG MOG_3
ICPRIBA NEMD      NEMD
BOTTOM
```

### Activation/Deactivation

Existing EMD process is used with this feature. This process survives forever and sleeps till it is activated. Activation is provided by datafilling ACTIVATION field of existing EMD tuple in MTRSYSPM table as “YES”.

Behavior of EMD process activation/deactivation for metered lines is not changed and it is same for trunks.

In case of activation, the following scenarios and messages are possible:

- System starts to allocate data store for metered lines and trunks and this is informed with a message. Please refer to [“Info message for the store allocation”](#). If store allocation fails, the operator is warned with a message and activation is rejected. Please refer to [“Message for the store allocation failure”](#). If store allocation is completed successfully then the operator is informed with a message and feature is activated. Please refer to [“Info message for the process activation”](#).

#### Info message for the store allocation

```
Store allocation is running.
Please wait...
```

#### Message for the store allocation failure

```
There is NOT ENOUGH DSPERM memory available.
Process could not be activated.
```

#### Info message for the process activation

```
EXCESSIVE METERING DETECTION process has been activated.
```

- If process died a time ago due to traps or some other reasons, in order to activate the feature any kind of a restart is needed and if so the operator is

warned with a message and activation is rejected. Please refer to [“Warning message if a restart is needed for activation”](#) . If a restart is necessary for the activation, WARM RESTART is recommended.

**Warning message if a restart is needed for activation**

|                                                                                              |
|----------------------------------------------------------------------------------------------|
| In order to set the ACTIVATION field to YES,<br>at least a WARM restart should be performed. |
|----------------------------------------------------------------------------------------------|

If the process dies for any reason, while it is already running, the ACTIVATION field is set to “NO” automatically and the data store allocated for storing the previous meter counts is freed.

If the feature is activated successfully, then the initial run time of the EMD process is determined in the following manner:

- If the current time that the feature is activated is less than the start time (HOUR, MINUTE) which is datafilled in table MTRSYSPM via tuple EMD, then the process is invoked at the same day, at the time indicated by HOUR, MINUTE fields. The PERIOD field indicates after how many days the next invocation is. For example, if feature is activated at 14:35 at 1st day of a month and HOUR, MINUTE and PERIOD are datafilled as 18, 15 and 3, then the process is invoked in the following sequence: at 18:15 of 1st, at 18:15 of 4th, at 18:15 of 7th... and etc. days.
- If the current time that the feature is activated is greater than the start time (HOUR, MINUTE), then the process is invoked at the start time of the next day. For example, if the feature is activated at 14:35 at 3rd day of a month and HOUR, MINUTE and PERIOD are datafilled as 14, 25 and 2 days, then process is invoked in the following sequence: 14:25 of 4th, 14:25 of 6th... and etc. days.
- While the process is sleeping, if the system time is changed to an earlier time, the process wake up time is still the same as set before. If the system time is changed to a time later than process wake up time, the process is waked up as soon as “settime” is handled.

The first process waking up after the activation of the feature is always for only copying the meter counts, that is, none of the meter counts of trunk agents are compared since there is no data about previous meter counts.

If the tuple EMD in table MTRSYSPM is being changed, the following controls are applied:

- If the EMD process is running then changing is rejected and the operator is warned with a message as shown in figure [“Reject message for the tuple change while process is running”](#) .

**Reject message for the tuple change while process is running**

```
EXCESSIVE METERING DETECTION process is running.  
Please try again later...
```

- If HOUR, MINUTE or PERIOD fields of the tuple is tried to change while the ACTIVATION field is “YES”, then tuple change is rejected and operator is warned as shown in figure “[Reject message for the HOUR, MINUTE or PERIOD change](#)”.

**Reject message for the HOUR, MINUTE or PERIOD change**

```
To change the HOUR, MINUTE or PERIOD fields,  
ACTIVATION field must be NO.
```

If the feature is deactivated by setting the ACTIVATION field from “YES” to “NO”, then the operator is informed with a message as shown in “[Deactivation message](#)” that EMD process is disabled and the data store allocated for copying the previous meter counts is freed.

**Deactivation message**

```
Store deallocation is running.  
Please wait...  
EXCESSIVE METERING DETECTION process has been deactivated.
```

**Detection Process**

With this activity detection process is enhanced to include metered trunks.

When the process wakes up, it detects all trunk agents whose meter counts reach the threshold value within the period time. When the process first wakes up, the current meter counts of all trunk and line agents are stored, and no comparison is made. The following actions are held for each periodic waking up:

- The current meters of line and trunk agents are compared with the previously copied meters and all agents whose meter counts reached the related THRESHOLD values of the tuple EMD in table MTRSYSPM are reported via EMD log. This log is EMD100 for lines and a new EMD 101 log for trunks.
- The current meter counts are copied to be used as previous values at the next invocation.

Periodic EMD process wakes up at the times determined according to the values of HOUR, MINUTE and PERIOD fields of EMD tuple in table MTRSYSPM.

With the waking up of the EMD process two main functionalities are performed:

- Comparison of meters of agents
- Copying of meters of agents

The running and completion of excessive metering detection process are informed with existing MTR107 (process running) and existing MTR109 (process completed) logs respectively.

### **Comparison of S/W meters of trunk agents**

When EMD runs, it checks the meters of trunk agents which do not have NEMD option assigned in TRKOPTS table. For this purpose, the process compares the current meter values with the values which had been stored by the previous run of the process.

The delta values of the assigned meters of a trunk agent are calculated and added to the total delta. This calculation is done in the following manner:

For each assigned meter of the trunk agent:

1. If previous meter value is greater than the current meter value and the current wrap bit is set, then previous value minus the current value is subtracted from the meter wrap value (1,000,000,000,000)
2. If previous meter value is greater than the current meter value but the current wrap bit is not set then this meter is ignored since it means a MOG deassignment and reassignment has occurred.
3. If previous meter value is less than or equal to the current meter value and the current meter wrap bit is set and the previous meter wrap bit is not set then current value minus the previous value is added to the meter wrap value (1,000,000,000,000).
4. If previous meter value is less than or equal to the current meter value and the current meter wrap bit is not set and the previous meter wrap bit is set then this meter is ignored since it means a MOG deassignment and reassignment has occurred.
5. If previous meter value is less than or equal to the current meter value and both the previous and the current meter wrap bit is set or not set then previous value is subtracted from the current value.
6. The delta value found for this assigned meter is added to the total delta.

A few examples are given in the following table for delta calculation of a meter. Here “Ignore” means “Do not make a delta calculation”.

**Meter delta examples**

| E.g. No | Prv. value of the meter | Prv. wrap bit | Cur. value of the meter | Cur. wrap bit | Delta value of the meter |
|---------|-------------------------|---------------|-------------------------|---------------|--------------------------|
| 5       | 000.000.000.100         | N             | 000.000.000.200         | N             | 000.000.000.100          |
| 3       | 000.000.000.100         | N             | 000.000.000.200         | Y             | 1.000.000.000.100        |
| 4       | 000.000.000.100         | Y             | 000.000.000.200         | N             | Ignore                   |
| 5       | 000.000.000.100         | Y             | 000.000.000.200         | Y             | 000.000.000.100          |
| 2       | 000.000.000.700         | N             | 000.000.000.300         | N             | Ignore                   |
| 1       | 000.000.000.700         | N             | 000.000.000.300         | Y             | 999.999.999.600          |
| 2       | 000.000.000.700         | Y             | 000.000.000.300         | N             | Ignore                   |
| 5       | 000.000.000.700         | Y             | 000.000.000.300         | Y             | 999.999.999.600          |
| 3       | 000.000.000.000         | N             | 999.999.999.999         | Y             | 1.999.999.999.999        |

After the total meter delta of the trunk agent is calculated, this value is compared with the threshold value of trunk agent and if the total meter delta of the trunk agent reaches this threshold value, it is reported via EMD log with the reason. For trunk agents a new log, EMD 101, is generated.

An example of delta calculation of meters of a trunk agent for different values of previous and current meter count values is given in the following table:

**Delta calculation of meters of a trunk agent**

| Meters      | Previous count  | Prv. wrap bit    | Current count   | Cur. wrap bit | Meter delta      |
|-------------|-----------------|------------------|-----------------|---------------|------------------|
| TLOCAL      | 000.000.006.000 | N                | 000.000.006.800 | N             | 000.000.000.800  |
| TTOLL       | 000.000.000.150 | N                | 000.000.000.050 | N             | Ignore           |
| Total delta |                 |                  |                 |               | 000.000.000.800  |
| Threshold   | 900             | Action (800<900) |                 |               | Nothing to do    |
| Threshold   | 800             | Action (800=800) |                 |               | Generate EMD 101 |
| Threshold   | 600             | Action (600<800) |                 |               | Generate EMD 101 |

**Copying of current trunk meters**

If the data that belongs to the previous meters are not present, then meter blocks are stored (independent of trunk option NEMD) by EMD process to be used at the next run without comparing meters of trunk agents. Otherwise,

after all trunk agents except which have NEMD option are compared, current meter counts of all trunk agents are copied to be used at the next run. For this purpose, same data store size necessary for storing the current meter counts is allocated. If sufficient data store can not be allocated, feature is deactivated automatically which causes all allocated data store to be freed.

When EMD process runs for the first time, it only copies the current meter blocks.

### **Interaction of EMD process with other metering processes**

EMD process has interaction with some metering processes as follows:

#### **Metering Restore Process**

When the wake up time of EMD process comes, if the metering restore process is active, EMD waits for the restore process to be completed and upon completion, it compares previous values with newly restored meter counts. At the end of comparison, it copies current meter blocks as previous meter counts.

If restore process begins to run while EMD process is running, EMD is stopped immediately and upon completion of restore process restarts and compares previous meter counts with newly restored meter counts. At the end of comparison, it copies current meter blocks as previous meter counts.

#### **Billing of Metered Agents**

At the end of billing process, if billing is done successfully, wrap bits are reset. But before resetting wrap bit of a meter block, comparison of its meter count with previous meter counts is handled and EMD 101 log is generated with “BILLING” reason indicating that comparison is handled not in periodic time, in billing time.

#### **Deassignment of ICMOG/OGMOG Option (TOOS)**

While ICMOG/OGMOG option is being deassigned from a trunk agent, its meter block is deallocated and sent to TOOS. But before this, comparison of its meter count with previous meter counts is handled and EMD 101 log is generated with “OOS” reason indicating that comparison is handled not in periodic time, in deassignment of ICMOG/OGMOG time.

### **Robustness**

EMD process survives all restarts RELOAD, COLD and WARM.

The store which is created for keeping previous meter counts is resides in DSPERM and affected by only reboot/upgrades. Previous meter counts are saved during all restarts (reload, cold and warm).

### **ONP**

Since existing EMD tuple has been changed, transfer of MTRSYSPM table is enhanced to support transfer of old format of EMD tuple into new format.

## Log Format

When a trunk subscriber whose meter counts reach a threshold value is detected, the operator is warned with a new log EMD101 with the reason in case of:

- A time period
- Billing, if billing process resets the wrap bit of a meter
- OOS, if a meter block is sent to the TOOS table due to ICMOG/OGMOG deassignment
- Wrap around more than once

The meters in the log are determined from the ICMOG/OGMOG assigned to the trunk.

This log includes the following fields:

- Current date and time
- CLI information of the trunk agent
- Reason
  - PERIODIC: if comparison of meter counts is handled at time indicated in EMD tuple in table MTRSYSPM.
  - BILLING: if comparison of meter counts is handled during billing process, before resetting wrap bits.
  - OOS: if comparison of meter counts is handled during deassignment of MOG option, before deallocating meter block.
  - WRAP: if comparison of meter counts is handled during incrementing meter count, before setting wrap bit to “yes”.
- Date information belonging to the previous meters which reflects the time all the meters copied for the next run at the end of the process.
- For each meter, previous wrap bit and meter count (WRAP1, COUNT1), current wrap bit and meter count (WRAP2, COUNT2) and delta value between them. If a meter is not assigned currently or previously then wrap and meter count fields of that meter are filled with ‘\*’ signs, the delta field which does not have a valid value is also filled with ‘\*’ signs.
- At the end of the log, threshold and total meter count delta are located.

An example of EMD101 log is shown in the following figure:

**Sample log report for EMD 101**

```

EMD101 JUN10 18:10:12 1367 INFO EXCESSIVE TRUNK METERING
CLLI: ICPRIBA
Reason: PERIODIC
Previous date: 2003/08/12 18:05:10
-----
METER NAME WRP1  COUNT1          WRP2  COUNT2          DELTA
-----
TLOCAL      NO    0000000000012  NO    0000000000045  00000000000033
TTOLL       NO    9999999999999  YES    0000000000009  00000000000010
TINTL       NO    *****      ***    *****      *****
-----
Threshold:0000000000020          Total delta: 00000000000043

```

**Hardware Requirements or Dependencies**

N/A.

**Software Requirements or Dependencies**

N/A.

**Limitations and restrictions**

1. Process runs initially when the day time reaches the datafilled start time whenever the following events occur.
  - Enabling the feature by changing the ACTIVATION field of the tuple EMD in table MTRSYSPM from “NO” to “YES”.
  - Rebooting the system.
  - Meter restore from tape or disk.
  - ONP.

In the initial run of the process, actual meter counts are copied to the previous meter tables and next process activation time is set according to the PERIOD field

2. Modifying the tuple EMD in table MTRSYSPM is not permitted while excessive metering detection process is running.



3. If HOUR, MINUTE or PERIOD fields of the tuple EMD in table MTRSYSPM are desired to change and ACTIVATION field is “YES” (this means EMD process is active) then tuple change is rejected.
4. First next EMD process skips comparison for a trunk if the following operations are applied to a trunk agent after the current meters are copied.
  - Assigning ICMOG/OGMOG option to a trunk
  - Deassigning ICMOG/OGMOG option from a trunk
5. If any restart occurs while EMD process is running, the process restarts from the beginning after restart is over and previously generated logs are invalid.
6. The concurrent execution of the periodic case and the extreme cases like billing, OOS and wrap around more than once is not handled.
7. If a dump is in progress and more storage is needed for storing any new meters (i.e. via MOG assignment) EMD will not store counts of new meters until the next first run.
8. The process performs the copy, compare and log operations only on the active side.

## Interactions

N/A.

## Applicable customer facing sections

### Fault Management

Logs ☒

Alarms ☐

### Configuration

Data Schema ☒

User Interface ☐

Element Management ☐

Security ☐

Service Order ☐

Office Parameters ☐

Accounting (includes AMA billing) ☐

Performance (includes operational measurements) ☐

## Glossary

| Term   | Description                             |
|--------|-----------------------------------------|
| DSPERM | Permanent data store saved over reloads |
| DN     | Directory Number                        |
| EMD    | Excessive Metering Detection            |
| NEMD   | No Excessive Metering Detection         |
| ONP    | One Night Process                       |
| OOS    | Out of Service                          |

## *Fault Management for A00002844*

### Fault management strategy

No change.

### Fault management tools and utilities

No change.

## Logs

### Explanation

Log Title: EMD 101

Name: Excessive Trunk Metering

Description: This log is generated when a subscriber is detected whose meter counts are increased by more than a threshold value in a time period.

Event type: Info

### Format

#### Format of log report EMD 101

```

EMD101 mmmdd hh:mm:ss ssdd INFO EXCESSIVE TRUNK METERING
<cli>
Reason: <rsn>
Previous date: yyyy/mm/dd hh:mm:ss
-----
METER NAME  WRP1 COUNT1  WRP2  COUNT2  DELTA
-----
<mtrnm>    <wrp> <cnt>   <wrp>   <cnt>   <dlt>
-----
Threshold:<thr>                                Total delta: <tdlt>

```

|  |
|--|
|  |
|--|

## Field descriptions

### Field descriptions

| Field                         | Value                                         | Description                                                                                                              |
|-------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| EXCESSIVE METERING FOR TRUNKS | Constant                                      | Indicates that a trunk agent whose meter counts are increased by more than a threshold value in time period is detected. |
| CLLI                          | Symbolic text                                 | Identifies CLLI of trunk                                                                                                 |
| Reason                        | PERIODIC, BILLING, OOS or WRAP                | Indicates the reason for the log generation.                                                                             |
| Previous date                 | Alphanumeric                                  | The copy date for the meter blocks.                                                                                      |
| METER NAME                    | Character string                              | Indicates a valid assigned meter name.                                                                                   |
| WRP1                          | YES, NO or ****                               | Wrap information for the copied meter.                                                                                   |
| COUNT1                        | 0000 0000 0000 - 9999 9999 9999 or *****      | Count information for the current meter.                                                                                 |
| WRP2                          | YES, NO or ****                               | Wrap information for the copied meter.                                                                                   |
| COUNT2                        | 0000 0000 0000 - 9999 9999 9999 or *****      | Count information for the current meter.                                                                                 |
| DELTA                         | 0 0000 0000 0000 - 1.999.999.999.998 or ***** | Difference between the previous count and the current count for that meter.                                              |
| Total delta                   | 0 0000 0000 0000 - 7.999.999.999.992          | Indicates the total of all meter deltas for that subscriber                                                              |
| Threshold                     | 0 0000 0000 0000 - 7.999.999.999.992          | Indicates the threshold for the comparison                                                                               |

## Action

No immediate action.

**Associated Operational Measurements or Performance Measurements**

N/A.

**Additional information**

None.

**Related documentation**

None.

***Configuration for A00002844*****Hardware and Software Requirements**

N/A.

**Initial Configuration**

N/A.

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema****New or modified tables**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/OLD/UNCHANGED) |
|----------------|--------------------------|-----------------------------------|
| MTRSYSPM       | CHANGED                  | CHANGED                           |

**Table/MIB/Remote Database Schema information****Name: MTRSYSPM**

Metering System Parameters

**Functional description**

A new parameter “trunk\_threshold” is added into EMD tuple in MTRSYSPM table.

Also, existing “threshold” field of EMD tuple is renamed as “line\_threshold”.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

## Size

### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                                             |
|------------------------|----------------|----------------|-------------------------------------------------------------------------------------------------------------------|
| MTRSYSPM               | 11             | 11             | EMD tuple is changed. A new parameter has been added, so there is not a fundamental change on memory consumption. |

## Fields/OIDs

The following table lists changed fields/OIDs for MTRSYSPM.

### Table field descriptions

| Field | New or Changed | Subfield or refinement | Entry              | Explanation and action                                                             |
|-------|----------------|------------------------|--------------------|------------------------------------------------------------------------------------|
| EMD   | Changed        | TRUNK THRESHOLD        | 0 to 2,100,000,000 | It identifies maximum delta value between current and previous trunk meter counts. |

## Datafill example

The following example shows sample datafill for table MTRSYSPM.

### Datafill example of EMD tuple in table MTRSYSPM

| Field name      | Default Value |
|-----------------|---------------|
| ACTIVATION      | NO            |
| HOURL           | 4             |
| MINUTE          | 15            |
| PERIOD          | 1             |
| LINE_THRESHOLD  | 20.000        |
| TRUNK_THRESHOLD | 200.000       |

There are some properties related to table MTRSYSPM as follows:

- New tuples cannot be added manually.
- Tuples can not be deleted.
- MTRSEL selector value must be identical to key value.
- Only changing is allowed.

**Table release history update**

Definition of EMD tuple has been made in MMP15. With this activity in SN07, parameters of EMD tuples is changed to include threshold value for trunks.

**Supplementary information**

None.

**Translation verification other tools**

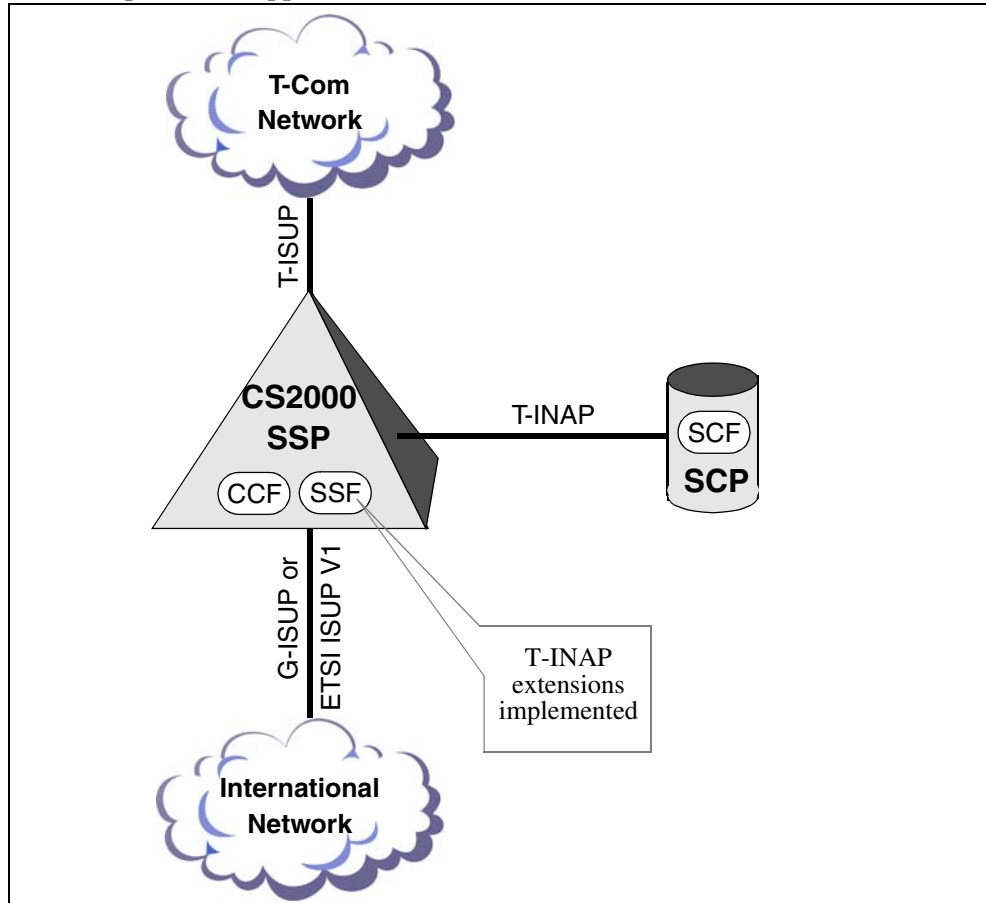
MTRSYSPM does not use translation verification tools.

## ***Product = World Trade***

### **A00002907 -- T-INAP Operations Support (PT-IP)**

#### ***Functional Description***

##### **Functional Overview**

**T-INAP Operations Support Overview**

In order to introduce the CS2K as an International Gateway for Deutsche Telekom (DTAG), T-INAP support is required. This activity implements the DTAG specific INAP operation enhancements which are required for use of the Universal International Freephone Service (UIFS). With this service, a UIFS subscriber in one country can be assigned one or more special telephone numbers in other countries. Callers in those countries can call the UIFS subscriber free of charge. All service and call-related charges are paid by the UIFS subscriber.

The Service Switching Function (SSF) in the CS2K Service Switching Point (SSP) is enhanced by the following items:

1. Definition and handling of T-INAP parameters in the CIRQ, CIRP, FCI, Connect, and InitDP operations. The new parameters and subparameters incorporated for each altered INAP operation are highlighted in bold in the table below.

## New DTAG (sub)parameters in INAP Operations

| INAP Operation   | Parameter                                                                                                                                                                                   | Subparameter        |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| CIRP             | requestedInformationList                                                                                                                                                                    | <b>releaseCause</b> |
| CIRQ             | requestedInformationTypeList                                                                                                                                                                | <b>releaseCause</b> |
| Connect          | <b>originalCalledPartyID, serviceInteractionIndicatorsTwo, redirectingPartyID, redirectionInformation, natServiceInteractionIndicators, natCallingPartysCategory, iNContainer, userUser</b> |                     |
| FCI <sup>a</sup> | <b>FCIBillingChargingCharacteristics</b>                                                                                                                                                    |                     |
| InitDP           | <b>additionalCallingPartyNumber, highLayerCompatibility, sFEncountered, gapInterval, natCallingPartysCategory, iNContainer</b>                                                              |                     |

a. FCIBillingChargingCharacteristics is handled transparently at SSP.

2. TINAP option for INAP\_VARIANT office parameter in table OFCENG
3. Extension of InitDP\_Parms and InitDP\_Extensions options in table SERVINFO

**Note:** For detailed information about parameter mapping, please refer to document [5] “T-ISUP/T-INAP Interworking” (A00002934).

### Functional Requirements

The functional requirements for DTAG INAP Operation Support are based on the following specifications:

- 163 TR 78.96 T-INAP Specification  
a subset of the specifications described in *163 TR 78.96* is implemented in order to provide Universal International Freephone Service (UIFS) functionality as defined in ITU-T Recommendation E.152
- ITU-T Recommendation E.152 Universal International Freephone Service
- User-user specification in EN 300 286-1 “Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification”, chapter 7.3.3 User-user.

**Note:** For a complete list of requirements of this activity, please refer to the section “Requirements Specification (RS)” of this document.

### Data Requirements

For T-INAP operations support specific datafill is required in the following tables:



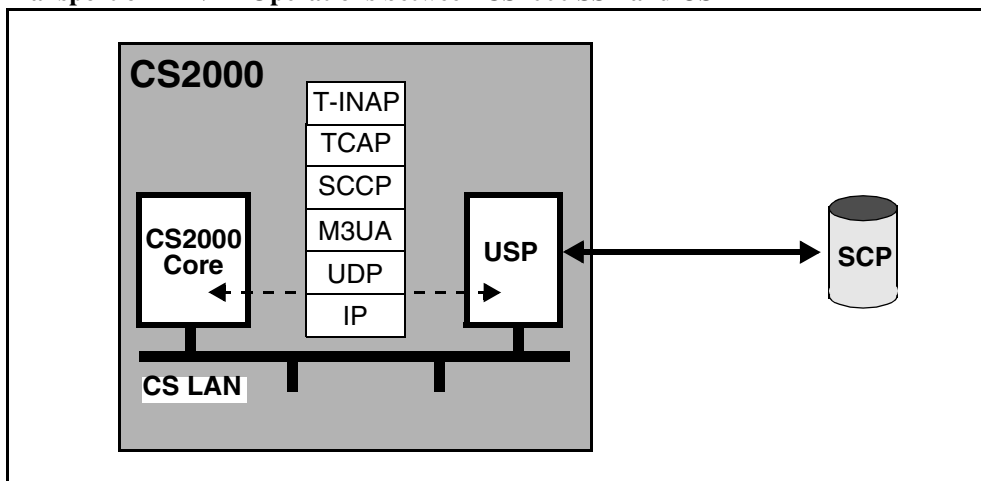
- table OFCENG: TINAP option for INAP\_VARIANT office parameter
- table SERVINFO: six new optional DTAG parameters in InitDP Options INITDP\_PARMS and INITDP\_EXTENSIONS
- table SERVINFO: set the TCAP\_VERSION to CCITT\_V1 in order to enable Application Context Negotiation

**Note:** For detailed information, please refer to the “Configuration (CN)” chapter of this document.

### T-INAP Signalling

The CS2000 Compact supports CCS7 signalling using the USP (Universal Signalling Point). As indicated in Figure “Transport of T-INAP Operations between CS2000 SSP and USP” on page 1557, T-INAP operations are sent in TCAP messages which are conveyed between the CS2000 SSP and the USP over the M3UA/UDP/IP protocol stack.

**Transport of T-INAP Operations between CS2000 SSP and USP**



### Application Context Negotiation (ACN)

The following ACN negotiation rules are implemented to support the T-INAP ACN:

- when SSP sends TC-BEGIN package:
  - encode the T-INAP ACN into the package.
- when SSP receives the first response from SCP in TC-CONTINUE/ TC-END:
  - if the ACN matches the ACN value of previous TC-BEGIN, go on processing the TC component.
  - else, respond to SCP with TC-U-ABORT. Abort reason is ‘application context name not supported’.
- when SSP receives the first response from SCP in a TC-U-ABORT:

- release the current dialogue.
- when SSP receives TC-BEGIN package:
  - respond to SCP with TC-U-ABORT. Abort reason is ‘application context name not supported’

**Note:** In order to enable application context negotiation it is required to set the TCAP\_VERSION in table SERV\_INFO to CCITT\_V1.

The definition of the T-INAP ACN is shown in the following table. This ACN is valid only for scenarios in which the TCAP dialogue is initiated by the SSP with an InitDP operation.

**T-INAP Specific Application Context Name (based on 163 TR 78)**

| Application Context Object Identifier | Decimal Value | ASN.1 Encoded Binary Value | ASN.1 Encoded Hex Value |
|---------------------------------------|---------------|----------------------------|-------------------------|
| CCITT administration                  | 2             | 00000010                   | 02                      |
| BMPT <sup>a</sup>                     | 262           | 10000010<br>00000110       | 82<br>06                |
| Telekom                               | 1             | 00000001                   | 01                      |
| CCS#7                                 | 5             | 00000101                   | 05                      |
| INAP                                  | 0             | 00000000                   | 00                      |
| Application Context                   | 1             | 00000001                   | 01                      |
| Direction cs1-ssp-to-scp              | 0             | 00000000                   | 00                      |
| Version 4                             | 3             | 00000011                   | 03                      |

a. The German telecommunications regulatory organization, BMPT (Bundesministerium für Post und Telekommunikation), is now called RegTP (Regulierungsbehörde für Telekommunikation und Post).

### ACN Error handling

The T-INAP ACN is only supported for scenarios in which the TCAP dialogue is initiated by the SSP with an InitialDP. Other T-INAP ACNs (e.g. the ACN used when the TCAP dialogue is initiated by the SCP with an ActivateServiceFiltering operation) are not implemented since they are not used within the context of the Universal International Freephone Service. If an unsupported ACN is received at the SSP, then a TCAP U-ABORT with ‘application context name not supported’ error code is returned to the SCP.

### CallInformationRequest (CIRQ) & CallInformationReport (CIRP)

The CIRQ operation is sent from the SCF to the SSF to request the SSF to record specific information about a single call. The information is reported back to the SCF by means of a CIRP operation.

The ISUP Release Cause can be requested in a CIRQ operation and returned in a CIRP operation. The releaseCause subparameter is implemented for both the CIRQ and CIRP operations. The releaseCauseValue subparameter is implemented for the CIRP operation.

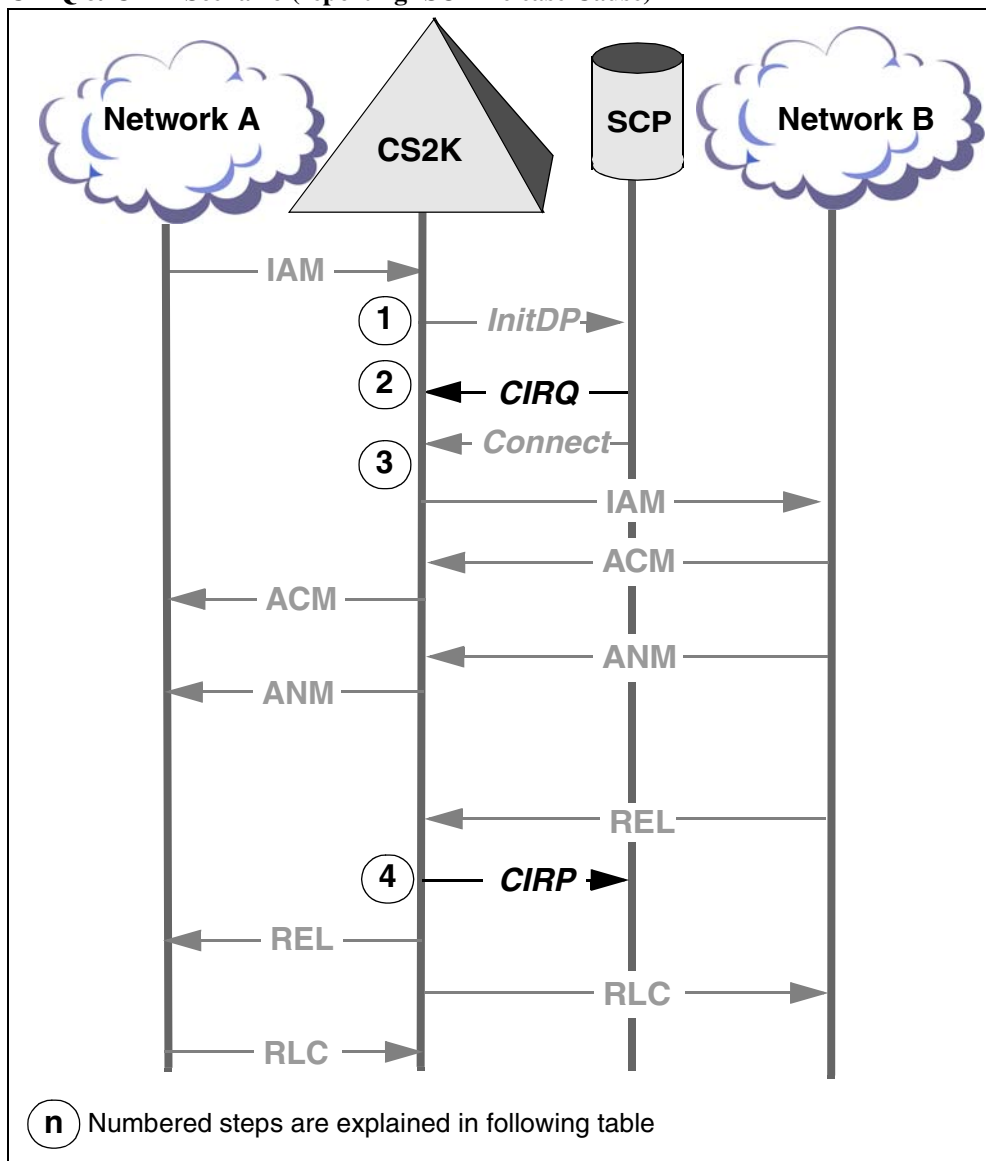
This enhancement adds support for releaseCause parameter in CIRQ/CIRP:

- releaseCause is defined the same as Q.762, which is applied to the indicated or default party. The format is shown in Table “releaseCauseValue Encoding” on page 1562. The diagnostics is not included in the releaseCauseValue of CIRP.

**Note:** for release cause, if the incoming release message is not in Q.762 format, then default value: ‘normal clearing’ is used.

## CIRQ & CIRP Scenario

### CIRQ & CIRP Scenario (reporting ISUP Release Cause)



| Step | Explanation                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------|
| 1    | Incoming call triggers as an IN call. InitDP is sent to SCF.                                                |
| 2    | The SCF sends a CIRQ operation to the SSF to request the ISUP release cause for the call.                   |
| 3    | The SCF responds with a Connect operation. Call setup continues.                                            |
| 4    | Once the call is released, the SSF sends a CIRP operation which contains the ISUP release cause to the SCF. |

## CIRQ & CIRP Encoding

### CIRQ & CIRP ASN.1 Encoding

```

callInformationRequest OPERATION
  ARGUMENT
    SEQUENCE {
      requestedInformationTypeList      [0] SEQUENCE SIZE (1..5) OF
        ENUMERATED {
          callAttemptElapsedTime        (0),
          callStopTime                  (1),
          callConnectedElapsedTime       (2),
          releaseCause                  (30)},
      extensions                        [2] Extensions OPTIONAL}

callInformationReport OPERATION
  ARGUMENT
    SEQUENCE {
      requestedInformationList          [0] SEQUENCE SIZE (1..5) OF
        SEQUENCE {
          requestedInformationType      [0] ENUMERATED {
            callAttemptElapsedTime      (0),
            callStopTime                 (1),
            callConnectedElapsedTime     (2),
            calledAddress                (3),
            releaseCause                (30)},
          requestedInformationValue      [1] CHOICE {
            callAttemptElapsedTimeValue  [0] INTEGER (0..255),
            callStopTimeValue            [1] DateAndTime,
            callConnectedElapsedTimeValue [2] Integer4,
            releaseCauseValue          [30] releaseCauseValue}},
      correlationID                    [1] CorrelationID OPTIONAL,
      extensions                      [2] Extensions OPTIONAL}

Cause ::= OCTET STRING (SIZE(causeLength))

causeLength INTEGER ::= 2

```

**releaseCauseValue Encoding**

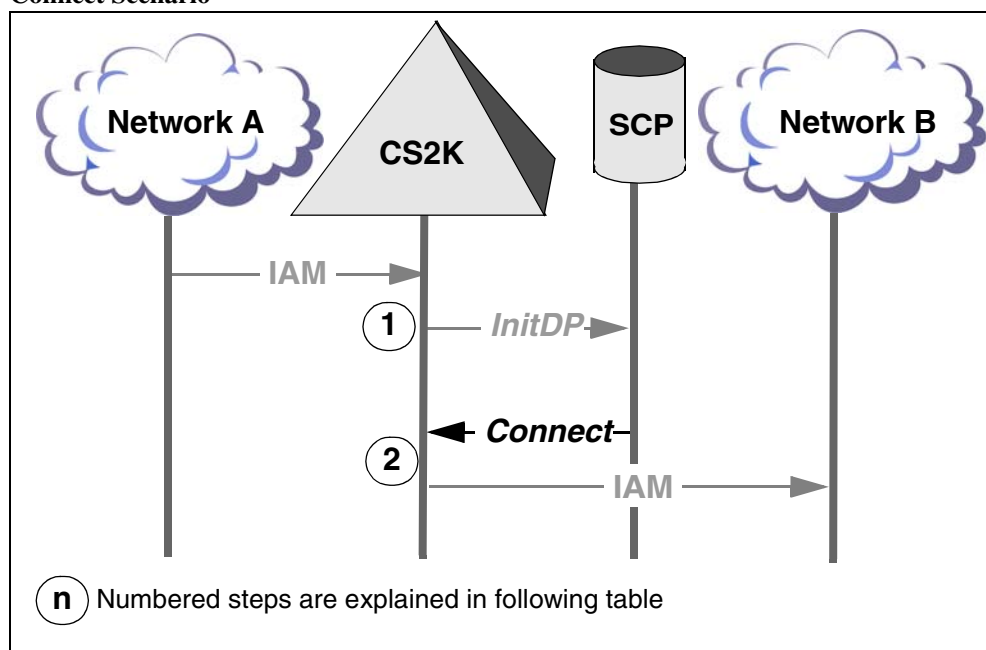
|      |                 |   |       |              |   |   |   |
|------|-----------------|---|-------|--------------|---|---|---|
| 8    | 7               | 6 | 5     | 4            | 3 | 2 | 1 |
| Ext. | Coding standard |   | spare | Location ... |   |   |   |
| Ext. | Cause Value     |   |       |              |   |   |   |

**Connect**

The Connect operation is sent from the SCF to the SSF to request the SSF to perform the call processing actions to route a call to a specific destination.

Decoding of the originalCalledPartyId, redirectingPartyID and redirectionInformation parameters is implemented.

Definition and decoding of the natServiceInteractionIndicators, natCallingPartysCategory, inContainer, and userUser parameters is implemented.

**Connect Scenario****Connect Scenario**

| Step | Explanation                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Incoming call triggers IN. InitDP is sent to SCF.                                                                                                           |
| 2    | The SCF responds with a Connect operation. If any of the new parameters are present in the Connect message, they are passed on in the outgoing IAM message. |

## Connect Encoding

### Connect ASN.1 Encoding

connect OPERATION

ARGUMENT

SEQUENCE {

|                                        |                                      |           |
|----------------------------------------|--------------------------------------|-----------|
| destinationRoutingAddress              | [0] DestinationRoutingAddress,       |           |
| cutAndPaste                            | [3] CutAndPaste                      | OPTIONAL, |
| <b>originalCalledPartyID</b>           | [6] OriginalCalledPartyID            | OPTIONAL, |
| serviceInteractionIndicators2          | [15] ServiceInteractionIndicators2   |           |
|                                        |                                      | OPTIONAL, |
| serviceInteractionIndicators           | [26] ServiceInteractionIndicators    |           |
|                                        |                                      | OPTIONAL, |
| callingPartyNumber                     | [27] CallingPartyNumber              | OPTIONAL, |
| callingPartysCategory                  | [28] CallingPartysCategory           | OPTIONAL, |
| <b>redirectingPartyID</b>              | [29] RedirectingPartyID              | OPTIONAL, |
| <b>redirectionInformation</b>          | [30] RedirectionInformation          | OPTIONAL, |
| <b>natServiceInteractionIndicators</b> |                                      |           |
|                                        | [PRIVATE 1] NSII                     | OPTIONAL, |
| <b>natCallingPartysCategory</b>        | [PRIVATE 5] NatCallingPartysCategory |           |
|                                        |                                      | OPTIONAL, |
| <b>inContainer</b>                     | [PRIVATE 7] INContainer              | OPTIONAL, |
| <b>userUser</b>                        | [PRIVATE 8] UserUser                 | OPTIONAL} |

OriginalCalledPartyId ::= OCTET STRING ( SIZE(3..13))

RedirectingPartyID ::= OCTET STRING (SIZE(3 ..13))

RedirectionInformation ::= OCTET STRING (SIZE(2))

NSII ::= SEQUENCE {

|                   |                       |            |
|-------------------|-----------------------|------------|
| inToNetworkBitInd | [0] InToNetworkBitInd | OPTIONAL,  |
| inNumber          | [1] InNumber          | OPTIONAL,  |
| locationNumber    | [2] locationNumber    | OPTIONAL,  |
| nPSSP             | [3] NPSSP             | OPTIONAL,  |
| cUGInterlockCode  | [4] CUGInterlockCode  | OPTIONAL } |

```

InToNetworkBitInd      ::= SEQUENCE {
    inToNetworkBitMask      [0] InToNetworkBitMask,
    inToNetworkBitValues    [1] InToNetworkBitValues }

```

```

InToNetworkBitMask     ::= BIT STRING {
    freePhoneInd           (0)
    longUIDInd             (1)} (SIZE(1..8))

```

```

InToNetworkBitValues   ::= BIT STRING {
    freePhoneInd           (0)
    longUIDInd             (1)} (SIZE(1..8))

```

```

InNumber                ::= OCTET STRING (SIZE(2 .. 10))

```

```

LocationNumber          ::= OCTET STRING (SIZE(2 .. 12))

```

```

NPSSP                   ::= OCTET STRING (SIZE(2 .. 2))

```

```

CUGInterlockCode       ::= OCTET STRING (SIZE(4 ..4))

```

```

NatCallingPartysCategory ::= OCTET STRING (SIZE(1))

```

```

INContainer             ::= OCTET STRING (SIZE(1 .. 4))

```

```

UserUser                ::= OCTET STRING (SIZE(1))

```

In the INAP operation Connect only octet 4 of the User-user information element is mapped to the userUser parameter. The User-user information element is coded as shown below. There are no restrictions on the contents of the user information field. For additional information, please refer to document EN 300 286-1 v1.2.4 (1998-06).

#### User-user Information Element

| 8                              | 7 | 6 | 5 | 4 | 3 | 2 | 1 | Octet  |
|--------------------------------|---|---|---|---|---|---|---|--------|
| User-user                      |   |   |   |   |   |   |   |        |
| 0                              | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1      |
| Information Element Identifier |   |   |   |   |   |   |   |        |
| Length of user-user contents   |   |   |   |   |   |   |   | 2      |
| Protocol Discriminator         |   |   |   |   |   |   |   | 3      |
| User Information               |   |   |   |   |   |   |   | 4 etc. |



The DTAG private parameters natServiceInteractionIndicators, natCallingPartyCategory, INContainer and userUser are decoded and handled at the SSF only if the INAP\_VARIANT office parameter is set to 'TINAP'. Otherwise, an "Unexpected Parameter" error will be generated by the SSF.

For the encoding of the userUser parameter, please refer to section "Connect Encoding" on page 1563. The DTAG private parameter userUser is encoded at the SSF only if the INAP\_VARIANT office parameter is set to 'TINAP'.

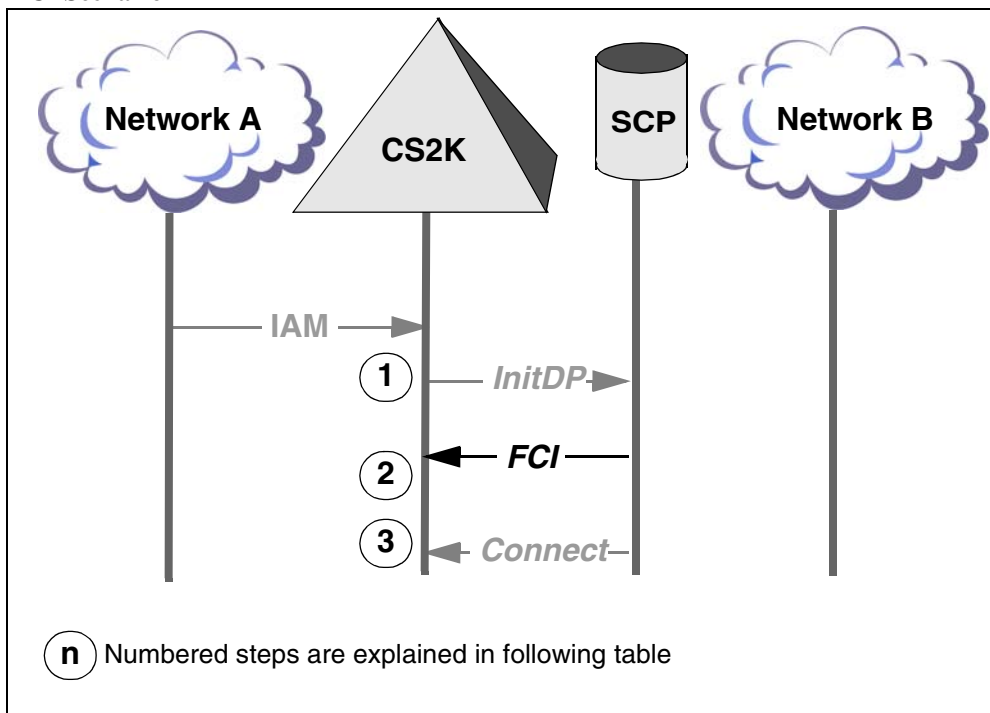
### **FurnishChargingInformation (FCI)**

The FCI operation is sent from the SCF to the SSF to request the SSF to generate a AMA record. The registered call record is intended for offline charging of the call. A possibility exists for the FCI operation to be invoked on multiple occasions. For each connection configuration, the FCI operation may only be used once.

The FCI operation contains one parameter: furnishChargingInformationArg. This parameter is defined as a variable length octet string. DTAG has a private definition for the encoding of the octet string. The octet string is handled transparently at the SSF. The contents are appended to the AMA record as documented by the DTAG AMA Enhancements feature (A00003007).

## FCI Scenario

### FCI Scenario



| Step | Explanation                                                                 |
|------|-----------------------------------------------------------------------------|
| 1    | Incoming call triggers IN. InitDP is sent to SCF.                           |
| 2    | The SCF sends an FCI operation to instruct the SSF to create a call record. |
| 3    | The SCF responds with a Connect operation. Call setup continues.            |

### FCI Encoding

furnishChargingInformation OPERATION

ARGUMENT

```

furnishChargingInformationArg ::= SEQUENCE {
    chargedPartyId      [0] OCTET STRING (SIZE(1..16)),
    chargingInformation [1] CHOICE {
        initChargingInformation SEQUENCE {
            callTypeAndStatus [1] INTEGER (0..999),
            billedItemList     [2] SEQUENCE SIZE (1..1)
                                OF OCTET STRING (SIZE(1)),    OPTIONAL,
            transparentData    [3] OCTET STRING (SIZE(2..20))  OPTIONAL}}}
  
```

**Note:** The FCI is handled transparently. It is accepted without decoding and inserted into the AMA record. If it is required in the future to send the chargedPartyID from the FCI operation in the IRS (Identification Response) ISUP Message, then the FCI will need to be decoded at the SSP. This functionality is not implemented by this activity since the IRS message is related to the MCID (Malicious Call Identification) feature which does not apply to Freephone functionality.

### **InitDetectionPoint (InitDP)**

The InitDP operation is sent from the SSF to the SCF upon initial trigger detection to request the SCF to provide instructions for completing the call.

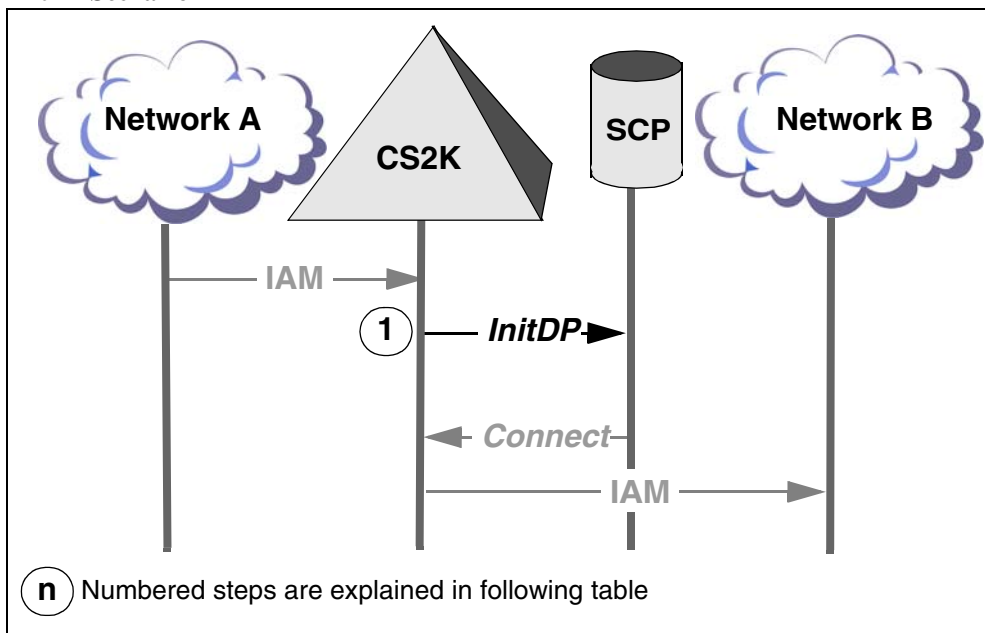
The sFEncountered, gapInterval, natCallingParysCategory, and iNContainer parameters contain DTAG specific values. These parameters are defined and implemented by this activity.

The additionalCallingPartyNumber and highLayerCompatibility are already defined, but are implemented by this activity.

The gapInterval and sFEncountered parameters are mandatory and are generated at the SSF. The other parameters are mapped from the incoming IAM message. See feature documentation for “A00002934 T-INAP/T-ISUP Interworking” for more information on mapping of parameters.

## InitDP Scenario

### InitDP Scenario



| Step | Explanation                                                                                                                                     |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Incoming call triggers IN. InitDP is sent to SCF. If any of the new parameters are received in the incoming IAM, they are mapped to the InitDP. |

## InitDP Encoding

### InitDP ASN.1 Encoding

```

initialDP OPERATION
  ARGUMENT
    SEQUENCE {
      serviceKey                [0] ServiceKey                OPTIONAL,
      calledPartyNumber         [2] CalledPartyNumber         OPTIONAL,
      callingPartyNumber        [3] CallingPartyNumber        OPTIONAL,
      callingPartysCategory     [5] CallingPartyNumber        OPTIONAL,
      locationNumber            [10] LocationNumber            OPTIONAL,
      originalCalledPartyID     [12] OriginalCalledPartyID     OPTIONAL,
      highLayerCompatibility    [23] HighLayerCompatibility    OPTIONAL,
      additionalCallingPartyNumber [25] AdditionalCallingPartyNumber
                                                                    OPTIONAL,
      bearerCapability          [27] BearerCapability          OPTIONAL,
      eventTypeBCSM             [28] eventTypeBCSM             OPTIONAL,
      redirectingPartyID        [29] RedirectingPartyID        OPTIONAL,
      redirectionInformation     [30] RedirectionInformation    OPTIONAL,
      sFEncountered            [PRIVATE 1] BOOLEAN             DEFAULT FALSE,
      gapInterval              [PRIVATE 2] INTEGER (-1 .. 60000)
                                                                    DEFAULT 0,
      natCallingPartysCategory   [PRIVATE 6] NatCallingPartysCategory
                                                                    OPTIONAL,
      iNContainer              [PRIVATE 7] INContainer          OPTIONAL}

```

Please refer to section “Connect Encoding” on page 1563 for the definitions of natCallingPartysCategory and INContainer.

The new parameters are encoded into the InitDP only if provisioned in table SERVINFO; for additional information please refer to the Configuration section of this feature.

## Error Handling

The following table lists errors which can be returned from the INAP operations discussed in this document.

**INAP Operations and Associated Errors**

| Operation                  | Target Node<br>(errors reported by) | Error                                         |                  |                     |               |             |                             |                     |                     |
|----------------------------|-------------------------------------|-----------------------------------------------|------------------|---------------------|---------------|-------------|-----------------------------|---------------------|---------------------|
|                            |                                     | 6                                             | 7                | 8                   | 11            | 12          | 14                          | 15                  | 16                  |
|                            |                                     | MissingCustomerRecord                         | MissingParameter | ParameterOutOfRange | SystemFailure | TaskRefused | UnexpectedComponentSequence | UnexpectedDataValue | UnexpectedParameter |
| CallInformationReport      | SCP                                 | INAP Class 4 operation (no associated errors) |                  |                     |               |             |                             |                     |                     |
| CallInformationRequest     | SSP                                 |                                               | ✓                | ✓                   | ✓             | ✓           | ✓                           |                     | ✓                   |
| Connect                    | SSP                                 |                                               | ✓                |                     | ✓             | ✓           | ✓                           | ✓                   | ✓                   |
| FurnishChargingInformation | SSP                                 |                                               | ✓                |                     |               | ✓           | ✓                           | <sup>a</sup>        | ✓                   |
| InitialDP                  | SCP                                 | ✓                                             | ✓                |                     | ✓             | ✓           | ✓                           | ✓                   | ✓                   |

a. The SSP does not return an UnexpectedDataValue error for the FCI operation since the FCI is not decoded at the SSP.

## INAP\_VARIANT Office Parameter

The value of the INAP\_VARIANT office parameter determines whether INAP variant specific requirements are considered when handling INAP operations.

For detailed information, please refer to the Configuration section of this feature.

## Table SERVINFO InitDP Extensions and InitDP Parms

The tables SERVINFO InitDP Extensions and InitDP Parms contains customer specific optional parameters which are required for building the InitDP operation.

For detailed information, please refer to the Configuration section of this feature.

## Hardware Requirements or Dependencies

Not applicable.

## Software Requirements or Dependencies

This Functionality is implemented in ISN07.

## Limitations and restrictions

- The T-INAP ACN is only supported for scenarios in which the TCAP dialogue is initiated by the SSP with an InitialDP. Other T-INAP ACNs (e.g. the ACN used when the TCAP dialogue is initiated by the SCP with an ActivateServiceFiltering operation) are not implemented since they are not used within the context of the Universal International Freephone Service. If an unsupported application context name is received at the SSP, then a TCAP U-ABORT with 'application context name not supported' error code is returned to the SCP.
- FCI is handled transparently at the SSP.
- This activity does not implement the complete set of enhancements specified in 163 TR 78. A subset of INAP operations are enhanced in order to provide UIFS functionality.

## Interactions

T-INAP interworks with T-ISUP, G-ISUP, and ETSI ISUP V1 originating and terminating agents. For additional information, please refer to the following documents:

- A00002908 "G-ISUP"
- A00002909 "T-ISUP"
- A00002934 "T-ISUP / T-INAP Interworking"

## Applicable customer facing sections

### Fault Management

|      |     |
|------|-----|
| Logs | N/A |
|------|-----|

|        |     |
|--------|-----|
| Alarms | N/A |
|--------|-----|

### Configuration

|             |   |
|-------------|---|
| Data Schema | X |
|-------------|---|

|                |     |
|----------------|-----|
| User Interface | N/A |
|----------------|-----|

|                    |     |
|--------------------|-----|
| Element Management | N/A |
|--------------------|-----|

|          |     |
|----------|-----|
| Security | N/A |
|----------|-----|

|               |     |
|---------------|-----|
| Service Order | N/A |
|---------------|-----|

|                                                 |     |
|-------------------------------------------------|-----|
| Office Parameters                               | X   |
| Accounting (includes AMA billing)               | N/A |
| Performance (includes operational measurements) | N/A |
| Realtime                                        | X   |
| Engineering Information                         | X   |

## Glossary

| Term   | Description                                                                                            |
|--------|--------------------------------------------------------------------------------------------------------|
| ACN    | <b>A</b> pplication <b>C</b> ontext <b>N</b> egotiation                                                |
| AMA    | <b>A</b> utomatic <b>M</b> essage <b>A</b> ccounting                                                   |
| BCSM   | <b>B</b> asic <b>C</b> all <b>S</b> tate <b>M</b> achine                                               |
| BMPT   | <b>B</b> undes <b>m</b> inisterium für <b>P</b> ost und <b>T</b> elekommunikation                      |
| CCF    | <b>C</b> all <b>C</b> ontrol <b>F</b> unction                                                          |
| CCITT  | <b>C</b> omité <b>C</b> onsultatif <b>I</b> nternational <b>T</b> élégraphique et <b>T</b> éléphonique |
| CCS#7  | <b>C</b> ommon <b>C</b> hanneling <b>S</b> ignalling <b>S</b> ystem <b>No. 7</b>                       |
| CIRP   | <b>C</b> all <b>I</b> nformation <b>R</b> eport                                                        |
| CIRQ   | <b>C</b> all <b>I</b> nformation <b>R</b> equ <b>e</b> st                                              |
| CS2K   | <b>C</b> all <b>S</b> erver <b>2000</b>                                                                |
| DTAG   | <b>D</b> eutsche <b>T</b> elekom <b>A</b> G                                                            |
| ETSI   | <b>E</b> uropean <b>T</b> elecommunications <b>S</b> tandards <b>I</b> nstitute                        |
| FCI    | <b>F</b> urnish <b>C</b> harging <b>I</b> nformation                                                   |
| G-ISUP | <b>G</b> ateway <b>I</b> SDN <b>U</b> ser <b>P</b> art                                                 |
| INAP   | <b>I</b> ntelligent <b>N</b> etwork <b>A</b> pplication <b>P</b> art                                   |
| InitDP | <b>I</b> nitial <b>D</b> etection <b>P</b> oint                                                        |
| ISDN   | <b>I</b> ntegrated <b>S</b> ervices <b>D</b> igital <b>N</b> etwork                                    |
| IP     | <b>I</b> nternet <b>P</b> rotocol                                                                      |
| ISUP   | <b>I</b> SDN <b>U</b> ser <b>P</b> art                                                                 |
| M3UA   | <b>M</b> TP Layer <b>3</b> <b>U</b> ser <b>A</b> daption                                               |
| MTP1   | <b>M</b> essage <b>T</b> ransport <b>P</b> rotocol, Layer <b>1</b>                                     |



| Term   | Description                                                                     |
|--------|---------------------------------------------------------------------------------|
| MTP2   | Message Transport Protocol, Layer 2                                             |
| MTP3   | Message Transport Protocol, Layer 3                                             |
| RegTP  | Regulierungsbehörde für Telekommunikation und Post; german regulatory authority |
| SCF    | Service Control Function                                                        |
| SCP    | Service Control Point                                                           |
| SSF    | Service Switching Function                                                      |
| SSP    | Service Switching Point                                                         |
| TCAP   | Transmission Capability Applications Part                                       |
| T-INAP | Deutsche Telekom INAP                                                           |
| T-ISUP | Deutsche Telekom ISDN User Part                                                 |
| UIFS   | Universal International Freephone Service                                       |
| UDP    | User Datagram Protocol                                                          |
| USP    | Universal Signalling Point                                                      |

## References

- [1] 163 TR 78.96 “T-INAP Specification”
- [2] ITU-T Recommendation E.152 “International Freephone Service”
- [3] EN 300 286-1 “Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification”

## *Configuration for A00002907*

### Hardware and Software Requirements

ISN07 software load on CS2K DMS.

### Initial Configuration

Not applicable.

## Office/Subnet parameters (OP/SP) (CM & SESM)

### New/modified office/subnet parameters

| Parm table | Parameter name | NEW/<br>CHANGED/<br>DELETED/<br>RELOCATED | Domain (CM or Subnet Management) |
|------------|----------------|-------------------------------------------|----------------------------------|
| OFCENG     | INAP_VARIANT   | CHANGED                                   | CM                               |

### Parameter information

#### INAP\_VARIANT

Intelligent Network Application Protocol Variant.

#### Functional description

The value of the INAP\_VARIANT office parameter determines whether INAP variant specific requirements are considered when handling INAP operations.

#### Provisioning rules

The value should be set to TINAP, if T-INAP support is required.

#### Range information

| Valid Values             | Maximum | Default  |
|--------------------------|---------|----------|
| DFLTINAP, CHINESE, TINAP |         | DFLTINAP |

#### Activation

Any changes are activated immediately.

#### Dependencies

None.

#### Consequences

When setting INAP\_VARIANT to TINAP, Deutsche Telekom (DTAG) specific INAP extensions are activated.

#### Verification

Enable T-INAP support and verify, whether Deutsche Telekom specific INAP extensions are activated.

The following functionality is supported with the INAP\_VARIANT office parameter set to TINAP:

- When ActivityTest operation fails, send an U-ABORT with activityTestFailed error code to the SCP.
- Encode userUser parameter in the ERB operation for DP9.

- Decode the DTAG private parameters in the Connect operation.

**Memory requirements**

No memory impact.

**Parameter release history update**

New TINAP option is implemented for the INAP\_VARIANT office parameter.

**Upgrade Impact**

No impact.

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema**

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| SERVINFO       | CHANGED                  | UNCHANGED                          |

**Table/MIB/Remote Database Schema information****Name: SERVINFO**

Intelligent Network Service Information Table.

**Functional description**

Unchanged.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | unchanged      | unchanged      | unchanged             |

**Fields/OIDs**

The following table lists fields/OIDs for SERVINFO.

**Table field descriptions**

| Field             | New or Changed | Subfield or refinement | Entry                                      | Explanation and action                                            |
|-------------------|----------------|------------------------|--------------------------------------------|-------------------------------------------------------------------|
| INITDP_PARAMETERS | Changed        | refinement             | {..., ACPN, HLC,...}                       | Parameters included when building an InitDP operation.            |
| ACLI              | New            |                        |                                            | Additional Calling Line Identity.                                 |
| HLC               | New            |                        |                                            | High Layer Compatibility.                                         |
| INITDP_EXTENSIONS | Changed        | refinement             | {..., SF_ENC, GAP_INT, NCPC, IN_CONT, ...} | Additional Parameters included when building an InitDP operation. |
| SF_ENC            | New            |                        |                                            | SF Encountered.                                                   |
| GAP_INT           | New            |                        |                                            | GAP Interval.                                                     |
| NCPC              | New            |                        |                                            | National Calling Partys Category.                                 |
| IN_CONT           | New            |                        |                                            | IN Container.                                                     |

**Datafill example**

The following example shows sample datafill for table SERVINFO.

**Example datafill SERVINFO**

|                                                                                                                                                                            |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| SERVIDX                                                                                                                                                                    | OPTION |
| -----                                                                                                                                                                      |        |
| <pre> 1234 ( INITDP_PARAMETERS ( CDPA) ( ACLI) ( HLC) \$)       ( INITDP_EXTENSIONS ( SF_ENC) ( GAP_INT) ( NCPC) ( IN_CONT) \$)       (CS1R (CONTINUE) (CWA) \$) \$ </pre> |        |

**Table release history update**

Extended existing INITDP\_PARAMETERS parameter attribute list.

Extended existing INITDP\_EXTENSIONS parameter attribute list.

**Supplementary information**

None

**Translation verification other tools**

The following example shows the output from TRAVER when it is used to verify SERVINFO.

**Example TRAVER using TINAP extensions**

```
>traver tr step29isupv2 800333123456 b
TABLE TRKGRP
STEP29ISUPV2 IBNT2 0 NPDGP NCRT STEPDEFAULT 0 ASEQ 0 7848810029 ANSDISC 0 N N N
      N N N N 0 0 N 0 0 0 0 N N N N N N N N NATL (BCNAME 3_1KHZ) $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP DFLTGRP
INAP Origination Attempt TDP:  no subscribed trigger.
TABLE NCOS
STEPDEFAULT 0 0 0 STTRK $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
STEPDEFAULT NXLA STEPDEF NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE TRIGGRP
DFLTGRP INFOCOL
      . GENTRIG ( SPC TDP2INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Collected TDP:  trigger criteria not met.
TABLE IBNXLA: XLANAME STEPDEF
TUPLE NOT FOUND
Default from table XLANAME:
STEPDEF
      (NET N N 0 N NDGT N N DOD N 59 NPRT_2 NLCA_NILLA_1 NONE $) $ F
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
59 NLCC NONE NT 1 1 NILSFC 0 PX STEPINTL NIL 00 NPRT_51 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
NPRT_2 NSCR 755 NPRT NONE N $ $
TABLE RATEAREA
```

```

NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
STEPINTL DFLT RTE ( DEST 10)$ DFOP $ CON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 800333123456
TABLE PXCDE
STEPINTL 080 080 CONT ( CLASS INTL) ( XLT FA STEPXLFA)$
TABLE FAHEAD
STEPXLFA DFLT RTE ( DEST 100)$ NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 800333123456
TABLE FACODE
STEPXLFA 800 800 RTE ( MM 5 18) ( DEST 1)$
TABLE: FARTE
KEY: STEPXLFA 1
. S STEP01PRIN
EXIT TABLE FARTE
TABLE TRIGGRP
DFLTGRP INFOANAL
. GENTRIG ( CDPN TDP3INST)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
. . TABLE TRIGDIG
. . TDP3INST GENTRIG 800333 GENTRIG EVENT TCAP INAPV8 SS7 EINJAZZ CALLED
. . (SERVINFO_INDEX 1) $
. . . TABLE SERVINFO
. . . 1
. . . (INITDP_PARMS ( CDPA) (CLI) (ACLI) (HLC) $)
. . . (INITDP_EXTENSIONS (SF_ENC) (GAP_INT) (NCPC) (IN_CONT) $)
. . . (CS1R (CONTINUE) (CWA) $)$
. . . TABLE C7GTTYPE
. . . EINJAZZ CCITT7 0 NATL E164 $
. . . TABLE C7GTT
. . . EINJAZZ 800333123456 800333123456 PCSSN (K1297CCITT_RS0 K1297 0) $ SSN
INAP Info Analyzed TDP: trigger criteria met, querying the database.

+++ AIN TRAVER: SUCCESSFUL CALL TRACE +++

```

## ***Product = World Trade***

### **A00003227 -- IN Support for User to User Service (UUS) (Succession on DMS-Int'l)**

#### ***Functional Description***

This activity performs the following for MMP:

- Introduction of the User-to-User information (UUI) parameter to the INAP InitDP operation as a Nortel defined InitDP parameter. This parameter is controlled via table SERVINFO datafill.
- Integration of the Continue opr XLA REENTRY function and the IN Auto-Continue functionality, i.e. the Auto-Continue functionality supports the XLA REENTRY option.
- Enhancement of the EINTRACE CI tool to display the UUI extension if it is sent within an InitDP operation.

#### **UUI Parameter**

The description in this section assumes the following:

- An incoming call triggers as an IN call (TDP2 or TDP3), i.e. an InitDP is sent to the SCP.

The UUI data, i.e. the real user information without the parameter header octets (i.e. without UUI element identifier, length and protocol discriminator octets), of an incoming BASE and GERMAN ETSI ISUP V2 IAM is read out and transferred within the InitDP operation to the SCP. UUI is only supported towards SCP. It can not be sent back.

If there is no UUI data contained in an incoming ETSI ISUP V2 IAM no UUI related data is sent within the InitDP operation to the SCP.

UUI functionality is only supported for ETSI ISUP V2 signalling.

When auto-continue is invoked, the UUI information is not removed and is passed on to the terminating agents which are ETSI BRI, ETSI PRI and ETSI ISUP.

The ASN.1 format of the UUI extension field of the InitDP looks as follows:

-- Definition of the Nortel UUI Extension

```
NortelUUIExtension EXTENSION
  EXTENSION-SYNTAX ExtUUIType
  CRITICALITY ignore
```

```
-- Assignment of value (integer identifier)
nortelUUExtension NortelUUExtension ::= 20
```

```
-- Type definition (format / possible values)
ExtUUType ::= INExtUU
INExtUU ::= OCTET STRING (SIZE(1..128))
```

An SSP example datafill for UI functionality is shown below:

```
>TABLE SERVINFORM
```

| SERVIDX | OPTION                                                                    |
|---------|---------------------------------------------------------------------------|
| 99      | (INITDP_PARMS ( SERVKEY) (CDPA) (CLI) (EVENT_TYPE) (UUI) \$)              |
|         | (RESPONSE_INFO (CONTINUE_OPT (XLA_REENTRY ( UNIV_XLA PX NETXLA) \$)\$)\$) |
|         | (TCAP_INFO ( INAP_OPT (AUTO_CONTINUE) \$)\$)\$                            |

### Auto-Continue with translation reentry functionality

The requirement is to be able to re-translate a TDP-3 triggered failing SCP query using a pre-defined translator. This functionality is supported in by 'merging' the existing Auto-Continue operation and the existing REENTRY XLA option. For that, both options have to be provisioned within table SERVINFORM for a service index.

Please note that the documented existing SSP functionality is as follows:

- Continue operation with REENTRY:  
In this call scenario the call is either translated using the REENTRY translator (if triggered at TDP-2), or re-translated using the REENTRY translator (if triggered at TDP-3). Armed and encountered EDPs are properly handled.
- Auto-Continue operation (alone):  
In this call scenarios the call is resumed either at TDP-2 (for TDP-2 triggered calls) or TDP-3 (for TDP-3 triggered calls) and behaves the same as a regular Continue operation. Any armed EDP is not handled as the IN feature is cleared as soon as the Auto-Continue opr finishes.

The merger of both above functionalities, i.e. Auto-Continue opr with REENTRY option, does properly work with TDP-2 and TDP-3 triggering but without consideration of EDP handling.

When Auto-continue is invoked, existing EIN301 log is generated.



An SSP example datafill for Auto-Continue with REENTRY functionality is shown below;

```
>TABLE SERVINFO
```

```
SERVIDX
```

```
OPTION
```

```
-----1
```

```
(RESPONSE_INFO (CONTINUE_OPT (XLA_REENTRY (UNIV_XLA  
PX NETXLA ) $)$)$)
```

```
(TCAP_INFO (INAP_OPT (AUTO_CONTINUE) $)$)$
```

```
BOTTOM
```

### UI extension display by EINTRACE CI tool

The EINTRACE CI tool supports the UI extension within an InitDP operation. If an InitDP operation contains an UI extension field, then the EINTRACE CI tool decodes and displays the UI data within the InitDP operation trace.

### Hardware Requirements or Dependencies

None

### Software Requirements or Dependencies

None

### Limitations and restrictions

- The Auto-Continue with XLA reentry utilization is only supported on TDP-3 triggered IN calls without utilization of EDPs or IPs. The Auto-Continue with XLA reentry utilization on TDP-2 triggered IN call is not considered in this activity.
- This activity only supports Base and German ETSI ISUP V2.

### Interactions

None

### Applicable customer facing sections

Fault Management

Logs

N/A

Alarms

N/A

Configuration

Data Schema

X

User Interface

N/A

Element Management

N/A

|                                                 |            |
|-------------------------------------------------|------------|
| Security                                        | <u>N/A</u> |
| Service Order                                   | <u>N/A</u> |
| Office Parameters                               | <u>N/A</u> |
| Accounting (includes AMA billing)               | <u>N/A</u> |
| Performance (includes operational measurements) | <u>N/A</u> |

## Glossary

| Term | Description             |
|------|-------------------------|
| EDP  | Event Detection Point   |
| IP   | Intelligent Peripheral  |
| SCP  | Service Control Point   |
| SSP  | Service Switching Point |
| UUI  | User-User information   |
| IN   | Intelligence Network    |
| TDP  | Trigger Detection Point |
| INAP | IN Application Part     |

## References

A59033629 INAP Auto-Continue

A59022169 ISDN PRI UUS

A59023626 BRI Explicit Call Transfer

## *Configuration for A00003227*

### Hardware and Software Requirements

N/A

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

## Upgrade Impact

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| SERVINFO       | CHANGED                  | Unchanged                          |

### Table/MIB/Remote Database Schema information

Name: SERVINFO

#### Functional Description

Option INITDP\_PARMS of table SERVINFO is extended to add a new field **UUI** to indicate whether parameter UUI data contained in an incoming ETSI ISUP V2 is carried in InitDP.

#### Usage sequence and implications (CM Only)

Current datafill order unchanged.

#### Size

Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| SERVINFO               | no change      | no change      | N/A                   |

#### Fields/OIDs

The following table lists fields/OIDs for SERVINFO.

#### Table field descriptions

| Field        | New or Changed | Subfield or refinement | Entry         | Explanation and action |
|--------------|----------------|------------------------|---------------|------------------------|
| INITDP_PARMS | Changed        | Refinement             | Boolean Value | Add new selection: UUI |

#### Datafill example

Example of datafill;

```
>TABLE SERVINFO
200 (INITDP_PARMS (SERVKEY) (CDPA)(UUI) $)
```

**Supplementary information**

N/A

**Translation verification other tools**

The following example shows the outgoing IAM message and output from EINTRACE when it is used to verify TABLE SERVINFO.

```
>display 1
```

```
C7TU MESSAGE   SIO      DPC      OPC      SLS
num type length ni pr si  XXXX XXXX XXXX  XXXX XXXX XXXX
1  IAM   170   1  2 ISUP  --- default routing label ---
```

```
Message bytes:
```

```
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
```

```
-----
A4 00 FD 04 FD 01 65 25 D0 04 12 67 00 01 00 60 00 0A 00 02
07 05 83 90 50 55 0F 0A 07 03 13 01 72 38 45 68 03 04 1E 02
84 83 20 78 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 7E B9 00 00 00
00 00 00 00 A1 00 00 FC 4F 00 00 00 00 82 A1 00 00 00 00 20
20 20 20 A1 00 00 1C 85 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 1D 03 80 90 A3 00
```

```
>EINTRACE
```

```
>open
```

```
14:25:49 TCAP MESSAGE      Tid : 26 36
```

```
Agent : CKT      2WISUPBA  0
```

```
=====
62 81 F8 48 04 00 00 4F 00 6C 81 EF A1 81 EC 02
01 00 02 01 00 30 81 E3 80 01 63 81 04 03 9C 50
55 82 04 83 90 55 05 83 07 03 13 01 72 38 45 68
85 01 0A 87 01 00 AB 08 30 06 80 01 00 81 01 00
8C 02 00 08 AF 1B 30 19 02 01 0E 0A 01 00 A1 14
04 0F 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 AF 81 84 30 81 81 02 01 11 0A 01 00 A1 79 04
77 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 7E
B9 00 00 00 00 00 00 00 A1 00 00 FC 4F 00 00 00
00 82 A1 00 00 00 00 20 20 20 20 A1 00 00 1C 85
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 9A 02 60 00 BB 03 81 01
00 9C 01 03 9D 02 00 08 9E 01 00
```

```
=====
Type of Package : 62 = BEGIN
```

Originating TRID : 00 00 00 4F  
Component Type : A1 = INVOKE  
Invoke ID : 00  
Operation : 00 = INITIAL DP  
Service Key : 63 = 99  
Dialled Digits  
Odd/Even Indicator : 0 = EVEN  
Nature Of Address : 03 = NATIONAL (SIGNIFICANT) NUMBER  
INN Indicator : 1 = ROUTING TO INTERNAL NETWORK NUMBER  
NOT ALLOWED  
Numbering Plan Indicator : 01 = ISDN (TELEPHONY) NUMBERING  
PLAN (E164)  
Digits : 50 55 = 0555  
Called Party Number  
Odd/Even Indicator : 1 = ODD  
Nature Of Address : 03 = NATIONAL (SIGNIFICANT) NUMBER  
INN Indicator : 1 = ROUTING TO INTERNAL NETWORK NUMBER  
NOT ALLOWED  
Numbering Plan Indicator : 01 = ISDN (TELEPHONY) NUMBERING  
PLAN (E164)  
Digits : 55 05 = 555  
Calling Party Number  
Odd/Even Indicator : 0 = EVEN  
Nature Of Address : 03 = NATIONAL (SIGNIFICANT) NUMBER  
NI Indicator : 0 = COMPLETE  
Numbering Plan Indicator : 01 = ISDN (TELEPHONY) NUMBERING  
PLAN (E164)  
Presentation Restriction : 00 = PRESENTATION ALLOWED  
Screening Indicator : 03 = NETWORK PROVIDED  
Digits : 01 72 38 45 68 = 1027835486  
Calling Partys Category : 0A = ORDINARY CALLING SUBSCRIBER  
CG Encountered : 00 = noCGencountered  
Misc Call Info  
Message Type : 00 = REQUEST  
dpAssignment : 00 = individualLine  
Original Called Party ID  
Odd/Even Indicator : 0 = EVEN  
Nature Of Address : 00 = SPARE  
Numbering Plan Indicator : 00 = UNKNOWN  
Presentation Restriction : 02 = ADDRESS NOT AVAILABLE  
Digits :  
Extensions  
Extension Field  
Type : 0E = CLI NAME  
Criticality : 00 = IGNORE  
Value  
CLI Name : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 = “

## Extensions

## Extension Field

**Type : 14 = UII**

Criticality : 00 = IGNORE

## Value

**UII : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00**  
**00 00 00 00 00 00 00 00 00 00 00 00 7E B9 00 00 00 00 00 00 0**  
**0 A1 00 00 FC 4F 00 00 00 00 82 A1 00 00 00 00 20 20 20 20 A1 00**  
**00 1C 85 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00**  
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

## Forward Call Indicator

Incoming International Call Indicator : 0 =

Call\_to\_be\_treated\_as\_national\_call

End to end method Indicator : 00 = no end to end method available

Interworking Indicator : 0 = no\_interworking\_encountered

End to end information : 0 = no\_end\_to\_end\_available

ISDN user part Indicator : 1 = ISDN\_user\_part\_used\_all\_the\_way

ISDN user part preference Indicator : 01 =

ISDN\_user\_part\_not\_required\_used\_all\_the\_way

ISDN access Indicator : 0 = originating\_access\_non-ISDN

SCCP method Indicator : 00 = no\_indication

## Bearer Capability

Transmission Medium Requirement : 00 = SPEECH

Event Type BCSM : 03 = ANALYZED INFORMATION

## Redirecting Party ID

Odd/Even Indicator : 0 = EVEN

Nature Of Address : 00 = SPARE

Numbering Plan Indicator : 00 = UNKNOWN

Presentation Restriction : 02 = ADDRESS NOT AVAILABLE

## Digits :

## Redirection Information

Redirecting Indicator : 00 = NO REDIRECTION

Original Redirection Reasons : 00 = UNKNOWN/NOT AVAILABLE

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = WT*****A00003466 -- MLPP Default Precedence Level on Termination  
(Succession on DMS)*****Functional Description***

This feature A00003466 MLPP Default Precedence Level on Terminations is an extension of the feature A00000154 Multi-Level Precedence and Preemption supplementary service that is implemented in MMP19/ISN06, for point-to-multipoint ETSI BRI.

In feature A00000154 Multi-Level Precedence and Preemption, calls from non-MLPP sources do not have a precedence when terminating to an MLPP BRI loop. They are not marked as MLPP call and treated as ordinary calls.

This feature is specified to meet Railway Dispatcher System requirements which are not compliant with specification Q955. The implementation for this activity will be done using Q955\_COMPLIANT office parameter.

This feature provide assigning precedence level ROUTINE to calls originated from non-MLPP sources when terminating to an MLPP BRI loop if Q955\_COMPLIANT is set to N. MLPP information (notifications, FAC data, causes) is not sent in the backwards direction to the non-MLPP originator.

Any MLPP related information is not included in IAM in the case of call forwarding or alternate party diversion over ISUP in which call is originated from non-MLPP resource.

**Hardware Requirements or Dependencies**

N/A

**Software Requirements or Dependencies**

N/A

## Limitations and restrictions

1. This feature is in effect only if Q955\_COMPLIANT office parameter is set to N.
2. Non\_MLPP sources mentioned in function description are ETSI BRI, PRI, ETSI ISUP V2
3. Calls from non\_MLPP sources cannot be preempted by network preemption.

## Interactions

If an MLPP call originated from non-MLPP resource is taken into conference -3pty, add-on, preset-it can be preempted by any other higher precedence MLPP call.

## Applicable customer facing sections

### Fault Management

Logs \_\_N/A\_\_

Alarms \_\_N/A\_\_

### Configuration

Data Schema \_\_N/A\_\_

User Interface \_\_N/A\_\_

Element Management \_\_N/A\_\_

Security \_\_N/A\_\_

Service Order \_\_N/A\_\_

Office Parameters \_\_N/A\_\_

Accounting (includes AMA billing) \_\_N/A\_\_

Performance (includes operational measurements) \_\_N/A\_\_

## Glossary

| Term | Description                                    |
|------|------------------------------------------------|
| BRI  | Basic Rate Interface                           |
| ETSI | European Telecommunications Standard Institute |
| ISUP | ISDN User Part                                 |



|      |                                       |
|------|---------------------------------------|
| MLPP | Multi Level Precedence and Preemption |
| IAM  | Initial Address Message               |

## ***Product = World Trade***

### **A00003686 -- Re-routing based on Release Cause Value (Succession on DMS-Int'l)**

#### ***Functional Description***

This feature provides re-routing of a call, when the release message (before ACM message) with ISUP cause value is received for terminating ETSI ISUP V1 and V2 agent (Base ETSI ISUP V1 and V2) and Belgian ISUP agent on a trunk route.

The activity provides re-routing on ETSI ISUP trunks for pre-datafilled release causes.

In current system ISUP Re-Routing on Congestion Cause value (No Circuit Available(34) or Switching Equipment Congestion(42)) is provided by Feature A59013395 called ISUP Re-routing on Congestion MMP13. It supports re-routing when congestion takes place for calls terminating to ETSI ISUP.

In current system, re-routing criteria depends on:

- CND NRR selector in the routing tuple
- Rel message received with congestion cause value

For this activity, Re-routing criteria will depend on:

- presence of CND NRR selector in routing tuple
- Rel message (before ACM message) received with ISUP cause value for which RTEADV field in table FLXCMAP was provisioned.
- optionality of feature

This feature has no affect on feature A59013395.

The activity is optional with a SOC option. When state of SOC is ON, feature becomes active, otherwise system behaves as it was before this functionality.

Through the findocs of this activity, 'ISUP cause value' is used to address ISUP cause value except following cause values:

Normal Call Clearing (CI=16),

Normal Unspecified (CI=30),

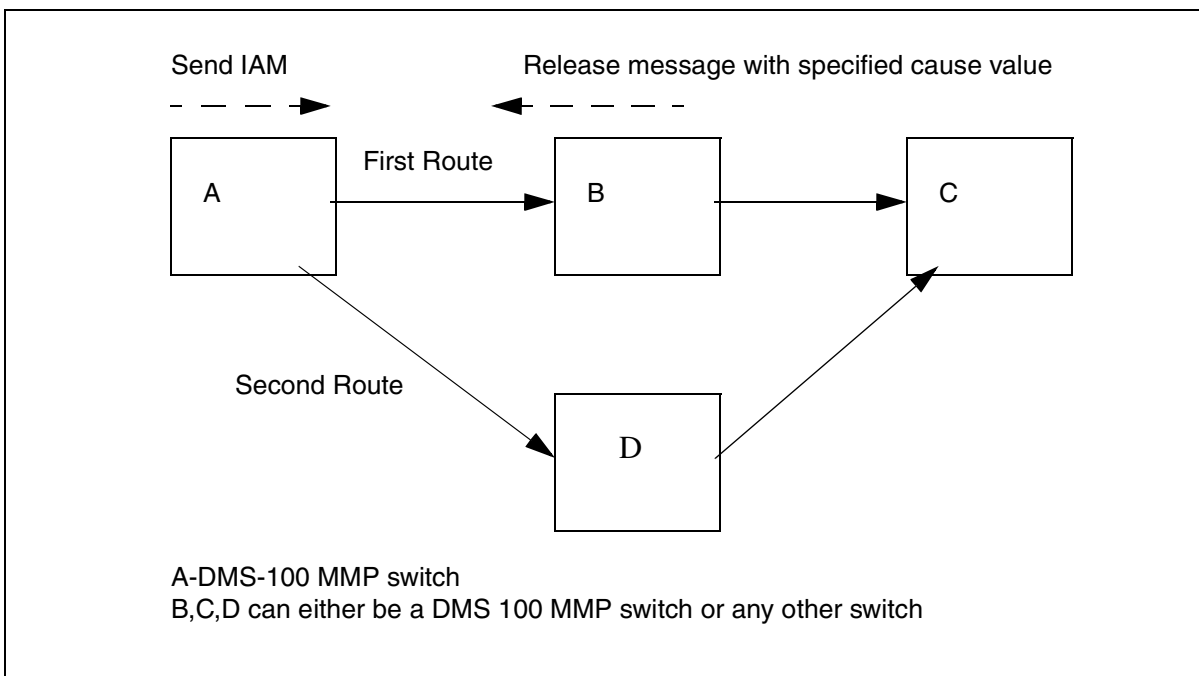
Interworking Unspecified (CI=127).

The feature is implemented in ISN07.

### Functional Description

The following figure describes functional behavior of the feature. In this case, ISUP IAM is sent out on first route. When REL message with ISUP cause value is returned in response along the first route, second route is determined in route list in office A. If second route is present and required conditions are provided, IAM is sent on second route.

#### Functional Behavior of the Feature



The conditions mentioned above are shown in Figure "Design Flow of The Feature" on page 1592 and can be listed as follows:

- a. *If ISUP cause value in REL message is congestion (No Circuit Available(34) or Switching Equipment Congestion(42)):*

- It is directly checked CND NRR datafill as alternate route. If CND NRR selector is present in route list for terminating side (A office), call is routed to another trunk (second route). Otherwise, call goes to treatment.
- b. *If ISUP cause value in REL message is not congestion, following conditions are determined respectively:*
  - Checking whether REL message is received before ACM message. Re-routing is provided for REL message before ACM message.
  - Checking of SOC option. It must be ON state for re-route.
  - Determining of RTEADV field in FLXCMAP table. It must be Y for re-route
  - Checking of CND NRR datafill as alternate route. CND NRR selector must be present in the route list for re-route.

If these three conditions are provided, call is routed to another trunk (second route). Otherwise, call is terminated to treatment

### Activation of Feature

Activation of feature is controlled by SOC XLAS0053.

XLAS Reroute Rel Cause is a state SOC and it has two states, ON and IDLE. Default state of XLAS Reroute Rel Cause is IDLE. When its state is ON, this feature becomes functional.

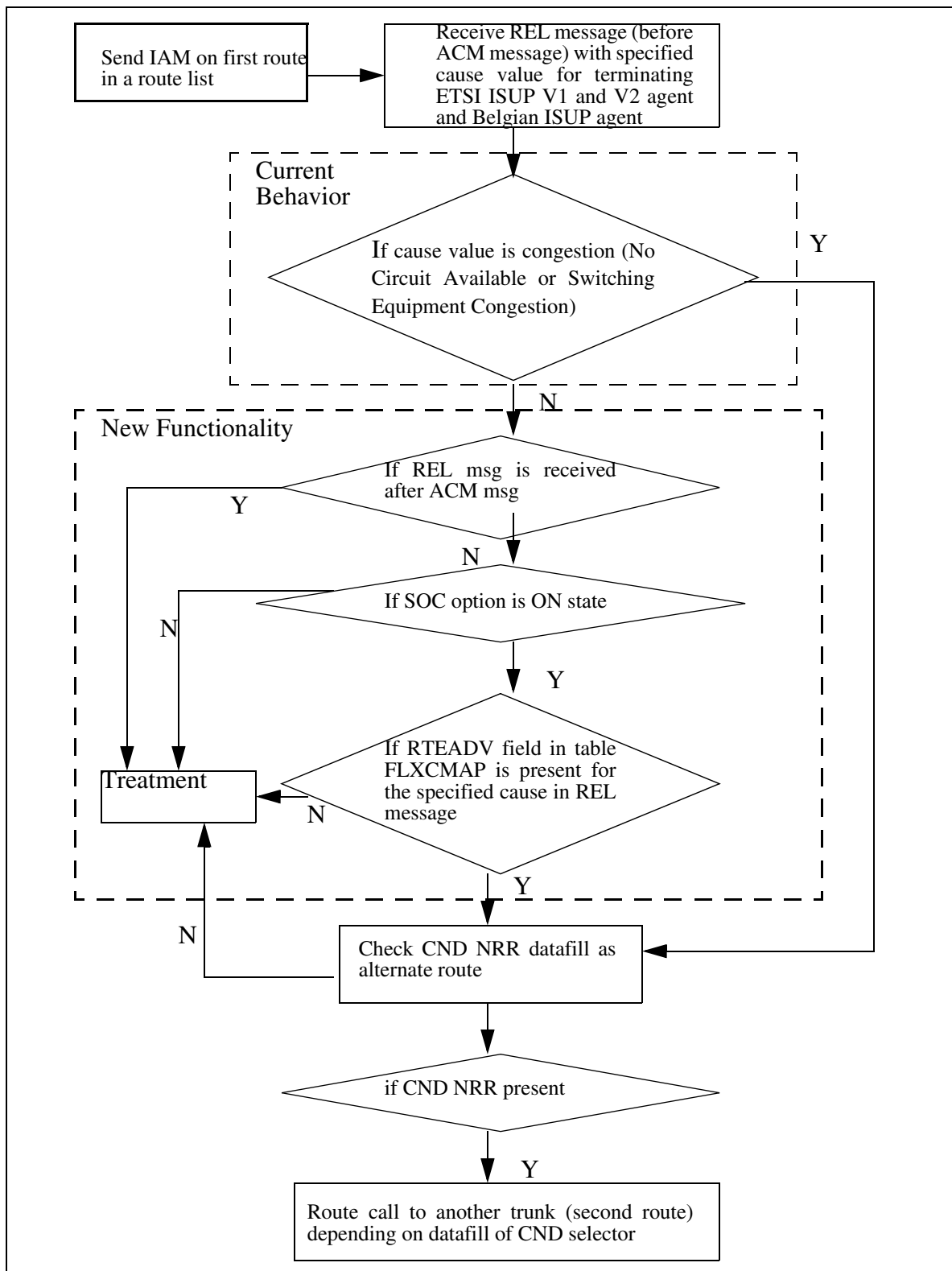
### Provisioning Table FLXCMAP

Normally, there is a map in FLXCMAP table for ISUP cause value in release message. It should be mapped ISUP cause value to Network Re-Routing Capability for each ISUP cause value in REL message. For providing this, RTEADV field of table FLXCMAP is used. RTEADV field for ISUP cause value in FLXCMAP table must be provisioned to Yes so as to perform re-routing

SOC option ISP70008 must be ON state so as to be provisioned RTEADV field in FLXCMAP table. So this feature is dependent on activation of SOC option ISP70008.

Figure “Example for FLXCMAP Table Datafill” on page 1593 shows an example for datafill of table FLXCMAP.

## Design Flow of The Feature



**Example for FLXCMAP Table Datafill**

| CSEMPKEY |                | TREAT | RTEADV |
|----------|----------------|-------|--------|
| -----    |                | ----- | -----  |
| USERBUSY | CCITT_STANDARD | BUSY  | Y      |
| NOCIRCAV | CCITT_STANDARD | NCRT  | Y      |

**Provisioning CND NRR selector**

CND NRR selector must be provisioned in the route list at the terminating side for re-route. In Figure “Example for Route Table Datafill” on page 1593, it is given an example for datafill of route table.

**Example for Route Table Datafill**

| XLANAME  | RTEREF | RTELIST                                          |
|----------|--------|--------------------------------------------------|
| -----    | -----  | -----                                            |
| TEXTXLA  | 10     | S TRUNK1<br>S TRUNK2                             |
| TEXTXLA1 | 12     | S TRUNK3<br>S TRUNK4<br>CND NRR SK 0<br>S TRUNK5 |

**Note:** The routing tables that support the CND NRR selector include: XXRTE, OFRX, IBNRTX tables.

**Hardware Requirements or Dependencies**

None

**Software Requirements or Dependencies**

- Feature C59015296 must be active for re-route since SOC option ISP70008 is implemented by C59015296 feature.
- SOC option XLAS0053 must be on for activation of this feature

**Limitations and restrictions**

Since this is enhancement in feature A59013395, it's limitations and restrictions are valid for this feature too. These are two items as follows:

- Rerouting will not be supported when REL message with ISUP cause value is received after an ACM (PostACM).

- It should be noted that re-routing will be limited to a specific number of route attempts(8 re-routing attempts). It is possible that the datafill may cause an infinite re-routing to occur, if the datafill is such that we are trying to select the already congested trunk.

Furthermore, following limitation and restriction will be valid for this feature.

- Whilst this functionality should work for terminating agents ETSI ISUP V1, ETSI ISUP V2 and all national ISUP variants based on ETSI V1 / V2, it is only being validated for use with terminating agents ETSI ISUP V1, ETSI ISUP V2 and Belgian ISUP.

## Interactions

### IN Functionality

In a call where IN is involved, current behavior is such that, if the received ISUP Release Cause Value is mapped in Table CSEDPMAP to an EDP for which IN has requested reporting, this ISUP Release Cause is passed to IN via the EDP value depending on this CSEDPMAP table. The EDP values involved for our purposes may be as follows:

- EDP-4 (Route \_Select\_Failure) RSF can be aimed to detect a failure to route a call to a final destination. In the current functionality, Congestion Cause Value is mapped to RSF.
- EDP-5 (o\_Called\_Party\_Busy) For Called Party being Busy
- EDP-9(o-Disconnect) For Called Party Disconnecting

Currently, the IN behavior for Congestion Cause Value (No\_Circuit\_Available\_ or Switching Equipment Congestion) does not check CSEDPMAP table and reattempts translation with CND NRR selector. In other words, IN involvement is skipped. This behavior for Congestion Cause Value is kept as it is.

With this feature, the interaction of the IN functionality with the CND NRR selector for other ISUP Release Causes will be as follows:

1. If the related ISUP Release Cause has a mapping to an EDP in Table CSEDPMAP:
  - *If the SCP has requested reporting of this EDP:* The handling will be left to IN, and the EDP will be reported to the SCP.
  - *If IN has not requested the reporting of this EDP:* CND NRR selector will be functional.
2. If the related ISUP Release Cause does not have a mapping to an EDP in Table CSEDPMAP: CND NRR will be functional.

## Applicable customer facing sections

### Fault Management

|        |     |
|--------|-----|
| Logs   | N/A |
| Alarms | N/A |

### Configuration

|                    |     |
|--------------------|-----|
| Data Schema        | N/A |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | X   |
| Office Parameters  | N/A |

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

## Glossary

| Term    | Description                                     |
|---------|-------------------------------------------------|
| IAM     | Initial Address Message                         |
| ISUP    | ISDN User Part                                  |
| ETSI    | European Telecommunications Standards Institute |
| SOC     | Software Optionality Control                    |
| EDP     | Event Detection Point                           |
| CND NRR | Network Re-Routing Conditional Selector         |

## Configuration for A00003686

### Hardware and Software Requirements

N/A

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)**

N/A

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

There is one new SOC option that is introduced with this feature, XLAS Reroute Rel Cause.

XLAS Reroute Rel Cause is defined under XLAS SOC group. Functionality of feature is controlled with this SOC option. It is a state SOC, whose can be ON or IDLE. When state of XLAS Reroute Rel Cause is ON, feature becomes functional.

**XLAS Reroute Rel Cause SOC**

|                          |                        |
|--------------------------|------------------------|
| SOC option name:         | XLAS0053               |
| SOC option title:        | XLAS Reroute Rel Cause |
| SOC option control type: | state                  |
| New SOC option?          | Yes                    |
| SOC option order code    | XLAS0053               |
| Option defined in DRU:   | WT                     |
| Affected products:       | ISN07                  |

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A



## ***Product = World Trade***

### **A00004503 -- Calling Party Number Serving Country Code (Succession on DMS)**

#### ***Functional Description***

##### **Notation**

The following notations are used throughout the whole document.

Switch: DMS-GSP Switch

Outpulsing/Terminating CLI: Outgoing CGPN

Callp: Call Processing

EISUPV1: ETSI ISUP Version 1

EISUPV2: ETSI ISUP Version 2

##### **Introduction**

This document describes the feature ‘Calling Party Number Serving Country Code (SCC)’ which is implemented in GSPISN07 for GSP product (i.e. datafillable on Axxess trunks).

This feature enhances the feature AD9743 by introducing the ability to deactivate the terminating SCC processing for Calling Party Number (CGPN) for ANSI ISUP, ETSI ISUP V1, ETSI ISUP V2, RBTUP and BBTUP agencies.

Terminating SCC processing is controlled via the SCC field of the xxATTR tables (i.e. ISUPATTR, TUPATTR) and applies to both the CGPN and CDPN by removing the country code and changing the CGPN and CDPN Nature of Address (NOA) to National.

With this feature, terminating SCC functionality may be deactivated for the Calling Party Number parameter independent from Called Party Number (CDPN) on a per trunk basis.

##### **The background for the requirement**

According to the feature for SCC Processing (AD9743), SCC functionality’s aspect is that; when a global carrier switch such as the DMS-GSP is translating calls received from or destined for different countries, it can be difficult to establish a database of calling numbers due to potential conflicts between each country’s number formats. Additionally, when terminating international calls into a certain country, the national dialing plan might require conversion of the

called and calling address from international to national formats. The Serving Country Code (SCC) functionality in feature AD9743 is designed to address these issues.

DMS takes off the country code (CC) (implemented in the existing feature AD9743) in the Calling Party Number Parameter in some case and consequently some organizations will delete the CLID when there is no CC or the NOA (nature of address) is set to National or in the worse case, they will reject the call.

This feature introduces the functionality where it is possible to disable the CGPN terminating SCC functionality inside the GSP.

### **Description of Feature**

The feature “Calling Party Number SCC” is implemented in GSPISN07 for GSP product(i.e. datafillable on Axxess trunks).

With this feature, the country code may be always present on the CGPN even when the calls are terminating in country while at the same time have it stripped for the CDPN.

Feature introduces the ability to deactivate terminating SCC processing on the CGPN independently of the CDPN and this is done on a per trunk group basis. Following agencies are supported by this feature:

- ANSI ISUP
- ETSI ISUP V1
- ETSI ISUP V2
- RBTUP
- BBTUP

A new field is introduced in table TRKGRP to provide control for deactivation of terminating SCC processing for CGPN on a per trunk basis.

- the originating Calling Party Number (CG) SCC functionality remains unchanged
- the terminating SCC functionality for CDPN remains unchanged

A new field in Table TRKGRP is defined to activate/deactivate terminating CGPN SCC processing in order to make terminating CGPN SCC processing independent from terminating CDPN SCC processing. While building up the CGPN in IAM/IAI/INF message this field is checked in order to decide if the terminating SCC processing will be active or not.

- If the field (CGSCCDEA) is set to 'Y' then terminating CGPN SCC processing is deactivated, that is, no SCC processing will be performed on the CGPN, CGPN remaining unchanged from the original received format.
- If the field is set to 1 'N' then terminating CGPN SCC processing is not deactivated, that is, the existing terminating SCC processing continues to work for CGPN.

This feature provides an optionality for terminating CGPN SCC processing by changing the new field in TRKGRP table. When this boolean field (CGSCCDEA) is set to 'N', the system behaves as it was before this functionality, that is, it performs SCC processing on that trunk (ref. AD9743FN, section 1.4.9.2).

### Existing Behavior

Below is a background and only a quote for summary for the Feature AD9743. For details please refer to the FN section of that feature.

Feature for SCC processing AD9743 functions as below:

1. Call Origination to the GSP: Convert a received Calling Party Number (CLI) from national to international format before performing any CLI screening (in this way, CLIs can be datafilled for each country). This involves prefixing the SCC and changing the NOA/TON to "International".
2. Call Termination: Convert the Called Party Number from International to National format (thus, stripping the country code and changing the NOA/TON to "National").
3. Call Termination: Convert the CLI to national format by stripping the country code and changing the NOA/TON back to "National".

This feature only enhances the call termination functionality of feature AD9743 mentioned above as the this item.

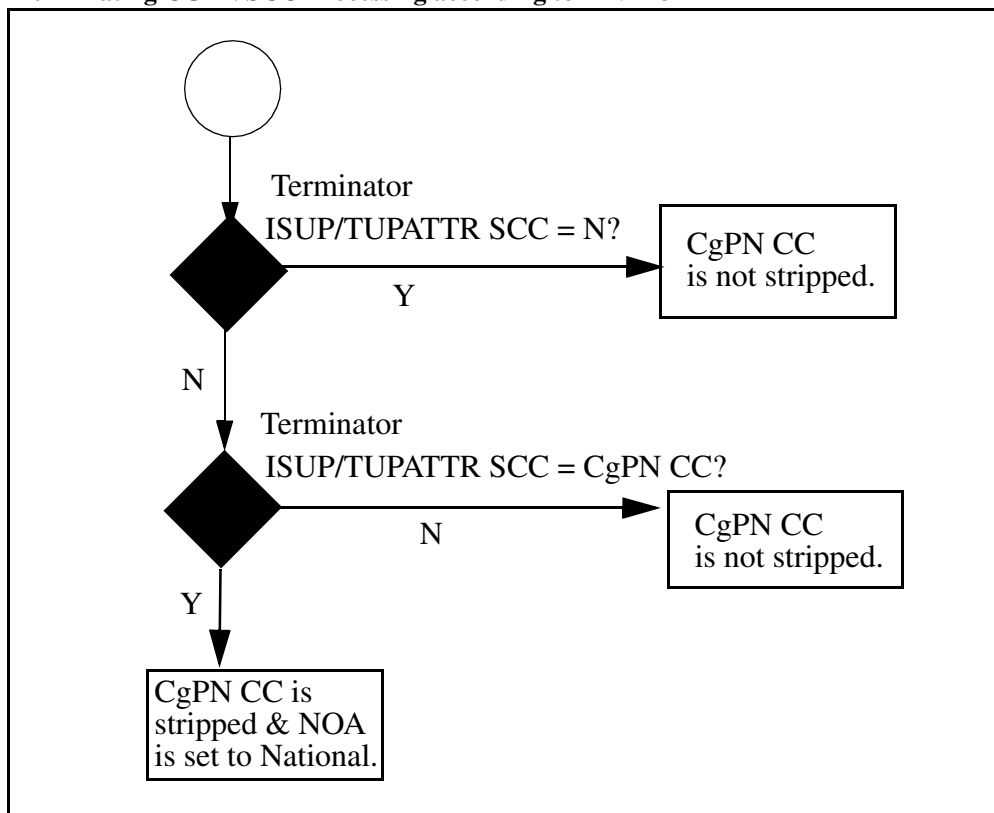
In order to invoke the SCC feature AD9743, only the Serving Country Code (SCC) is datafilled according to trunk's protocol type. The SCC is assigned to a trunk in ISUPATTR, PRIATTR, TUPATTR or CASATTR (only for C5). Below table illustrates the tuples and datafills for the table ISUPATTR.

**Table ISUPATTR**

```

>table isupattr
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISUPATTR
>format pack;lis
ISUPKEY ISUPATTR_DATA SS7ATIDX SCC ECHOSUPR ECHOSELECT TMRNAME ABCNTL
GLAREVAR DCME ISUP_PREF PI_ROUTING OVLPOUTP CLIOUTP UNSUPPORTED_PARM OCN_DMI
-----
100 ANSI7 NIL THRH 0 N N 0 N N UNEQ NIL NONE CIC N NOVERI N N NIL FILTER 0
205 EISUPV2 NIL THRH 0 Y INTL Y 0 N N UNEQ NIL NONE CIC N NOVERI N N NIL
FILTER 0
0 ANSI7 NIL THRH 0 N N 0 N N UNEQ NIL NONE CIC N NOVERI N N NIL FILTER 0
1 EISUPV1 NATIONAL NOVERI NIL THRH 0 Y Y N 0 N N UNEQ NIL NONE CIC N NOVERI
N N NIL FILTER 0

```

**Terminating CGPN SCC Processing according to AD9743**

The preceding figure illustrates terminating CGPN SCC processing according to feature AD9743. During termination further processing is needed for an

International ANI. If the call is terminating within the same country it originated, then the Country Code from the CGPN needs to be stripped off. To determine if the call is terminating in the same country, the Serving Country Code for the terminating agency in table xxxATTR is compared to the Country Code of the Calling Party Number. If the SCC and CC match then the CC is stripped off from the CGPN and the NOA of the CGPN is set to National. Stripping will not occur if SCC and CC mismatch or if SCC is datafilled as N in table xxxATTR.

In the feature AD9743, the Serving Country Code is a parameter in the tables ISUPATTR and TUPATTR. This field has a NIL option of N if no SCC is datafilled. The range for the SCC parameter is 1 to 3 digits. The SCC is used to create International ANIs out of the incoming Calling Party Number.

### **Functionality Introduced with this Feature**

This feature enhances the feature AD9743 by providing an optionality that, for the terminating agents of the supported protocols (ANSI ISUP, ETSI ISUP V1, ETSI ISUP V2, RBTUP, BBTUP) SCC processing for CGPN may be deactivated according to the new boolean field (CGSCCDEA) in table TRKGRP.

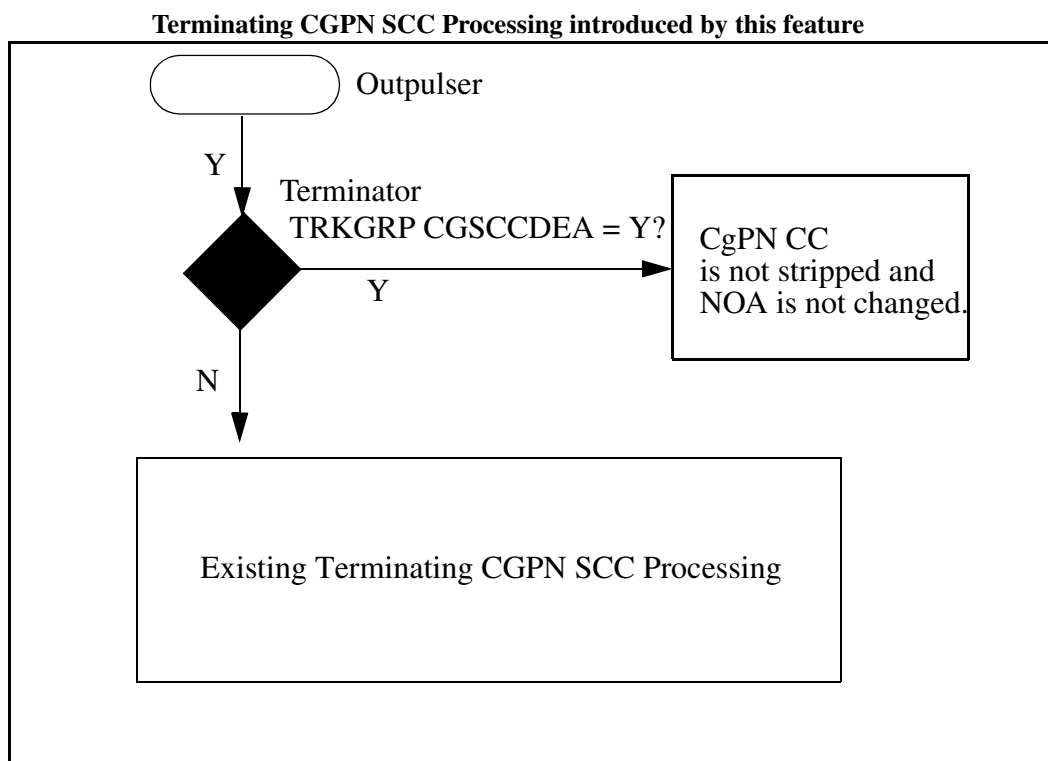
This feature functions for the default CLI being built inside the GSP switch as well.

Below is the TRKGRP table with the new field CGSCCDEA and some examples:

**Table TRKGRP**

```
>table trkgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISUPATTR
>format pack;lis
<line length>: 76 columns can be output per line.
<pack mode>: Pack mode is ON.
<indent column>: Indented lines will begin in column 1.
<first column>: The first column of output is column 1.
GRPKEY GRPTYP TRAFSNO PADGRP NCCLS GRPINFO
-----
GANSIE1STEP1 AXCESS 0 NPDGP NCIT 2W ODP1 MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N 1 0 0 0 N N NIL NIL ISUP (NETINFO) $ 0 STD N Y NIL 0 N

GITU1E1STEP1 AXCESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y Q764
N 1 0 0 0 N N NIL NIL ISUP $ 1 STD N Y NIL 0 Y
```



The preceding figure illustrates the terminating CGPN SCC processing introduced by this feature. The new field in table TRKGRP is checked to activate/deactivate terminating SCC processing in order to make terminating CGPN SCC processing independent from CDPN processing.

When building up the outgoing IAM / INF/IAI message this field is checked in order to determine whether the SCC will be stripped off or not.

- If the field is 'Y', then there will not be any SCC processing on CGPN and CGPN will be left as it is.
- If the field in table TRKGRP for the terminating trunk agent is 'N', then the existing SCC processing will continue to work for CGPN as in the functionality of feature AD9743.

### Activation of Feature

This feature is functional for ANSI ISUP, ETSI ISUP V1, ETSI ISUP V2, RBTUP and BBTUP agencies. For the other protocols and variants, this feature is not functional.

The new field will be set to 'N' by default for all axcess trunks including incoming, outgoing and two-way trunks. But it will be functional for only outgoing and two-way trunks.

The default value for the newly introduced field 'CGSCCDEA' is 'N'.

CGSCCDEA field can be set to 'Y' for only terminating ANSI ISUP, ETSI ISUP V1, ETSI ISUP V2, RBTUP and BBTUP trunks. Please refer to "Limitations/Restrictions" section of this document for details.

### New field CGSCCDEA in TRKGRP

To control the SCC processing on per trunk basis, a new boolean field CGSCCDEA is added to TRKGRP table for each trunk having the possible values 'Y' representing 'YES' and 'N' representing "NO".

#### Activating/ Deactivating Terminating CGPN SCC Process

```
>table trkgrp
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos GANSIE1STEP1
GANSIE1STEP1 AXCESS 0 NPDGP NCIT 2W ODP1 MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N 1 0 0 0 N N NIL NIL ISUP (NETINFO) $ 0 STD N Y NIL 0 N

>pos GANSIE1STEP2
GANSIE1STEP2 AXCESS 0 NPDGP NCIT 2W ODP2 MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N 1 0 0 0 N N NIL NIL ISUP (NETINFO) $ 0 STD N Y NIL 0 Y
```

As seen from the figure 3, CGSCCDEA field in TRKGRP table is represented as 'Y' or 'N' and for all axcess trunks it is set to 'N' by default.

### TABLE CONTROL

A new field 'CGSCCDEA' is introduced for AXCESS trunks in Table TRKGRP.

- The default value of the new field 'CGSCCDEA' is 'N' for all trunks
- For ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP trunks CGCCDEA field can be set to 'Y' to deactivate the terminating SCC processing for CGPN which means for the trunks that have this new field set to 'Y', Country Code is not going to be stripped off and NOA is not going to be changed while outputting the CGPN on the terminating side.

The limitations and restrictions for setting and changing the CGSCCDEA field is mentioned in "Limitations and Restrictions" section of this document.



**SIGNALLING:**

When a CPGN is received from incoming side with NOA: INTL and SCC code is prefixed in IAM message:

- If the CGSCCDEA is set to 'N' in Table TRKGRP, 'terminating CGPN SCC processing' will work according to feature AD9743; if the SCC prefix in CGPN matches the SCC datafill in TUPATTR/ISUPATTR tables for the outgoing trunk SCC will be stripped off and the NOA will be set to NATL for CGPN in outpulsed IAM message.
- If the CGSCCDEA is set to 'Y' in Table TRKGRP, CGPN will be outpulsed as received.

When an INR message is received from terminating switch; while outpulsing the CGPN in INF message (if the CGPN to be sent has the NOA INTL and SCC code prefix):

- If the CGSCCDEA is set to 'N' in Table TRKGRP, terminating CGPN SCC processing will work according to feature AD9743; if the SCC prefix in CGPN matches the SCC datafill in TUPATTR/ISUPATTR tables for the outgoing trunk SCC will be stripped off and the NOA will be set to NATL for CGPN in outpulsed INF message.
- If the CGSCCDEA is set to 'Y' in Table TRKGRP, CGPN will be outpulsed with NOA INTL and SCC code prefix in INF message.

This functionality is introduced for interworkings which have the terminating side protocols: ETSI ISUP V1, ETSI ISUP V2, ANSI ISUP, RBTUP/BBTUP.

**Hardware Requirements or Dependencies**

None.

**Software Requirements or Dependencies**

None.

**Limitations and restrictions**

This functionality is introduced for interworkings which have the terminating side protocols: ETSI ISUP V1, ETSI ISUP V2, ANSI ISUP, RBTUP/BBTUP.

The new field will be set to 'N' by default for all axcess trunks including incoming, outgoing and two-way trunks. But it will be functional for only outgoing and two-way trunks.

As for datafill changes there are some restrictions and limitations:

**When attempting to change the value of CGSCCDEA field in table TRKGRP:**

For axcess trunks other than ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP, CGCCDEA field CAN NOT be changed to 'Y'.

If the field is attempted to be changed from 'N' to 'Y' for any AXCESS trunks other than ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP, error messages are displayed and modification can not be realized:

- For trunks other than ISUP/TUP:  
"CGSCCDEA can be set to Y for ISUP and TUP protocols."
- For ISUP trunks other than ETSI ISUP V1, V2 and ANSI ISUP:  
"CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP."
- For TUP trunks other than RBTUP/BBTUP:  
"CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP/BBTUP."

**When attempting to change the value of Protocol field in table TRKGRP:**

For axcess trunks if the CGCCDEA field is 'Y', the 'Protocol' field in Table Trkgrp cannot be changed to any protocol other than ISUP and TUP.

If the Protocol field is attempted to be changed from ISUP or TUP to any other protocol, an error message is displayed and modification can not be realized.

- For an Axxess trunk with the CGSCCDEA field 'Y' and protocol field ISUP or TUP in table TRKGRP:  
"CGSCCDEA can be set to Y for ISUP and TUP protocols."

**When attempting to change the value of Protidx field in table TRKGRP:**

For axcess trunks if the CGCCDEA field is 'Y', the 'Protidx' field in Table Trkgrp cannot be changed to any index other than the indexes representing the supported variants.

If the Protidx field is attempted to be changed from an index representing a supported variant to any other index of an unsupported variant, an error message is displayed and modification can not be realized.

- For an Axxess trunk with the CGSCCDEA field 'Y' and protidx field in table TRKGRP representing a supported variant of ISUP:  
"CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP."
- For an Axxess trunk with the CGSCCDEA field 'Y' and protidx field in table TRKGRP representing a supported variant of TUP:  
"CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP/BBTUP."

### While adding a new AXXESS trunk in Table TRKGRP:

Following error messages are displayed if the new trunk has the CGSCCDEA field as 'Y' and the trunk is not a ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP TRUNK.

- For trunks other than ISUP/TUP:  
"CGSCCDEA can be set to Y for ISUP and TUP protocols."
- For ISUP trunks other than ETSI ISUP V1, V2 and ANSI ISUP:  
"CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP."
- For TUP trunks other than RBTUP/BBTUP:  
"CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP/BBTUP."

### When CGSCCDEA field is set to 'Y':

For any of the trunks ETSI ISUP V1, ETSI ISUP V2 , ANSI, RBTUP, BBTUP; an error message is displayed under the name of the trunk which has the CGSCCDEA field set to 'Y' if there is an attempt to change the protocol in ISUPATTR/TUPATTR tables to a value other than ETSI V1, ETSI V2, ANSI and RBTUP (protocols that do not support CGPN SCC deactivation) and it is not permitted to change the protocol variant in ISUPATTR/TUPATTR tables unless the CGSCCDEA field is changed to 'N' for all related trunks.

- "CGSCCDEA field is set to Y in Table TRKGRP"

### Interactions

This feature is an enhancement of the SCC processing function in feature AD9743.

### Applicable customer facing sections

Fault Management N/A

Logs \_\_\_N/A\_\_\_

Alarms \_\_\_N/A\_\_\_

Configuration

Data Schema \_\_\_X\_\_\_

User Interface \_\_\_X\_\_\_

Element Management \_\_\_N/A\_\_\_

Security \_\_\_N/A\_\_\_

Service Order \_\_\_N/A\_\_\_

Office Parameters \_\_\_X\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_N/A\_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_N/A\_\_\_\_\_

## Glossary

| Term     | Description                                         |
|----------|-----------------------------------------------------|
| ANI      | Automatic Number Identification                     |
| ANSI     | American National Standards Institute               |
| BBTUP    | Blue Book TUP                                       |
| CC       | Country Code                                        |
| CDPN     | Called Party Number                                 |
| CGPN     | Calling Party Number                                |
| CLI/CLID | Calling Line Identity                               |
| ETSI     | European Telecommunications Standards Institute     |
| GSP      | Global Services Platform                            |
| IAI      | Initial Address Message with Additional Information |
| IAM      | Initial Address Message                             |
| INR      | Information Request                                 |
| ISUP     | Integrated Services Digital Network User Part       |
| NOA      | Nature of Address                                   |
| ONP      | One Night Process                                   |
| RBTUP    | Red Book TUP                                        |
| SCC      | Serving Country Code                                |
| TON      | Type Of Number                                      |
| TUP      | Telephony User Part                                 |

## References

AD9743 GLOBAL CARRIER SWITCH IN-SWITCH SERVICES

## *Configuration for A00004503*

## Hardware and Software Requirements

N/A.

## Initial Configuration

N/A

## Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

## Upgrade Impact

### Dump and Restore

If the boolean field CGSCCDEA exists in the prior releases, it is transferred unchanged; if it does not exist, it is moved in ONPs by 'N' as default.

### Element Management Upgrade

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| TRKGRP         | CHANGED                  | CHANGED                            |

### Table/MIB/Remote Database Schema information

#### Name: TRKGRP

Trunk group table

#### Functional description

TRKGRP table is used to store agent basis information about trunks to be able to define and change variable options about trunks including group type, trunk direction, class of service,....etc.

A new field is added to this table to provide a new control mechanism in order to activate/deactivate terminating SCC processing for CGPN.

#### Usage sequence and implications (CM Only)

In order to be able to add a new tuple into table TRKGRP, current datafill order is unchanged.

## Size

### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory |
|------------------------|----------------|----------------|-----------------------|
| TRKGRP                 | 0              | 912            |                       |

## Fields/OIDs

The following table lists new field added into TRKGRP table.

### Table field descriptions

| Field    | New or Changed | Subfield or refinement | Entry | Explanation and action                                  |
|----------|----------------|------------------------|-------|---------------------------------------------------------|
| CGSCCDEA | NEW            | None                   | Y/N   | Terminating CGPN SCC processing deactivation/activation |

## Datafill example

The following example shows sample datafill for table TRKGRP:

```
>table trkgrp
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos GANSIE1STEP1
GANSIE1STEP1 AXCESS 0 NPDGP NCIT 2W ODP1 MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N 1 0 0 0 N N NIL NIL ISUP (NETINFO) $ 0 STD N Y NIL 0 N

>pos GANSIE1STEP2
GANSIE1STEP2 AXCESS 0 NPDGP NCIT 2W ODP2 MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N 1 0 0 0 N N NIL NIL ISUP (NETINFO) $ 0 STD N Y NIL 0 Y
```

In the above example, the last field in table TRKGRP illustrated as bold is the CGSCCDEA field datafilled per trunk. It is a boolean value and it can be datafilled as Y or N.

### Table TRKGRP

| GRPKEY       | GRPTYP | TRAFSNO | ..... | CGSCCDEA |
|--------------|--------|---------|-------|----------|
| GANSIE1STEP1 | AXCESS | 0       |       | N        |

| GRPKEY       | GRPTYP | TRAFSNO | ..... | CGSCCDEA |
|--------------|--------|---------|-------|----------|
| GANSIE1STEP2 | AXXESS | 0       |       | Y        |

**Table release history update**

N/A.

**Supplementary information**

N/A.

**Table Control Messages**

As for datafill changes there are some restrictions and limitations:

**When attempting to change the value of CGSCCDEA field in table TRKGRP:**

- a. For trunks ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP:

For these supported protocols, CGSCCDEA field can be changed as illustrated in the below figure.

**Changing CGSCCDEA for supported protocols**

```

>table trkgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos GITU2IE1N01D
GITU2IE1N01D AXXESS 0 NPDGP NCIT 2W GPX MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 101 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N N 0 0 0 N N NIL NIL ISUP (NETINFO) $ 105 STD N Y NIL 0 N
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
GRPTYP: AXXESS
>
TRAFSNO: 0
>
.....
CGSCCDEA: N
>y
TUPLE TO BE CHANGED:
GITU2IE1N01D AXXESS 0 NPDGP NCIT 2W GPX MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 101 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y ALL
N N 0 0 0 N N NIL NIL ISUP (NETINFO) $ 105 STD N Y NIL 0 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE CHANGED
JOURNAL FILE INACTIVE

```

For trunks other than ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP CGSCCDEA field CAN NOT be changed to 'Y'. If the field is attempted to be changed from 'N' to 'Y' for any AXXESS trunk type, the following error/warning messages are displayed and modification can not be realized:

1. For trunks other than ISUP/TUP:

“CGSCCDEA can be set to Y for ISUP and TUP protocols.”



**Changing CGSCCDEA for trunks other than ISUP/TUP**

```

>table trkgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos CR11MANIC1
CR11MANIC1 AXXESS 0 NPDGP NCIT IC MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 N N NODEF NO_OVERRIDE VOICE_DATA Y
NOPROP N 1 0 0 0 N N NIL NIL CAS 3 STD N Y NIL 0 N
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
GRPTYP: AXXESS
>
TRAFSNO: 0
>
.....
CGSCCDEA: N
>y
CGSCCDEA can be set to Y for ISUP and TUP protocols.
TUPLE TO BE CHANGED:
CR11MANIC1 AXXESS 0 NPDGP NCIT IC MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 N N NODEF NO_OVERRIDE VOICE_DATA Y
NOPROP N 1 0 0 0 N N NIL NIL CAS 3 STD N Y NIL 0 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
CGSCCDEA can be set to Y for ISUP and TUP protocols.
DATA CONSISTENCY ERROR
UNEXPECTED ERROR CONDITION

```

**2. For ISUP trunks other than ETSI ISUP V1, V2 and ANSI ISUP:**

“CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP.”

**Changing for ISUP trunks other than E ISUP V1, V2 and ANSI ISUP**

```

>table trkgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos GCOLOIE1A01A
GCOLOIE1A01A AXXESS 0 NPDGP NCIT 2W GPX MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 101 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y Q764
N 1 30 121 0 N N NIL NIL ISUP $ 104 STD N Y NIL 0 N
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
GRPTYP: AXXESS
>
TRAFSNO: 0
>.....
CGSCCDEA: N
>y
CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTRas ETSI ISUP
V1,ETSI ISUP V2 and ANSI ISUP.
TUPLE TO BE CHANGED:
GCOLOIE1A01A AXXESS 0 NPDGP NCIT 2W GPX MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 101 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y Q764
N 1 30 121 0 N N NIL NIL ISUP $ 104 STD N Y NIL 0 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>n
DMO REJECTED
>

```

**3. For TUP trunks other than RBTUP/BBTUP:**

“CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP /BBTUP.”

**Changing for TUP trunks other than RBTUP/BBTUP**

```

>table trkgrp
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TRKGRP
>pos GBTUPSTEP1
GBTUPSTEP1 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 N N NODEF NO_OVERRIDE VOICE_DATA Y
PROT1 N 1 0 0 0 N N NIL NIL TUP 0 STD N Y NIL 0 N
>table tupattr
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TUPATTR
>pos 0
      0                      BTUP N N N   N           N       N BTUP2W
      CIC                      NIL
>quit
TABLE: TRKGRP
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
GRPTYP: AXXESS
>
TRAFSNO: 0
>.....
CGSCCDEA: N
>y
CGSCCDEA can be set to Y for TUP trunks datafilled
in Table TUPATTR as RBTUP/BBTUP.
TUPLE TO BE CHANGED:
GBTUPSTEP1 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 N N NODEF NO_OVERRIDE VOICE_DATA Y
PROT1 N 1 0 0 0 N N NIL NIL TUP 0 STD N Y NIL 0 Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y

```

**While adding a new AXXESS trunk in Table TRKGRP:**

Following error messages are displayed if the new trunk has the CGSCCDEA field as 'Y' and the trunk is not a ETSI ISUP V1, ETSI ISUPV2, ANSI, RBTUP and BBTUP TRUNK.

CGSCCDEA can be set to Y for ISUP and TUP protocols.

CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP.

CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP /BBTUP.

**When CGSCCDEA field is set to 'Y':**

For any of the trunks ETSI ISUP V1, ETSI ISUP V2, ANSI, RBTUP, BBTUP; an error message is displayed under the name of the trunk which has the CGSCCDEA field set to 'Y' if there is an attempt to change the protocol in ISUPATTR/TUPATTR tables to a value other than ETSI V1, ETSI V2, ANSI and RBTUP (protocols that do not support CGPN SCC deactivation) and it is prevented to change the protocol variant in ISUPATTR/TUPATTR tables unless the CGSCCDEA field is changed to 'N'.

“CGSCCDEA field is set to Y in Table TRKGRP”

## Changing variant field in Table TUPATTR

```

>table tupattr
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TUPATTR
>pos 101
>cha
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUITy
>
VARIANT: RBTUP
>FTUP
ADJNODE:
>nil
OVLPOUTP: N
>
OVERLAP: N
>
.....
CGSCCDEA field is set to Y in Table TRKGRP
TUPLE TO BE CHANGED:
      101  FTUP      THRH   0   NONE   N      NIL      N      N      NIL
      CIC          NIL
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>
INVALID REPLY
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y

```

When the CGSCCDEA field is set to 'Y' in Table TRKGRP, there are some restrictions for changing the 'Protocol' and 'Protidx' fields of TRKGRP table as follows:

For axcess trunks if the CGCCDEA field is 'Y', the 'Protocol' field in Table Trkgrp can not be changed to any protocol other than ISUP and TUP.

If the Protocol field is attempted to be changed from ISUP or TUP to any other protocol, an error message is displayed and modification can not be realized.

- For an Axxess trunk with the CGSCCDEA field 'Y' and protocol field ISUP or TUP in table TRKGRP:

“CGSCCDEA can be set to Y for ISUP and TUP protocols.”

**Changing Protocol field in TRKGRP if CGSCCDEA is 'Y'**

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TABLE: TRKGRP

>>pos GITU1E1STEP2

GITU1E1STEP2 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING  
NIL\_COSGRP 0 901 NONE 0 0 NIL\_CUST 1 Y Y NODEF NO\_OVERRIDE VOICE\_DATA Y Q764  
N 1 0 0 0 N N NIL NIL ISUP \$ 1 STD N Y NIL 0 Y

>cha

JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED  
ENTER Y TO CONTINUE PROCESSING OR N TO QUITy

>

GRPTYP: AXXESS

>

TRAFSNO: 0

>

PADGRP: NPDGP

>

.....

.....

PROTOCOL: ISUP

>CAS

PROTIDX: 1

>

FWDXMT: STD

>

INTLNTWK: N

>

LOOPBACK: Y

>

POECNAME: NIL 0

>

CGSCCDEA: Y

>

CGSCCDEA can be set to Y for ISUP and TUP protocols.

TUPLE TO BE CHANGED:

GITU1E1STEP2 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING  
NIL\_COSGRP 0 901 NONE 0 0 NIL\_CUST 1 Y Y NODEF NO\_OVERRIDE VOICE\_DATA Y Q764  
N 1 0 0 0 N N NIL NIL CAS 1 STD N Y NIL 0 Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>N

DMO REJECTED

>

For axcess trunks if the CGCCDEA field is 'Y', the 'Protidx' field in Table Trkgrp cannot be changed to any index other than the indexes representing the supported variants.

If the Protidx field is attempted to be changed from an index representing a supported variant to any other index of an unsupported variant, an error message is displayed and modification can not be realized.

- For an Axxess trunk with the CGSCCDEA field 'Y' and protidx field in table TRKGRP representing a supported variant of ISUP:

“CGSCCDEA can be set to Y for ISUP trunks datafilled in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP.”

- For an Axxess trunk with the CGSCCDEA field 'Y' and protidx field in table TRKGRP representing a supported variant of TUP:

“CGSCCDEA can be set to Y for TUP trunks datafilled in Table TUPATTR as RBTUP/BBTUP.”



**Changing Protidx field in TRKGRP if CGSCCDEA is 'Y'**

```
2004/01/09 16:29 SANITY HAS FINISHED HANDAN 2011
TABLE: TRKGRP

>>pos GITU1E1STEP2
GITU1E1STEP2 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y Q764
N 1 0 0 0 N N NIL NIL ISUP $ 1 STD N Y NIL 0 Y
>cha
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUITy

>
GRPTYP: AXXESS
>
TRAFSNO: 0

>PADGRP: NPDGP
>
.....
CCNTLIDX: NIL
>
PROTOCOL: ISUP
>
OPTIONS:
>$
PROTIDX: 1
>215
FWDXMT: STD
>
INTLNTWK: N
>
LOOPBACK: Y
>
POECNAME: NIL    0
>
CGSCCDEA: Y
>
CGSCCDEA can be set to Y for ISUP trunks datafilled
in Table ISUPATTR as ETSI ISUP V1,ETSI ISUP V2 and ANSI ISUP.
TUPLE TO BE CHANGED:
GITU1E1STEP2 AXXESS 0 NPDGP NCIT 2W MAN MIDL 16 7 16 16 4 5 4 ALERTING
NIL_COSGRP 0 901 NONE 0 0 NIL_CUST 1 Y Y NODEF NO_OVERRIDE VOICE_DATA Y Q764
N 1 0 0 0 N N NIL NIL ISUP $ 215 STD N Y NIL 0 Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>N
```

**Translation verification other tools**

N/A

**Service Orders (SO) (CM & SESM)**

N/A.

**Software optionality control (SOC)**

N/A.

**Element Management**

N/A.

**Command interface changes**

N/A.

**Security**

N/A.

**Configuration Walkthrough**

N/A.

***Product = World Trade*****A00004563 -- Moroccan ISUP V2 on DMS100 (Succession on DMS)*****Functional Description***

This activity addresses the following functionality:

1. Introduction of Moroccan ISUP version 2 as a new variant of ETSI ISUP version 2 signaling protocol
2. Support for Moroccan ISUP v2 - Moroccan ISUP v2 interworking
3. Tandem exchange functionality related to the following ISUP messages in a Moroccan ISUP v2 - Moroccan ISUP v2 interworking:
  - Charge (CRG)
  - Information Request (INR)
  - Information (INF)

The Moroccan ISUP v2 is built upon ETSI ISUP v2 BASE variant.

The requirements for Moroccan ISUP v2 are stated in Maroc Telecom Specific Requirements version 1.5.

## Introduction of New Variant

The Moroccan ISUP v2 variant is introduced to the DMS. As a result, it is possible to perform calls over a trunkgroup that is datafilled as of Moroccan ISUP v2 variant.

The following is a sample datafill in table TRKSGRP for outgoing (OG), incoming (IC) and two-way (2W) Moroccan ISUP v2 trunks:

### Sample TRKSGRP datafill for Moroccan ISUP v2 trunks

```
TABLE: TRKSGRP
SGRPKEY CARDCODE SGRPVAR SGRPVAR
-----
OGMRISUPV2 0 DS1SIG C7UP OG N N UNEQ NONE Q767 THRH 0 DMS N N
MOROCCO 100_WHITE $ OGN7

ICMRISUPV2 0 DS1SIG C7UP IC N N UNEQ NONE Q767 THRH DMS
MOROCCO 100_WHITE $ ICN7

2WMRISUPV2 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0 DMS N N
MOROCCO 100_WHITE $ 2WN7 CIC
```

Table C7UPTMR is used to datafill the signaling timers applying to a specific trunk subgroup in table TRKSGRP. Table C7UPTMR is not modified by this activity but an example is presented here for completeness.

### Sample C7UPTMR datafill for Moroccan ISUP v2 timers

```
TABLE: C7UPTMR
TMRKEY C7UPDIR TMRS OPTIONS
-----
OGN7 OG Q767 15 180 326 60 90 20 180 10 60 10 60 1000 10 120 240 10 $
ICN7 IC Q767 15 180 326 60 90 15 5 15 10 60 10 60 10 60 10 60
10 60 10 120 240 10 20 4 $
2WN7 2W Q767 15 180 326 60 90 20 15 180 5 15 10 60 10 60 10 60
10 60 10 60 1000 10 120 240 10 15 20 4 10 $
```

## Interworking Support

This activity supports **only** Moroccan ISUP v2 - Moroccan ISUP v2 interworking.

For other interworkings supported by Moroccan ISUP v2, please refer to the following activity documentation:

- a00004563: Line to Moroccan ISUP V2 Interworking
- a00004560: Moroccan ISUP - ISDN Interworking

- a00004557: Moroccan R2 and Interworkings

## Supported Messages and Parameters

### Supported Messages

This activity supports the ISUP v2 messages presented in Table “Supported Messages in Moroccan ISUP v2” on page 1624”. Please note that the level of support is restricted to **tandem exchange functionality only**.

#### Supported Messages in Moroccan ISUP v2

| Message Name                             | Message Code |
|------------------------------------------|--------------|
| Address Complete                         | #06          |
| Answer                                   | #09          |
| Blocking                                 | #13          |
| Blocking Acknowledgement                 | #15          |
| Call Progress                            | #2C          |
| Charge                                   | #31          |
| Circuit Group Blocking                   | #18          |
| Circuit Group Blocking Acknowledgement   | #1A          |
| Circuit Group Reset                      | #17          |
| Circuit Group Reset Acknowledgement      | #29          |
| Circuit Group Unblocking                 | #19          |
| Circuit Group Unblocking Acknowledgement | #1B          |
| Confusion                                | #2F          |
| Connect                                  | #07          |
| Continuity                               | #05          |
| Continuity Check Request                 | #11          |
| Facility                                 | #33          |
| Facility Accepted                        | #20          |
| Facility Rejected                        | #21          |
| Facility Request                         | #1F          |
| Forward Transfer                         | #00          |
| Information                              | #04          |
| Information Request                      | #03          |

| Message Name               | Message Code |
|----------------------------|--------------|
| Initial Address            | #01          |
| Pre-release Information    | #42          |
| Release                    | #0C          |
| Release Complete           | #10          |
| Reset Circuit              | #12          |
| Resume                     | #0E          |
| Segmentation               | #38          |
| Subsequent Address         | #02          |
| Suspend                    | #0D          |
| Unblocking                 | #14          |
| Unblocking Acknowledgement | #16          |
| User-to-user Information   | #2D          |

### Supported Parameters

The set of parameters supported in Moroccan ISUP v2 messages is the same as in ETSI ISUP v2 BASE variant, unless otherwise stated.

The differences with respect to the ETSI ISUP v2 BASE variant are listed in the subsequent tables. Please note that the level of support is restricted to **tandem exchange functionality only** for all parameters.

- A parameter of type “F” is a mandatory parameter for the specified message and has a fixed length as specified in ITU-T Recommendation Q763.
- A parameter of type “V” is a mandatory parameter for the specified message and can have a variable length as specified in ITU-T Recommendation Q763.
- A parameter of type “O” is an optional parameter for the specified message and can have a variable length as specified in ITU-T Recommendation Q763.

### Supported Parameters in Initial Address Message

| Parameter Name                  | Parameter Type |
|---------------------------------|----------------|
| Message type                    | F              |
| Nature of connection indicators | F              |
| Forward call indicators         | F              |

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Calling party's category            | F              |
| Transmission medium requirement     | F              |
| Called Party Number                 | V              |
| Calling Party Number                | O              |
| Optional Forward call indicators    | O              |
| Redirecting number                  | O              |
| Redirection information             | O              |
| CUG interlock code                  | O              |
| Original Called Number              | O              |
| User-to-user information            | O              |
| Access transport                    | O              |
| Generic number                      | O              |
| Propagation delay counter           | O              |
| User teleservice information        | O              |
| Service Activation                  | O              |
| CCBS parameter                      | O              |
| Generic digits                      | O              |
| Parameter Compatibility Information | O              |
| Generic notification                | O              |
| Location number                     | O              |
| Hop Counter                         | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Address Complete Message**

| Parameter Name                    | Parameter Type |
|-----------------------------------|----------------|
| Message Type                      | F              |
| Backward Call Indicators          | F              |
| Optional Backward Call Indicators | O              |
| Cause Indicators                  | O              |
| User-to-User Indicators           | O              |

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| User-to-User Information            | O              |
| Access Transport                    | O              |
| Generic Notification                | O              |
| Access Delivery Information         | O              |
| Redirection Number                  | O              |
| Parameter Compatibility Information | O              |
| Call Diversion Information          | O              |
| Redirection Number Restriction      | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Answer Message**

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Message Type                        | F              |
| Backward Call Indicators            | O              |
| Optional Backward Call Indicators   | O              |
| User-to-User Indicators             | O              |
| User-to-User Information            | O              |
| Connected Number                    | O              |
| Access Transport                    | O              |
| Access Delivery Information         | O              |
| Generic Notification                | O              |
| Parameter Compatibility Information | O              |
| Generic Address                     | O              |
| Redirection Number                  | O              |
| Redirection Number Restriction      | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Call Progress Message**

| Parameter Name | Parameter Type |
|----------------|----------------|
| Message Type   | F              |

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Event Information                   | F              |
| Cause Indicators                    | O              |
| Backward Call Indicators            | O              |
| Optional Backward Call Indicators   | O              |
| Access Transport                    | O              |
| User-to-User Indicators             | O              |
| Redirection Number                  | O              |
| User-to-User Information            | O              |
| Generic Notification                | O              |
| Access Delivery Information         | O              |
| Parameter Compatibility Information | O              |
| Call Diversion Information          | O              |
| Redirection Number Restriction      | O              |
| Call Transfer Number                | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Facility Message**

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Message Type                        | F              |
| Access Transport                    | O              |
| Generic Notification                | O              |
| Message Compatibility Information   | O              |
| Parameter Compatibility Information | O              |
| Call Transfer Number                | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Connect Message**

| Parameter Name           | Parameter Type |
|--------------------------|----------------|
| Message Type             | F              |
| Backward Call Indicators | F              |



| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Optional Backward Call Indicators   | O              |
| Connected Number                    | O              |
| User-to-User Indicators             | O              |
| User-to-User Information            | O              |
| Access Transport                    | O              |
| Generic Notification                | O              |
| Access Delivery Information         | O              |
| Parameter Compatibility Information | O              |
| Redirection Number                  | O              |
| Generic Address                     | O              |
| Redirection Number Restriction      | O              |
| End of Optional Parameters          | O              |

- The *Charge Message* is nationally defined for Moroccan ISUP v2. The structure of the message is presented in detail in Table "Supported Parameters in Charge Message". This activity is responsible **only** for the tandeming of the Charge Message in a Moroccan ISUP v2 - Moroccan ISUP v2 interworking.

#### Supported Parameters in Charge Message

| Parameter Name                      | Parameter Type | Parameter Code | Parameter Length |
|-------------------------------------|----------------|----------------|------------------|
| Message Type                        | F              | N/A            | 1                |
| Tariff Index                        | O              | #FF            | 3                |
| Pulse Number                        | O              | #FE            | 3                |
| Parameter Compatibility Information | O              | #39            | 4                |
| End of Optional Parameters          | O              | #00            | 1                |

- The Moroccan ISUP v2 uses the *Information Request* and *Information Messages* as defined in ITU-T Recommendation Q.763. The message formats are included here for convenience only.

**Supported Parameters in Information Request Message**

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Message Type                        | F              |
| Information Indicators              | F              |
| Call Reference                      | O              |
| Calling Party Number                | O              |
| Calling Party's Category            | O              |
| Connection Request                  | O              |
| Network Specific Facility           | O              |
| Parameter Compatibility Information | O              |
| End of Optional Parameters          | O              |

**Supported Parameters in Information Message**

| Parameter Name                      | Parameter Type |
|-------------------------------------|----------------|
| Message Type                        | F              |
| Information Request Indicators      | F              |
| Call Reference                      | O              |
| Network Specific Facility           | O              |
| Parameter Compatibility Information | O              |
| End of Optional Parameters          | O              |

**Handling of Called Party Number Parameter in IAM****Numbering Plan Indicator (NPI) field in CdPn:**

- The Moroccan ISUP supports **only** the “ISDN Telephony Numbering Plan” value for the NPI field in the CdPn parameter in an IAM.
- In order to support other values of NPI in the IAM CdPn, the incoming and/or outgoing Moroccan ISUP v2 trunk must be provisioned with the **ALL\_NPI** option via table *TRKSGRP*. An attempt to receive and/or transmit an IAM with an unsupported NPI value results in the **release** of the call.

**Nature of Address (NOA) field in the CdPn:**

- The Moroccan ISUP supports **only** the following values for the NOA field in the CdPn parameter in an IAM:
  - *Subscriber Number*
  - *National Significant Number*
  - *International Number*
- In order to support other values of NOA in the IAM CdPn, the incoming and/or outgoing Moroccan ISUP v2 trunk must be provisioned with the **ALL\_NOA** option via table *TRKSGRP*. An attempt to receive and/or transmit an IAM with an unsupported NOA value results in the **release** of the call.
- In a Moroccan ISUP v2- Moroccan ISUP v2 interworking, the NOA of the CdPn in the outgoing IAM is determined according to the **translation class datafill**:

**Setting CdPn NOA via translation class**

| Translation Class Datafill                                                                                         | NOA of the Called Party Number in the outgoing IAM |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| No class datafill ( <b>\$</b> ), Intragroup ( <b>IAGRP</b> )                                                       | Same as the CdPn NOA in the incoming IAM           |
| International ( <b>INTL</b> ), Intercontinental ( <b>ICNTL</b> ), International Operator Assisted ( <b>IOPRA</b> ) | International Number (#04)                         |
| National ( <b>NATL</b> ), Continental ( <b>CNTL</b> ), Operator Assisted ( <b>OPRA</b> ), Cellular ( <b>CELL</b> ) | National Significant Number (#03)                  |
| Local ( <b>LCL</b> )                                                                                               | Subscriber Number (#01)                            |
| Other classes                                                                                                      | Subscriber Number (#01)                            |

**Timers**

The Moroccan ISUP v2 functionality supports the ISUP timers indicated in ITU-T Recommendation Q.764, "Signalling System No.7 - ISDN user part signaling procedures".

The timers **not** supported by Moroccan ISUP v2 are listed in Table "Timers not supported by Moroccan ISUP v2":

**Timers not supported by Moroccan ISUP v2**

| Timer Name | Associated Functionality | ITU-T Reference |
|------------|--------------------------|-----------------|
| T3         | Temporary Trunk Blocking | Q.764, 2.9.9    |

| Timer Name | Associated Functionality                                                   | ITU-T Reference                              |
|------------|----------------------------------------------------------------------------|----------------------------------------------|
| T29, T30   | Congestion Control                                                         | Q.764, 2.10.2                                |
| T31, T32   | ISUP - SCCP signaling                                                      | Q.730 1.4.7.3, 1.4.7.4.1, 1.4.7.4.2, 1.4.7.5 |
| T38        | Suspend/Resume functionality in an incoming international gateway exchange | Q.764 2.4.1, 2.4.2, 2.4.3                    |
| T39        | Malicious Call Identification (MCID)                                       | Q.731.7                                      |

### Supported Call Functionality & Services

This section outlines the functionality & services supported by Moroccan ISUP v2. The level of support is restricted to **tandem exchange functionality only**.

#### Basic Call Capabilities & Procedures

- Speech/3.1 kHz audio
- 64 kbit/s unrestricted
- Compatibility procedure
- Confusion procedure
- Tones and announcements
- MTP pause and resume
- Access delivery information
- Transportation of User teleservice information
- Generic number transfer
- Generic digit transfer
- Generic notification procedure
- Simple Segmentation procedure (IAM only)

#### Supplementary Services

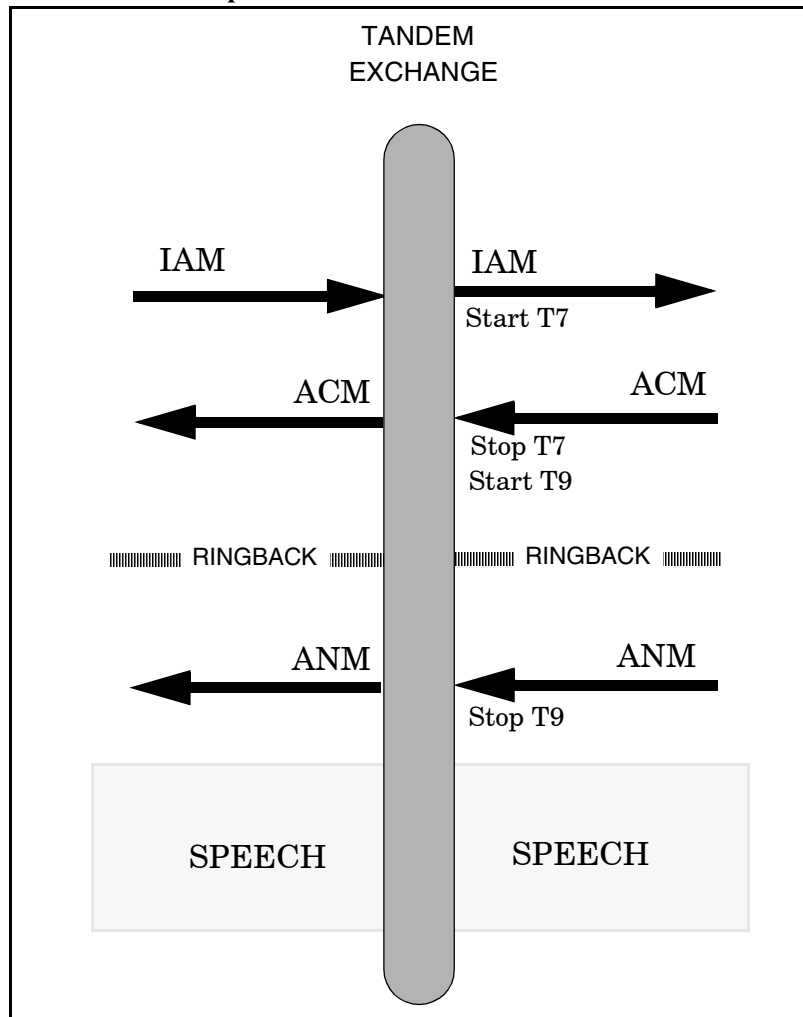
- CLIP/CLIR
- COLP/COLR
- SUB
- TP
- CFU/CFB/CFNR
- CD
- CW

- HOLD
- CONF
- 3PTY
- CUG
- UUS service 1 (implicit)/1 (explicit)/2/3
- ECT
- CCBS
- MCT (CLF)
- MCID

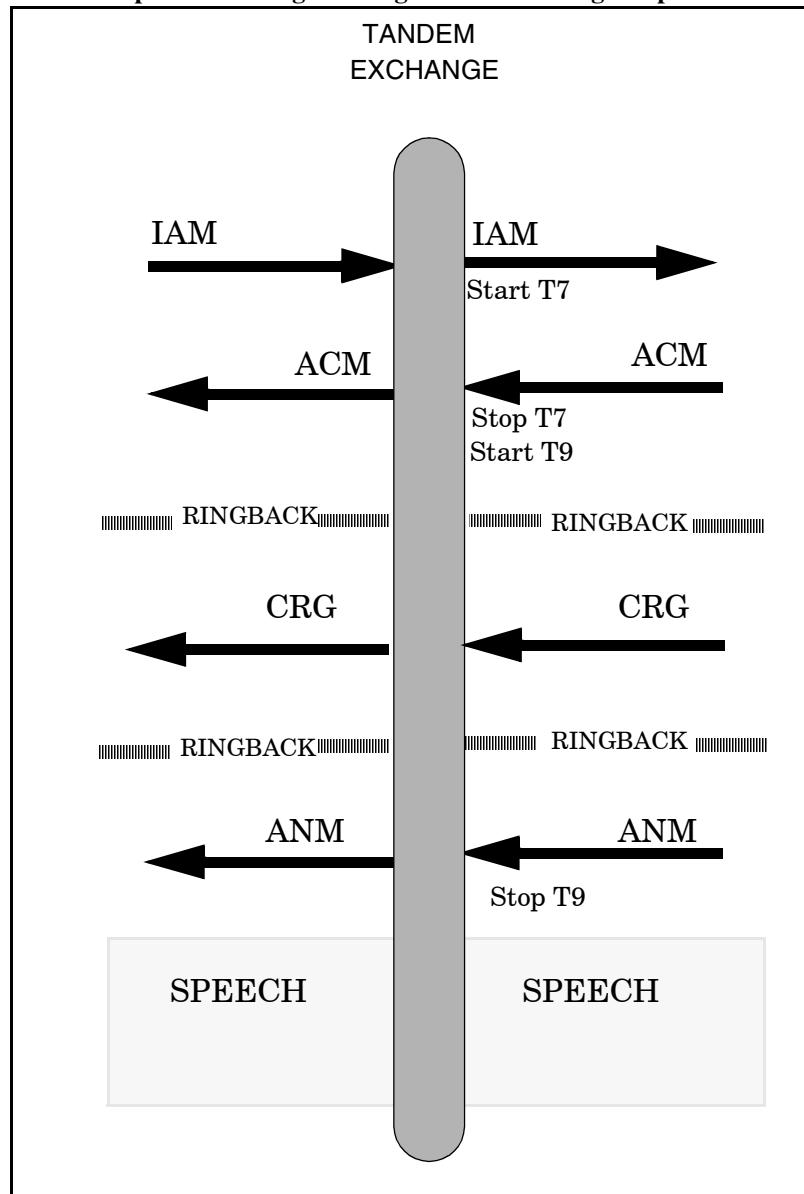
## Typical Call Scenarios

### Normal Call Setup

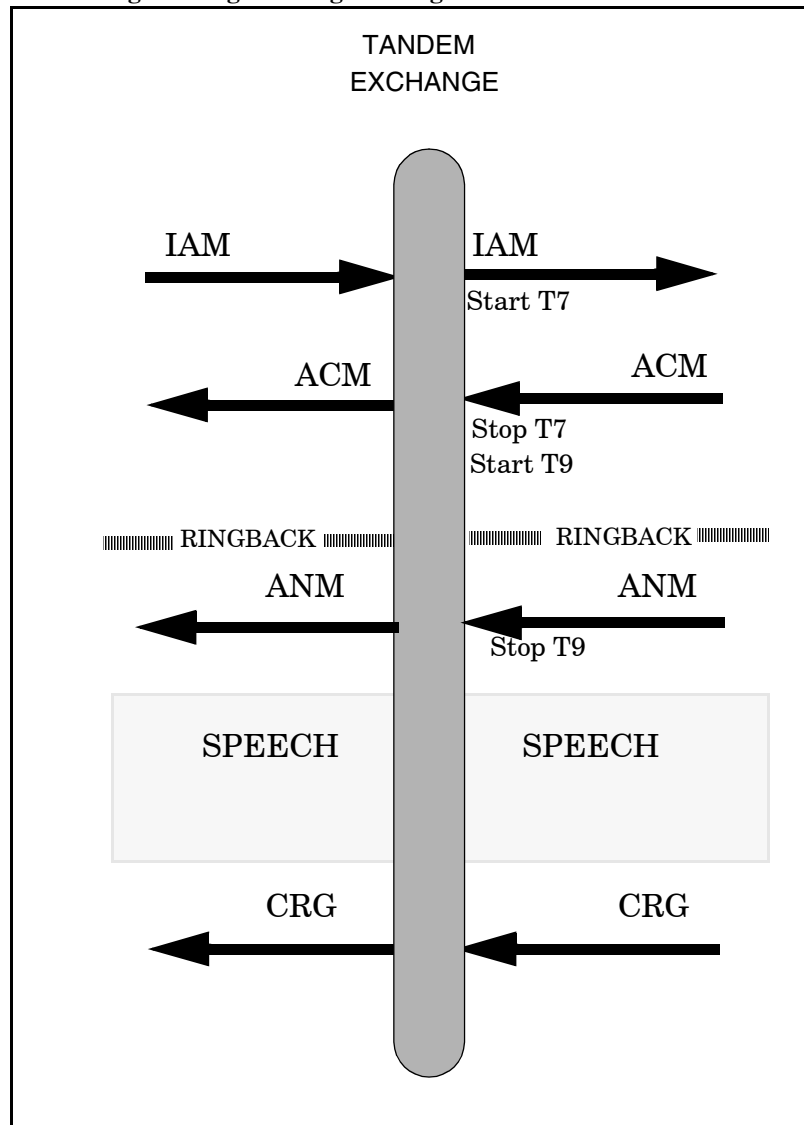
#### Normal Call Setup



- Timer T7 is started upon sending the IAM, and stopped upon receiving the first backward call setup message (ACM in this case).
- Timer T9 is started upon receiving the ACM, and stopped upon receiving the answer indication (ANM in this case).

**Call with a Charge Message received during call setup****Call Setup with a Charge Message received during setup**

- The DMS tandems the CRG message as is.
- No timers specific to CRG message are implemented in the tandem exchange.
- Timers T9 is not impacted by CRG message.

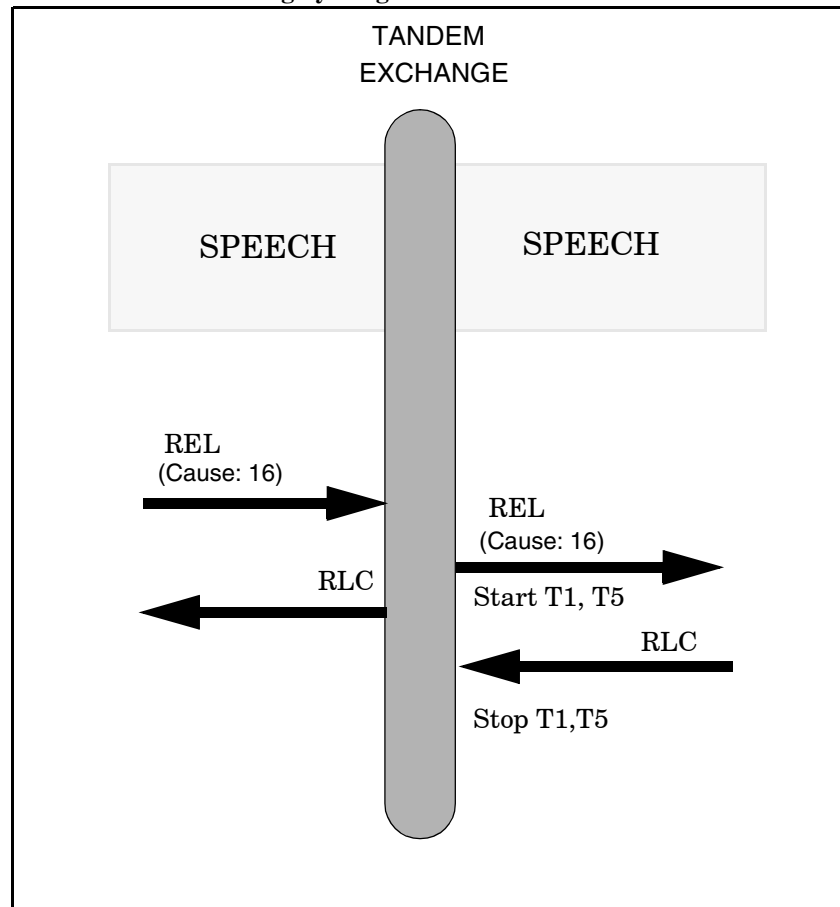
**Call with a Charge Message received during conversation****Receiving a Charge Message During Conversation**

- The DMS tandems the CRG message as is.
- No timers specific to CRG message are implemented in the tandem exchange.

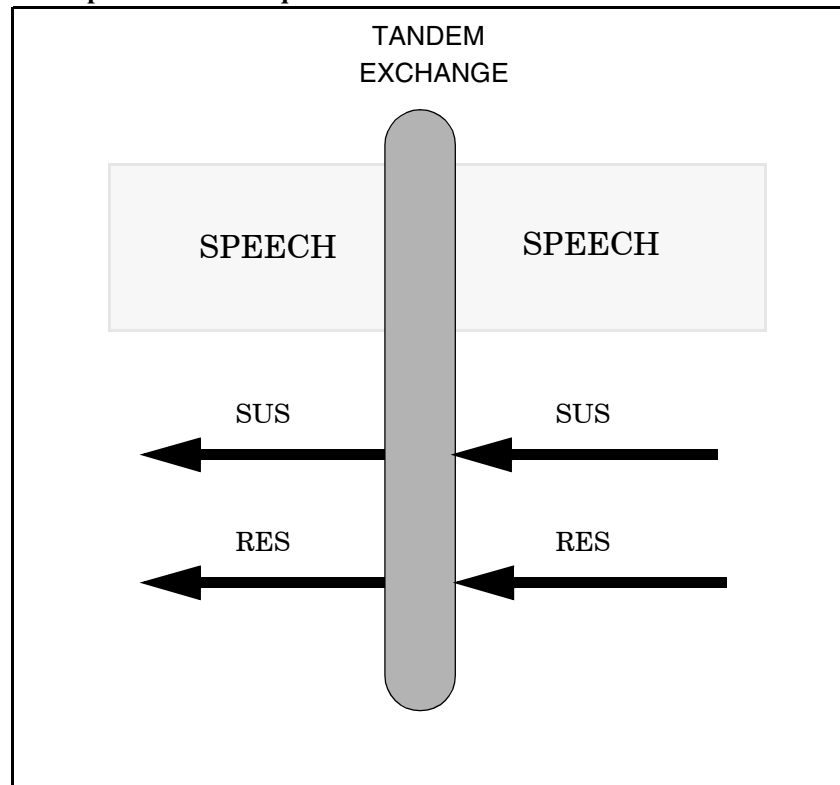


## Normal Call Clearing by Originator

### Normal Call Clearing by Originator

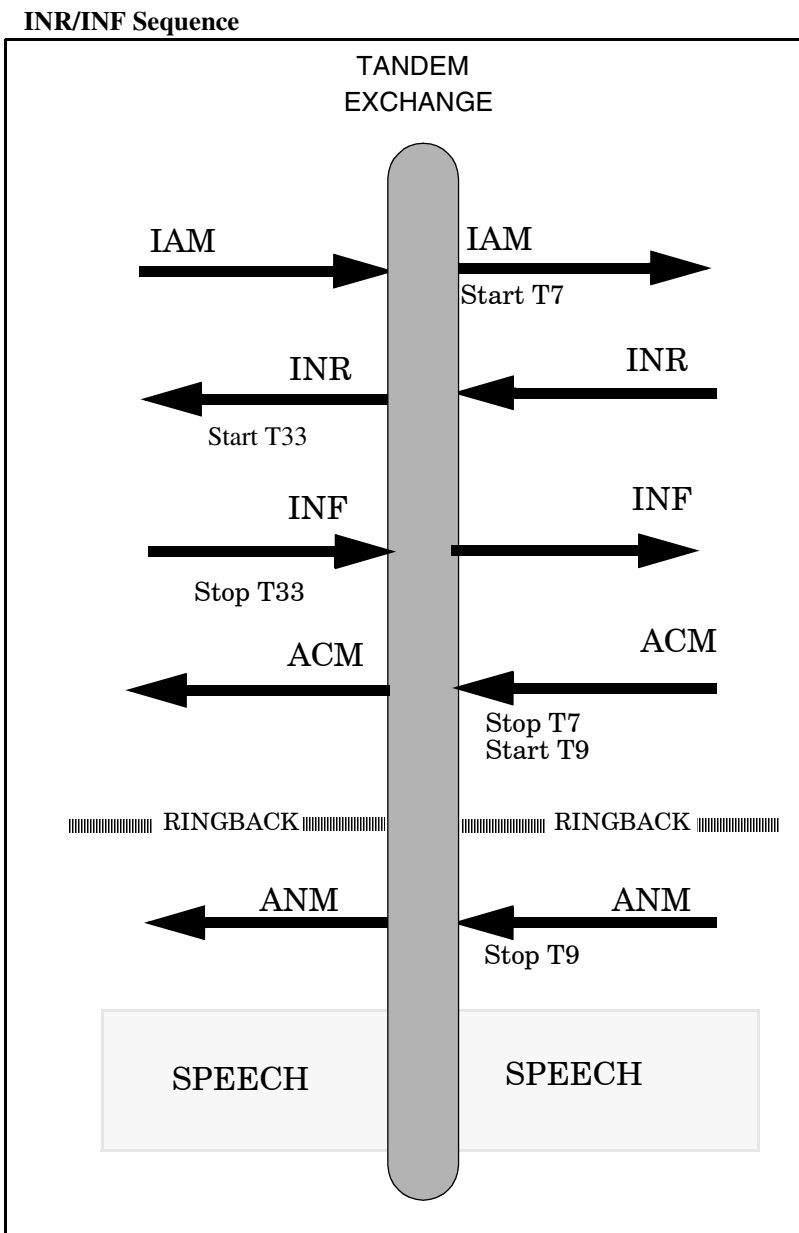


- Normal call clearing by the originator is performed using an ISUP REL message with cause 16, "normal call clearing".
- Upon sending the REL message in an exchange, T1 and T5 timers are started.
- Upon receiving the release completion indication (RLC), the T1 and T5 are stopped in that exchange.

**Suspend/Resume Sequence (Terminator's Exit)****Suspend/Resume Sequence**

- The Moroccan ISUP v2 Suspend/Resume functionality is limited to tandeming of SUS and RES messages **only**. **No timers are maintained in the tandem exchange.**

## Information Request (INR/INF) Sequence



- The INR/INF sequence is invoked by the terminating exchange to request data from the preceding office(s) which are needed by the terminating exchange to complete the call setup.
- The INR/INF messages are **tandemed** transparently in a Moroccan ISUP v2 - Moroccan ISUP v2 interworking.
- In a Moroccan ISUP v2 - Moroccan ISUP v2 tandem, timer T33 is started upon sending the INR message to the preceding exchange and stopped upon receiving the INF message.

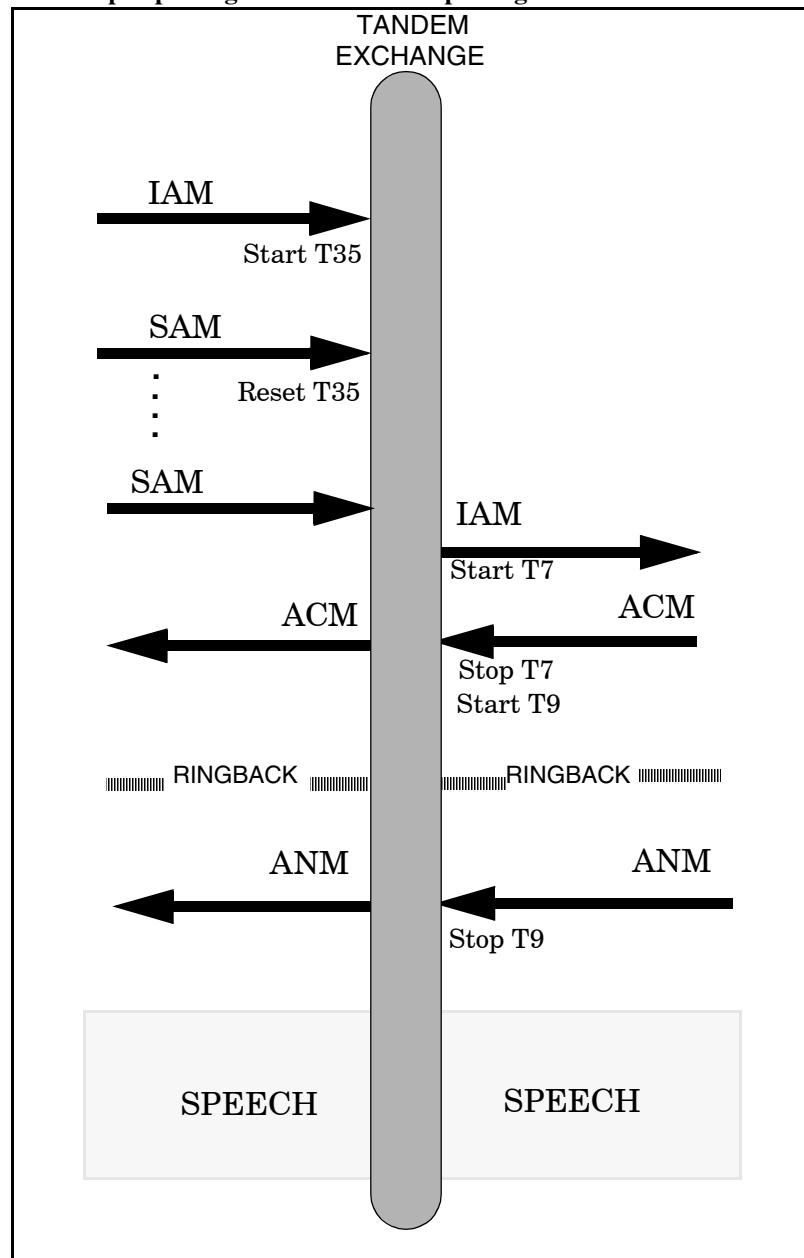
### Overlap Signaling

- The Moroccan ISUP v2 supports the following overlap signaling procedures:
  - Overlap Impulsing, en-bloc outpulsing
  - Overlap Impulsing, overlap outpulsing
- On the impulsing side, timer T35 is maintained during the receipt of multiple address messages.
- Upon obtaining the minimum address information (i.e. Called Party Number digits) to route the call, the DMS attempts to continue the call setup. The minimum address information needed for routing is determined by the translation datafill.

**Note:** In case of overlap impulsing and en-bloc outpulsing, the translation used for a specific call must ensure that the IAM is not sent too early, i.e. with insufficient CdPN digits, to the succeeding exchange. Otherwise, there is no possibility for tandeming the SAMs that are received after the IAM has been sent, and the call cannot be established due to incomplete address information.

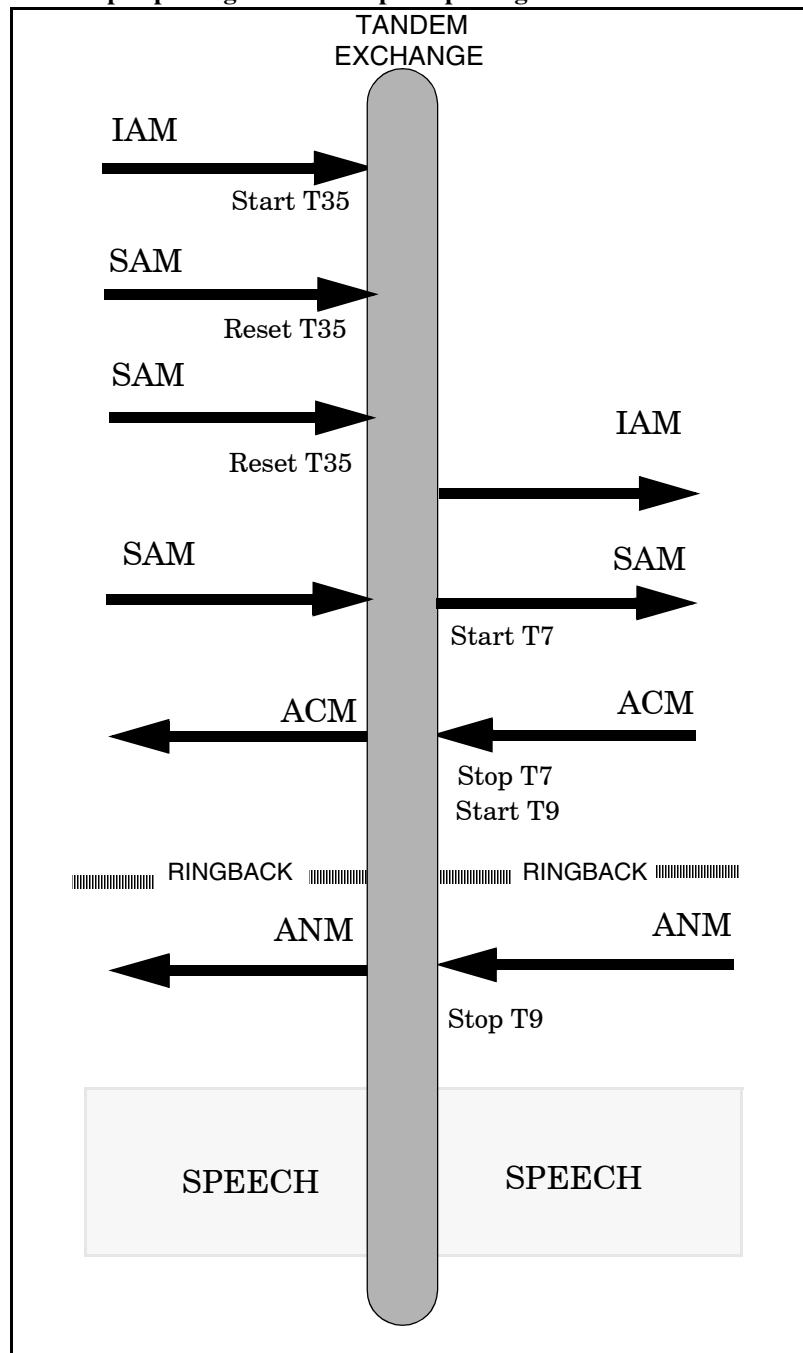
## Overlap Inpulsing with En-Bloc Outpulsing

### Overlap Inpulsing with En-Bloc Outpulsing



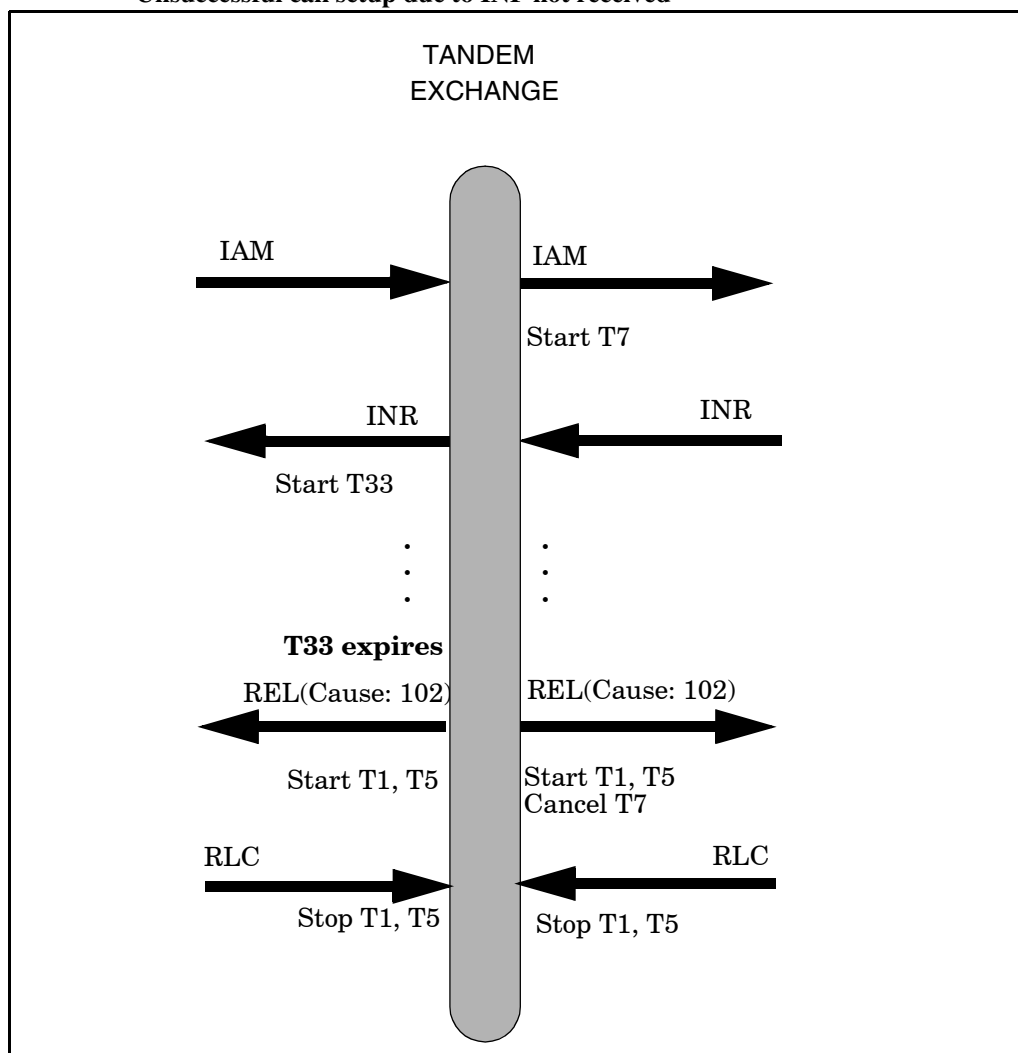
## Overlap Impulsing with Overlap Outputling

### Overlap Impulsing with Overlap Outputling

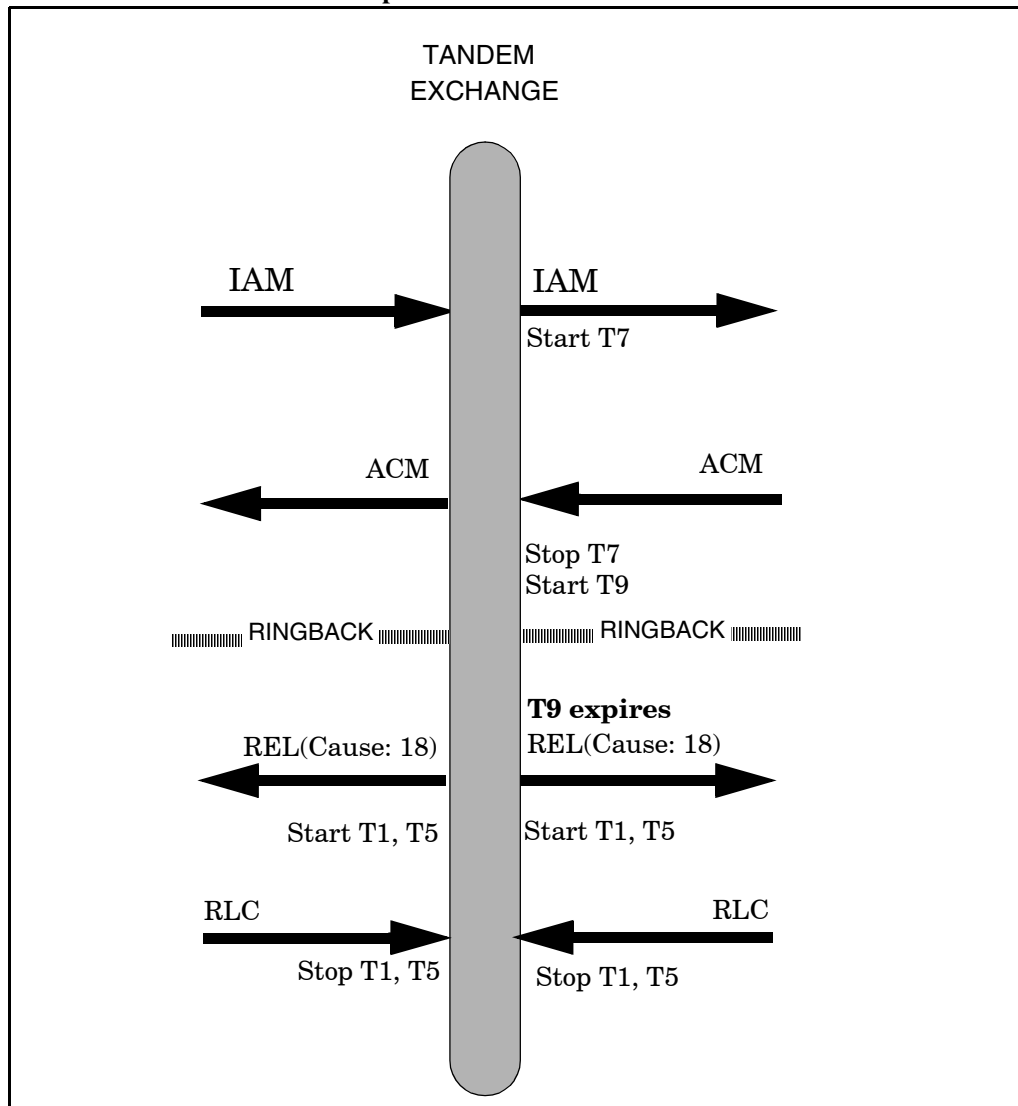


## Unsuccessful call setup due to INF time-out

### Unsuccessful call setup due to INF not received



- Upon tandeming of the INR message, timer T33 is started.
- If no INF message is received before T33 expiry, the tandem exchange releases the call by sending an ISUP REL message with cause 102, "Recovery on Timer Expiry" in both directions.
- Upon sending the REL message in the tandem exchange, T1 and T5 timers are started.
- Upon receiving the release completion indication (RLC), the T1 and T5 are stopped in that exchange.

**Unsuccessful call setup due to ANM time-out****Unsuccessful call setup due to ANM not received**

- Upon receiving the ACM, timer T9 is started in the tandem exchange.
- If no ISUP ANM is received before T9 expiry, the connection is released in both directions using an ISUP REL message with cause 18, “No user responding”.
- Upon sending the REL message in the tandem exchange, T1 and T5 timers are started.
- Upon receiving the release completion indication (RLC), the T1 and T5 are stopped in that exchange.



## Hardware Requirements or Dependencies

The functionality provided by this activity is supported for **SX05** XPM processors **only**.

## Software Requirements or Dependencies

N/A

## Limitations and restrictions

1. Please refer to the appropriate section of the documentation for possible restrictions/limitations on a specific functional item.
2. Multi-rate connection types (2x64, 384, 1536 and 1920kbit/s) are **not** supported.
3. Signalling procedures for connection type allowing fallback capability are **not** supported.
4. **No** compatibility procedures are invoked in case of receiving recognized optional parameters with unsupported/unrecognized/spare/reserved values (ITU-T Q.764, 2.9.5.3.3.b).
5. Simple segmentation is supported for the segmentation of the IAM **only**.
6. User part availability control is **not** supported.
7. Propagation delay determination procedure is **not** supported.
8. Echo control procedure is **not** supported.
9. End-to-end signalling Pass along method is **not** supported.
10. End-to-end signalling SCCP Connection Orientated is **not** supported.
11. Simple service activation procedure is **not** supported.
12. Remote operations procedure is **not** supported.
13. Network specific facility procedures is **not** supported.

## Billing

This activity does not implement or modify a functionality related to billing.

## Interactions

N/A

## Applicable customer facing sections

### Fault Management

Logs ☐ N/A ☐

Alarms ☐ N/A ☐

### Configuration

Data Schema ☒ X ☐

User Interface ☐ N/A ☐

Element Management ☐ N/A ☐

Security ☐ N/A ☐

Service Order ☐ N/A ☐

Office Parameters ☐ N/A ☐

Accounting (includes AMA billing) ☐ N/A ☐

Performance (includes operational measurements) ☐ N/A ☐

## Glossary

| Term | Description                                |
|------|--------------------------------------------|
| 3PTY | 3-Party Calling                            |
| ACM  | Address Complete Message                   |
| ANM  | ANswer Message                             |
| CCBS | Completion of Calls to Busy Subscribers    |
| CD   | Call Diversion                             |
| CdPn | Called Party Number                        |
| CFU  | Call Forward Unconditional                 |
| CFB  | Call Forward Busy                          |
| CFNR | Call Forward No Reply                      |
| CLIP | Calling Line Identification Presentation   |
| CLF  | Calling Line Identification with Flash     |
| CLIR | Calling Line Identification Restriction    |
| COLP | Connected Line Identification Presentation |
| COLR | Connected Line Identification Restriction  |

|      |                                                |
|------|------------------------------------------------|
| CONF | Conference                                     |
| CRG  | Charge Information                             |
| CUG  | Closed User Group                              |
| CW   | Call Waiting                                   |
| DMS  | Digital Multiplex Switch                       |
| ECT  | Explicit Call Transfer                         |
| ETSI | European Telecommunication Standards Institute |
| HOLD | Call Hold                                      |
| IAM  | Initial Address Message                        |
| INF  | Information                                    |
| INR  | Information request                            |
| ISDN | Integrated Services Digital Network.           |
| ISUP | ISDN User Part                                 |
| ITU  | International Telecommunication Union          |
| MCID | Malicious Call Identification                  |
| MCT  | Malicious Call Trace                           |
| NOA  | Nature of Address                              |
| REL  | RELease message                                |
| RES  | RESume message                                 |
| RLC  | ReLease Complete message                       |
| SAM  | Subsequent address                             |
| SCCP | Signalling Connection Control Port             |
| SUB  | Sub Addressing                                 |
| SUS  | SUSpend message                                |
| Tn   | Timer n                                        |
| TP   | Terminal Portability                           |
| UUS  | User to User Signalling                        |
| XPM  | Extended Peripheral Module                     |

## Recommended Reading/References

1. Maroc Telecom Specific Requirements, High Level, v 1.5

2. AJ4319FN: ETSI ISUP V2 On The DMS100E
3. ITU-T Recommendations Q.763: Signalling System No.7 - ISDN User Part formats and codes
4. ITU-T Recommendations Q.764: Signalling System No.7 - ISDN User Part Signalling Procedures
5. SIM Specification NIS A246-1: ISN04 ETSI ISUP COMPLIANCE

## ***Configuration for A00004563***

### **Hardware and Software Requirements**

The functionality provided by this activity is available on **SX05** XPM processors **only**.

### **Initial Configuration**

None

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

#### **Dump and Restore**

Not impacted by this activity.

#### **Element Management Upgrade**

N/A

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

New or modified tables

| Table name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|------------|--------------------------|------------------------------------|
| TRKSGRP    | CHANGED                  | UNCHANGED                          |

#### **Table/MIB/Remote Database Schema information**

##### **Table TRKSGRP**

Trunk Subgroup Table

##### **Functional description**

Table TRKSGRP is an existing table that holds information related to trunk subgroups on a per trunk subgroup basis. This activity enhances table

TRKSGRP such that an ETSI ISUP version 2 trunk of the new Moroccan ISUP variant can be datafilled.

### Usage sequence and implications (CM Only)

Not impacted by this activity.

### Size

Not impacted by this activity.

### Fields/OIDs

#### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Entry                                              | Explanation and action                |
|---------|----------------|------------------------|----------------------------------------------------|---------------------------------------|
| SGRPVAR | CHANGED        | VARIANT                | {BASE,<br>GERMANY,<br>...<br>HONDURAS,<br>MOROCCO} | New variant provided by this activity |

### Datafill example

#### Sample TRKSGRP datafill for Moroccan ISUP v2 trunks

```
TABLE: TRKSGRP
SGRPKEY CARDCODE SGRPVAR SGRPVAR
-----
OGMRISUPV2 0 DS1SIG C7UP OG N N UNEQ NONE Q767 THRH 0 DMS N N
MOROCCO 100_WHITE $ OGN7

ICMRISUPV2 0 DS1SIG C7UP IC N N UNEQ NONE Q767 THRH DMS
MOROCCO 100_WHITE $ ICN7

2WMRISUPV2 0 DS1SIG C7UP 2W N N UNEQ NONE Q767 THRH 0 DMS N N
MOROCCO 100_WHITE $ 2WN7 CIC
```

Table C7UPTMR is used to datafill the signaling timers applying to a specific trunk subgroup in table TRKSGRP. Table C7UPTMR is not modified by this activity but an example is presented here for completeness.

**Sample C7UPTMR datafill for Moroccan ISUP v2 timers**

TABLE: C7UPTMR

TMRKEY C7UPDIR TMRS OPTIONS

```
-----
OGN7 OG Q767 15 180 326 60 90 20 180 10 60 10 60 1000 10 120 240 10 $
ICN7 IC Q767 15 180 326 60 90 15 5 15 10 60 10 60 10 60 10 60
10 60 10 120 240 10 20 4 $
2WN7 2W Q767 15 180 326 60 90 20 15 180 5 15 10 60 10 60 10 60
10 60 10 60 1000 10 120 240 10 15 20 4 10 $
```

**Table release history update**

None

**Supplementary information**

None

**Translation verification other tools**

Not impacted by this activity

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

Not impacted by this activity.

## ***Product = World Trade***

### **A00004565 -- Line to Moroccan ISUP V2 Interworking (Succession on DMS)**

#### ***Functional Description***

The activity A00004565 “Line to Moroccan ISUP V2 interworking” provides line to Moroccan ISUP V2 and Moroccan ISUP V2 to line interworkings. Addition to the ISUP V2 messages, national use messages CRG, INR and INF are supported.

The activity A00004551 “Backward Metering For Morocco” provides backward metering functionality at the originating office for Moroccan ISUP calls. Received metering information in Moroccan ISUP V2 CRG message will be used to meter originating agent with MOG option.

IBN, BRI and V5.2 (IBN, BRI) lines are supported by these activities.

These activities are implemented in ISN07 for TDM.

#### **Feature Description**

This feature supports line to Moroccan ISUP V2 and Moroccan ISUP V2 to line interworkings. National use CRG, INR and INF messages are supported by this activity.

#### **Line to Moroccan ISUP V2 and Moroccan ISUP V2 to line interworkings**

Line to Moroccan ISUP V2 and Moroccan ISUP V2 to line interworking behaviours are same as line to Turkish ISUP V2 and Turkish ISUP V2 to line interworkings. So, for this interworkings please refer to FN section of A59018055.

Also, please refer to FN section of A59012394 for supported and unsupported services.

#### **INR/INF sequence**

During call setup in a Moroccan ISUP V2 - line interworking, the terminating exchange can initiate an INR/INF message sequence to request CPC and/or CLI information from the preceding exchange(s) if one or both of them are not received in the incoming IAM message.

The INR/INF sequence is initiated depending on the datafill in table ISUP SVC.

Default tuples for ISUP variants exist in table ISUP SVC. Default tuples in Moroccan ISUP V2 is shown in Figure , "Default Tuple in table ISUP SVC".

**Default Tuple in table ISUPsvc**

```

>table isupsvc
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISUPsvc
>lis all
TOP
      KEY                                     SERVICE
-----
MOROCCAN_EIV2  (INR_INF GENERATION_AND_RECEPTION (CGN_REQUESTED)
                (CPC_REQUESTED) $)$
BOTTOM
>

```

**Backward Metering Activation and Behaviour**

Backward metering information is sent to originating office by a central office with ISUP CRG message to perform metering locally in the originating office.

Two types of CRG message are used by Moroccan ISUP V2 to send backward metering information.

- CRG message which includes tariff index
- CRG message which includes pulse count

There are two types of backward metering provided within this feature according to the used CRG message type:

- ***Local type backward metering:***

Tariff index is received as backward metering information inside Morocco ISUP V2 CRG message before ISUP ANM/CON message. This tariff index is used for calculating meter counts and updating software meter register of the call locally. Also for hardware metered lines, pulses are generated according to the MTRTARIFF datafill of received tariff index.

- ***Distance type backward metering:***

Pulse count is received as backward metering information inside Morocco ISUP V2 CRG messages after ISUP ANM/CON message. This pulse count is accumulated and used for updating software meter register of the call locally. Also for hardware metered lines, received amount of pulse is generated.

The type of backward metering to be performed depends on the reception sequence of the Moroccan ISUP V2 CRG Message

Morocco ISUP calls that will be charged using backward metering is determined via a newly introduced translation option BCKWMTR at the originating office.



BCKWMTR option is added to the OSEL (option selector) field of HEAD and CODE translation tables. BCKWMTR option does not have any subfields. See sample datafill below for PXCODE table.

#### Sample Datafill in Table PXCODE

```
TABLE: PXCODE
>lis
  XLANAME          FROMD          TOD          XLADATA
-----
  NETXLA          783          783
CONT (PF 3) (MM 7 7) (CLASS LCL) (XLT OFC OFC783) (LNET INTL) (MZONE
4) (BCKWMTR) $
>
```

Please note that software metering using local metering datafills is not applied when BCKWMTR is used in translation.

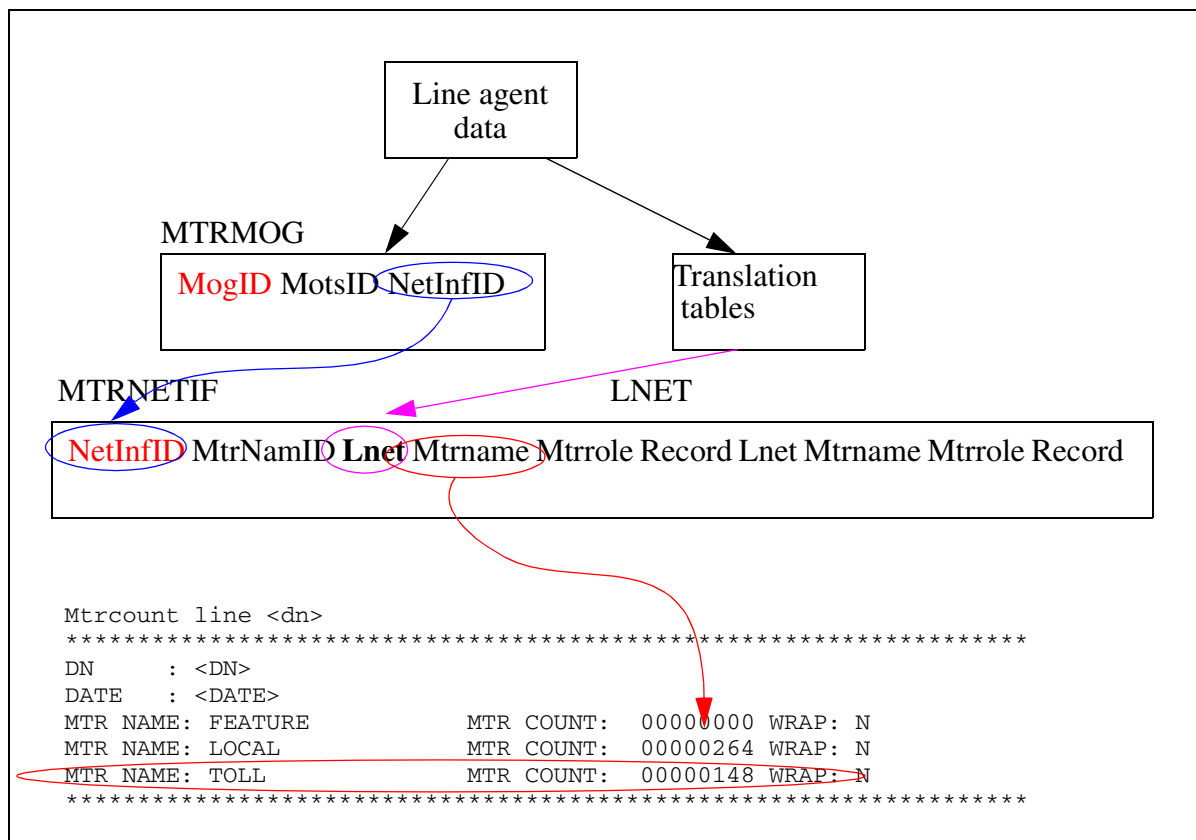
For the calls with BCKWMTR translation option, originating line software and hardware metering is performed using received backward metering information.

If the below conditions are not met, the call will not be metered by received backward metering information although BCKWMTR option is datafilled:

- Line must have MOG option for line metering
- Line must have SPM/COIN option for line hardware metering
- LNET value must be datafilled in translation tables for both type backward metered call.
- CRG timer must be datafilled in table C7UPTMR.
- Received tariff index must be datafilled in table MTRTARIF for local type backward metered calls.
- A meter name must be datafilled in table MTRNETIF with GENERATE meter role for used LNET.

LNEL and MOGID values are used to index the meter name that will be incremented for backward metering call.

## Indexing of meter name using LNET and MOGID values



If LNET value is not datafilled in backward metering translation, this missing datafill is reported with an MTR113 log and backward metering is not performed. If MFP parameter in table MTRSYSPM is set to FAIL, the call is sent to treatment otherwise call is not metered for this case.

New MTR logs MTR161 and MTR162 are defined to report backward metering specific failures.

MTR161 log is generated if a matching MTRTARIF tuple could not be found for a received tariff index within Moroccan ISUP V2 CRG message.

If a Moroccan ISUP V2 CRG tariff message with 0 tariff index is received then the call is not charged. Note that, despite 0 tariff index cannot be datafilled in MTRTARIF, it's used as free tariff index by metering system and MTR161 log is not generated for this case.

MTR162 log is generated for two cases:

- When a mismatch occurs between calculated software meter count and reported hardware metering pulse count for local type backward metering

- When a mismatch occurs between received meter count and reported hardware metering pulse count for distance type backward metering

Tariff change over in local office does not take affect for backward metered calls.

If the call is not line to Morocco ISUP V2 interworking then BCKWMTR option in translation is not taken into consideration.

If an ANM,ACM,CON or CPG message with no charge in BCI parameter is received, then the call will not be charged.

Note that, if an ISUP message with no charge in BCI parameter is received during the message sequence, the charge indicator in the following ISUP messages is not taken into consideration by the metering system and the call is not charged. (Examples of this case is ANM/CON/CPG messages with charge in BCI received after ACM/ANM/CON message with no charge in BCI parameter).

If AMA record generation with MC 612 is enabled, then pulse count field in ICR records will be updated according to accumulated or calculated backward meter count in software meter register. (originated from s/w metered lines or SPM/COIN lines).

ICR record for a call with BCKWMTR translation will be generated if the originating line has MOG option, LNET is datafilled in translation and a meter name for the used LNET is datafilled in table MTRNETIF with Y in record field.

Note that pulse count value in trunk metering related ICAMA and IAA records will not be updated for backward metering.

### **CRG message**

Incoming Morocco specific ISUP V2 CRG message in the originating DMS100 office is handled to support Backward Metering. In backward metering, central office sends CRG message with meter tariff index or pulse count to local DMS100 office over Moroccan ISUP V2 trunks. Local DMS100 office performs metering procedures according to information in CRG message.

Central office is responsible for CRG message generation. This activity doesn't deal with generation of CRG message. Only handling of incoming CRG message in originating office is covered by this activity.

A new translation option BCKWMTR is introduced by activity A00004551 to mark backward metered calls. Hitting BCKWMTR tuple during translation means that the call needs **backward charging**.

This activity is going to check the existence of the new translation option to decide whether the call needs backward charging in local type backward metering and distance type backward metering.

The metering of originating line is done according to CRG messages coming over Moroccan ISUP V2. There are two types of backward metering: local and distance. In local type backward metering, tariff index is carried in CRG message. In distance type backward metering, pulse count is carried in CRG message.

### CRG message format

This section covers CRG message format on Moroccan ISUP V2 protocol.

The received CRG message should contain one of the following information:

- The metering tariff index during the call establishment phase
- The number of metering pulses during the call

### CRG message format

| Parameter                  | Type | Code      | Length |
|----------------------------|------|-----------|--------|
| Message type               | M    | 0011 0001 | 1      |
| Tariff index               | O    | 1111 1111 | 3      |
| Pulse number               | O    | 1111 1110 | 3      |
| Compatibility information  | O    | 0011 1001 | 4      |
| End of optional parameters | O    | 0000 0000 | 1      |

M: Mandatory

O: Optional

### The value range of Parameters:

- Tariff index

0000 0000

No charge

0000 0001

to

Represents the number of tariff index

1111 1111

- Pulse number

0000 0000

In use

0000 0001

to

Represents the incremented pulse count

1111 1111

- Compatibility information

Refer to Q.763 for compatibility information

### Local Type Backward Metering

The metering information is sent from distance office (metering exchange, international exchange) and the metering is performed locally in the originating office. This information is received by Moroccan ISUP V2 CRG message which includes tariff index during call set up for local type backward metering.

The status of CRG message for local type backward metering is indicated in the following table.

**Status of CRG message for local type backward metering**

| Pulse number | Tariff index | Status    |
|--------------|--------------|-----------|
| Present      | Non present  | Invalid   |
| Present      | Present      | Incorrect |
| Non present  | Non present  | Incorrect |
| Non present  | Present      | Correct   |

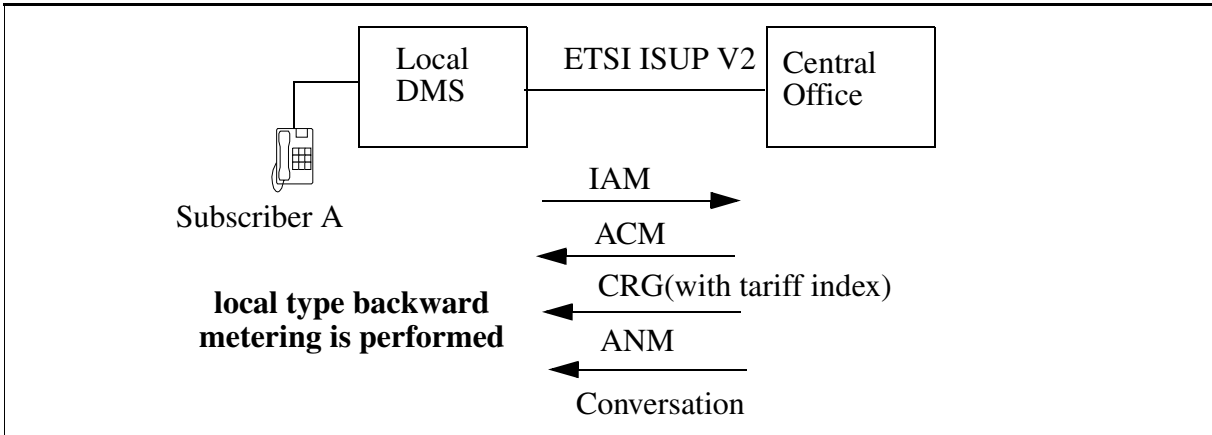
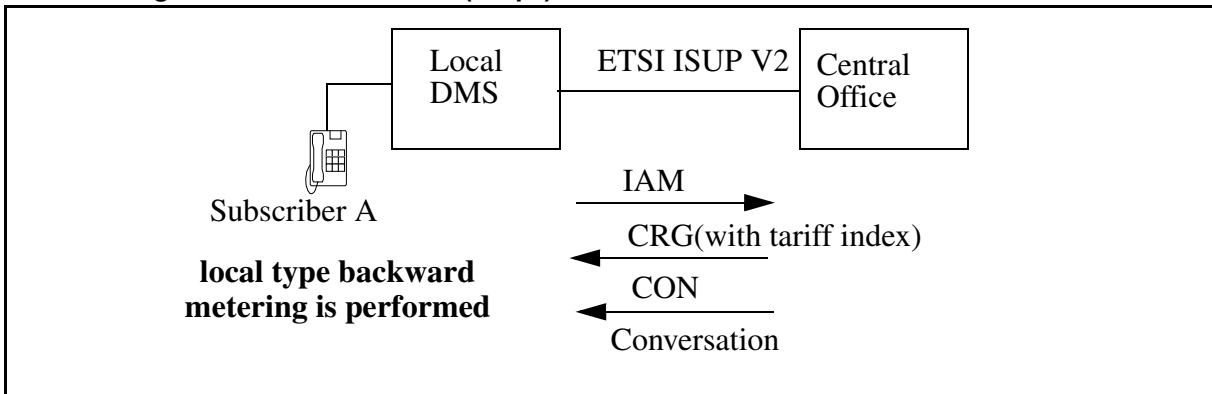
Actions of the local office for local type backward metering

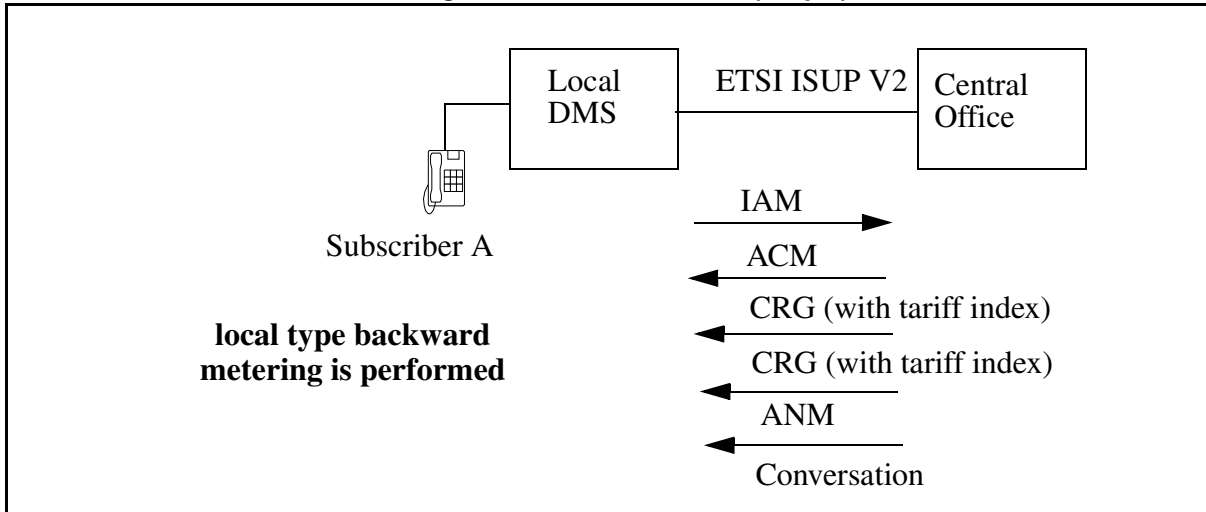
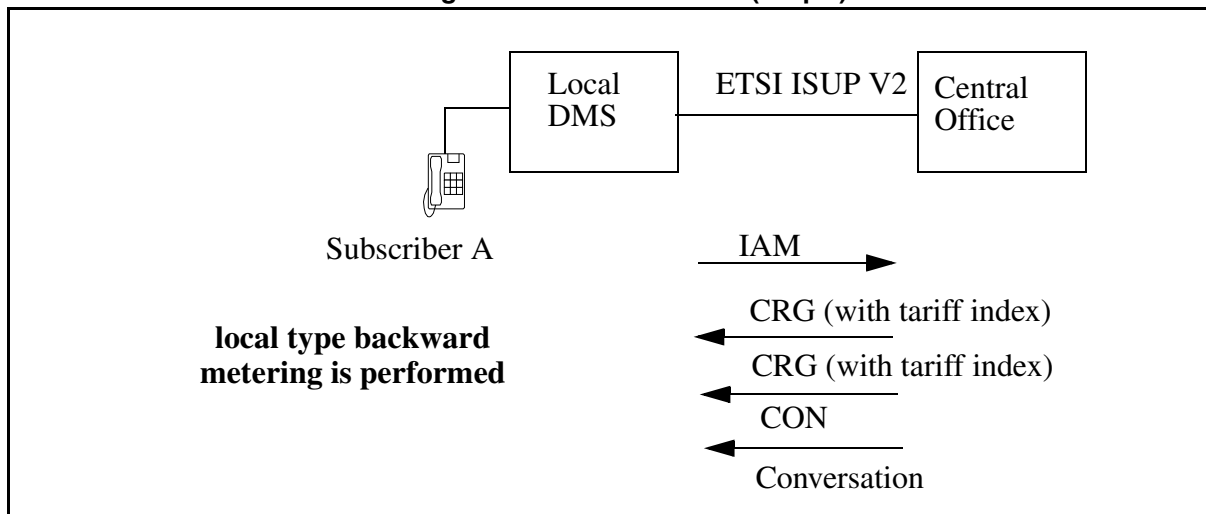
1. CRG message is received before ANM/CON message (Requirement 1).
2. If the call needs backward charging, and CRG timer is provisioned in table C7UPTMR, all correct CRG messages are reported to CM (Requirement 2).
3. The circuit is reset and the reattempt is performed in case an invalid (CRG message with pulse number) or incorrect CRG message is received as a first backward message after IAM message (Requirement 3).
4. After the first backward message reception during call setup (ACM or correct CRG), if an invalid (CRG message with pulse number) or incorrect CRG message is received, it is ignored (Requirement 4).
5. The CRG message which is received after CPG message is handled and reported to CM (Requirement 5).
6. When ACM, ANM, CON or CPG message is received with “no charge” value for charge indicator in backward call indicator parameter, the received CRG message is ignored.
7. ISUP INFO log (PM189) is generated in XPM to inform the maintenance about the cases numbered 3, and 4 (Requirement 6).

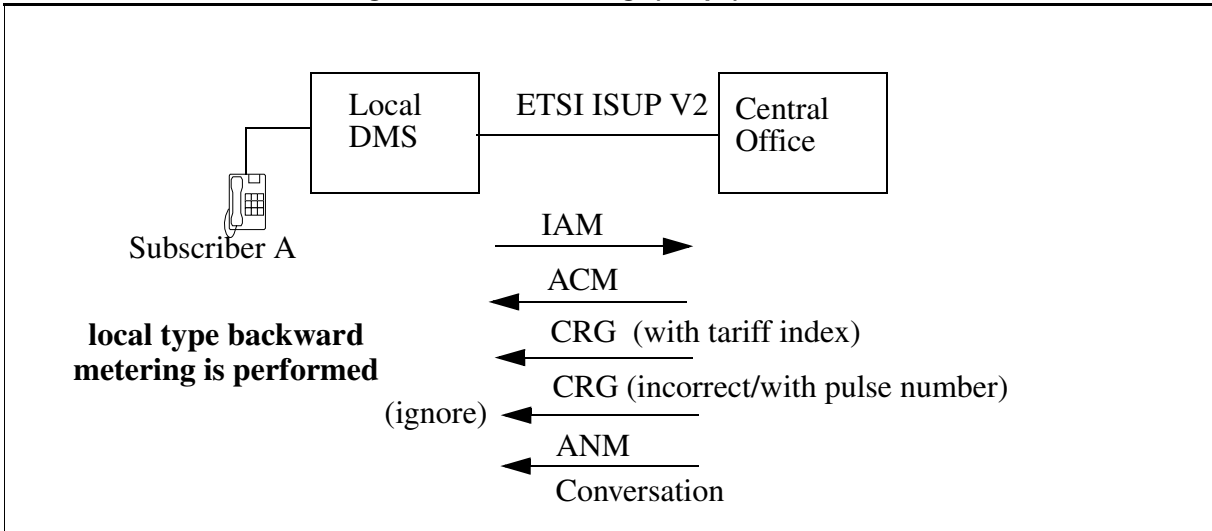
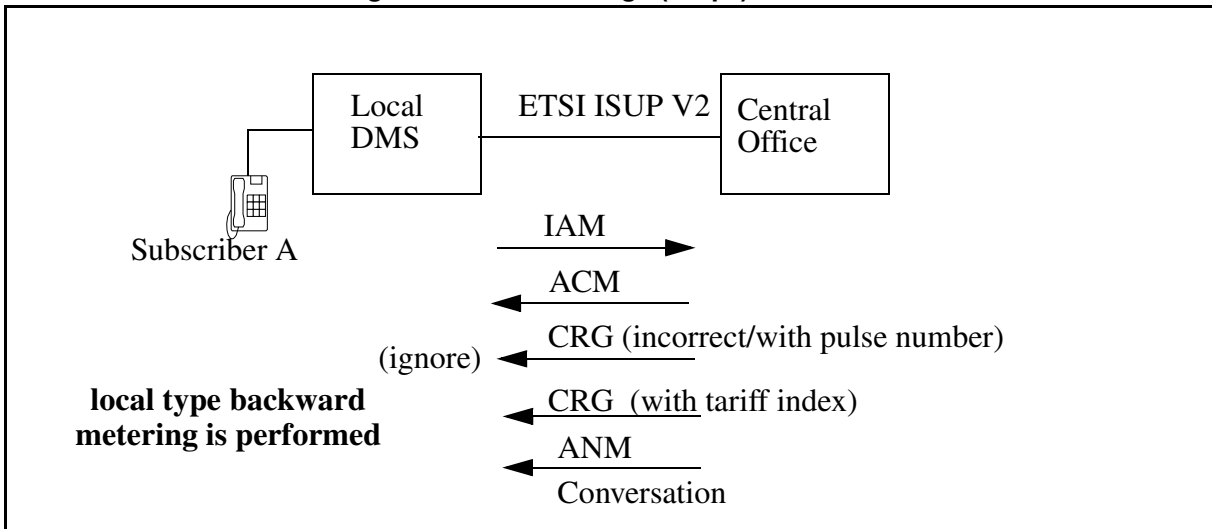
### Successful calls for local type backward metering

Refer to Table “More than one correct CRG message received before ANM (Req. 2)” on page 1659 for the status of CRG message in this subsection. For free calls, central office has the responsibility to send an appropriate CRG

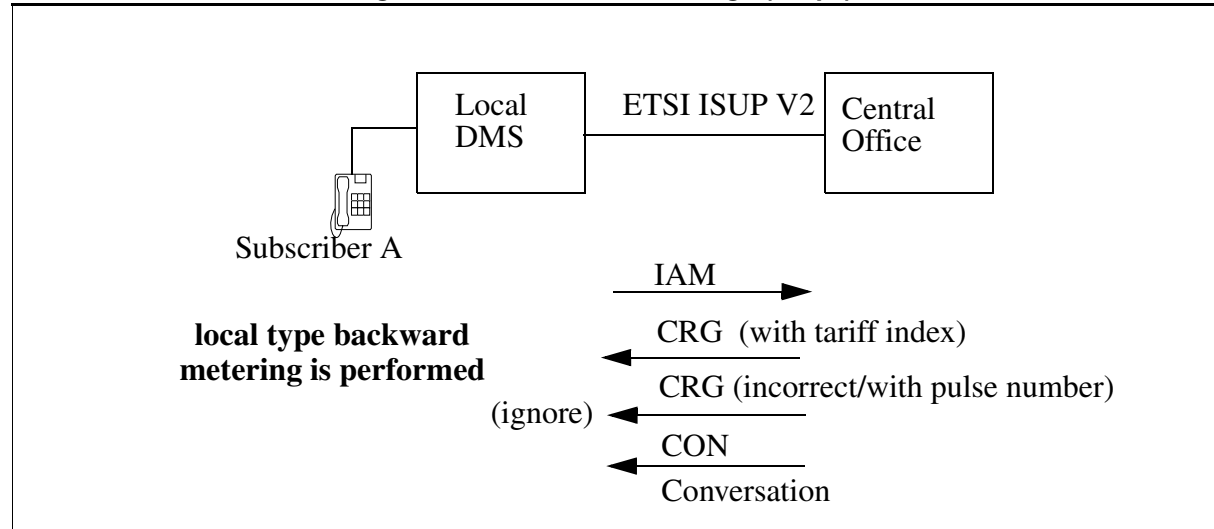
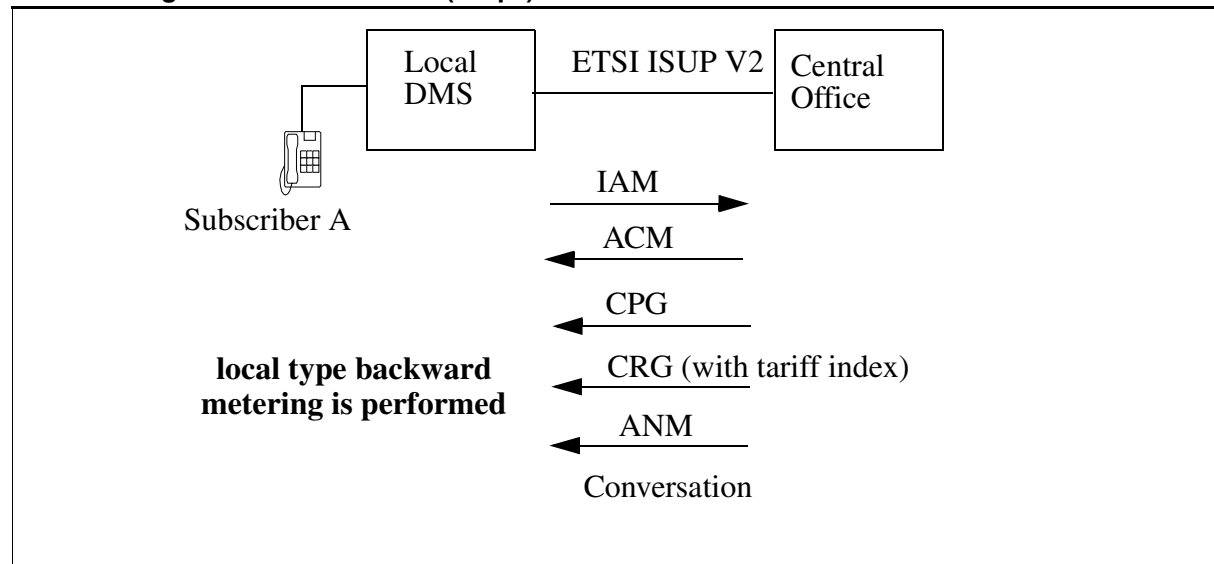
message (with index 0) to local DMS. Correct datafill with this index is required on DMS for free charging of the call.

**CRG message received before ANM (Req.1)****CRG message received before CON (Req.1)**

**More than one correct CRG message received before ANM (Req. 2)****More than one correct CRG message received before CON (Req. 2)**

**Invalid/Incorrect CRG message after ACM message(Req.4)****Invalid/Incorrect CRG message after ACM message (Req.4)**

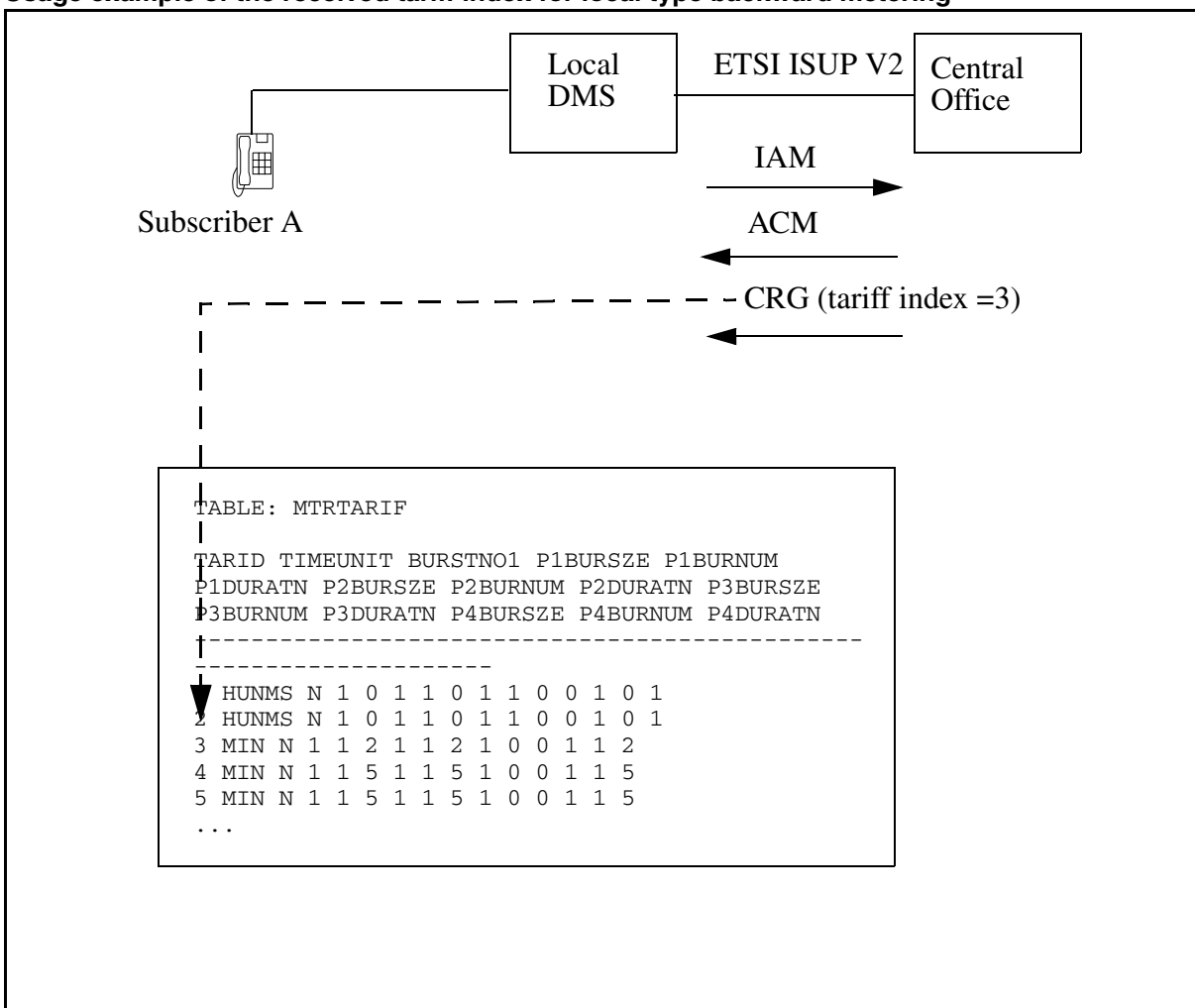


**Invalid/Incorrect CRG message after correct CRG message (Req.4)****CRG message received after CPG (Req.5)****Metering behavior for successful local type backward metering calls:**

If the CRG message with a valid tariff index is received, then this index is evaluated by metering system to verify that a corresponding tariff tuple exists in table MTRTARIF. In case more than one CRG message with tariff index is received, the last received tariff index is used by local type backward metering Figure “More than one correct CRG message received before ANM (Req. 2)” on page 1659.

If a related MTRTARIF tuple is found, then this tariff tuple is used for charging the call. Note that tariff index range that can be received within CRG message is 0 to 255 which means MTRTARIF tuples within 256-511 index range cannot be used for local type backward metering.

#### Usage example of the received tariff index for local type backward metering



For plain subscribers with MOG option, software meters are increased according to the found MTRTARIF tuple.

For SPM/COIN subscribers, pulse generation to the originator is done using the found MTRTARIF tuple.

For MOG subscribers without SPM/COIN, software meters are increased according to the found MTRTARIF tuple.

At the end of the call, an MTR162 log is generated if there is a mismatch between calculated software meter count and reported hardware metering pulse count. In this case calculated software meter counts are used to update software meter registers.

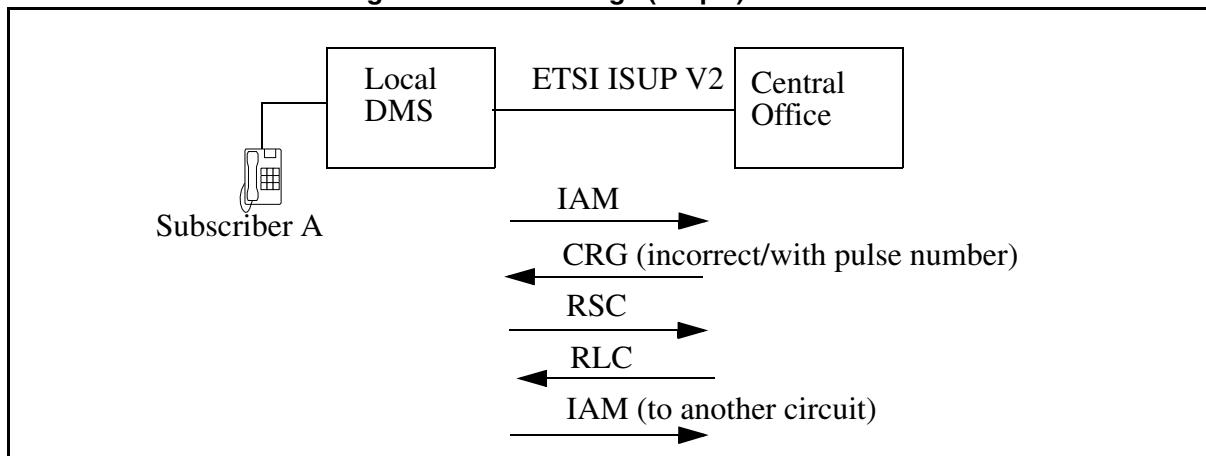
The amount of meter count mismatch which causes MTR162 log generation is determined by the PULMISTH parameter in table MTRSYSPM.

If a corresponding MTRTARIF tuple is not found then an MTR161 log including the received tariff index is generated and the call is not metered. Also the call is sent to treatment and dropped for this case if the MFP parameter in table MTRSYSPM is set to 'FAIL'. If MFP parameter is set to SUCCEED MTR161 log is generated, call is not dropped but not metered.

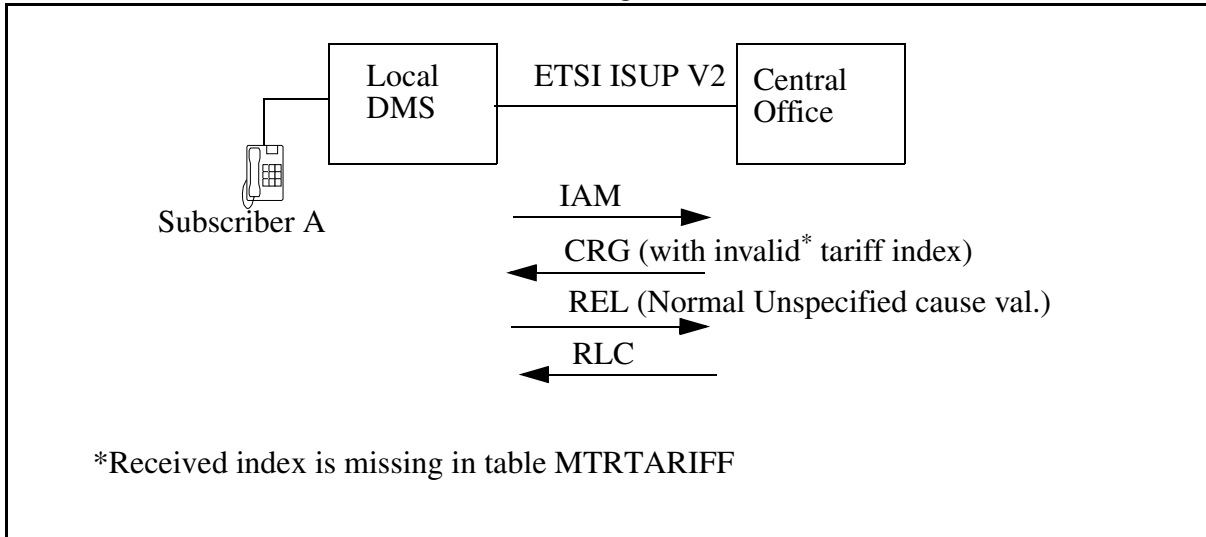
Unsuccessful calls for local type backward metering

Refer to Table "Status of CRG message for local type backward metering" on page 1657 for the status of CRG message in this subsection.

**Invalid/incorrect CRG message after IAM message (Req. 3):**



Another unsuccessful call scenario for local type backward metering is reception of an invalid tariff index which does not correspond to any MTRTARIF tuple in the local office. If MFP parameter in table MTRSYSPM is set to FAIL, then the call is sent to treatment for this case. Otherwise call is continue but not metered.

**Invalid tariff index is received within CRG message when MFP is 'FAIL':****Distance Type Backward Metering**

Central office identifies the charging count and sends this information by CRG message to the local offices during the conversation phase.

The new charge timer is started after receiving of ANM/CON messages to wait for a CRG message at local exchange for the calls that need backward charging. If the new timer is not provisioned in the table C7UPTMR, CRG timer is not started, incoming CRG messages are ignored and not reported to CM.

**CRG timer values**

| Minimum value | Maximum Value | Default value |
|---------------|---------------|---------------|
| 0.5 seconds   | 4 minutes     | 20 seconds    |

The status of CRG message for distance type backward metering is indicated in the following table.

**Status of CRG message for distance type backward metering**

| Pulse number | Tariff index | Status    |
|--------------|--------------|-----------|
| Present      | Non present  | Correct   |
| Present      | Present      | Incorrect |
| Non present  | Non present  | Incorrect |
| Non present  | Present      | Invalid   |

Actions of the local office for distance type backward metering

1. When ANM/CON message is received, the CRG timer is started for the calls that needs backward charging (Requirement 7).
2. CRG message is ignored and not reported to CM, if CRG timer is not provisioned in table C7UPTMR.
3. CRG timer is stopped when the first correct CRG message is received during conversation (Requirement 8).
4. CRG message is received after ANM/CON message (Requirement 9).
5. All correct CRG messages are reported to CM, if the call needs backward charging, and CRG timer is provisioned in table C7UPTMR (Requirement 10).
6. The circuit is reset and reattempted in case reception of correct (CRG message with pulse number) or incorrect CRG message as a first backward message after IAM message (Requirement 3).
7. The correct (CRG message with pulse number) or incorrect CRG message is ignored if it is received after first backward message (ACM or CRG message with tariff index) during call setup (Requirement 4).
8. Local office ignores the incorrect or invalid (CRG message with tariff index) messages which is received during the conversation (Requirement 11).
9. If local type backward metering is performed for a call, the CRG timer is not started in ANM/CON message. Also received CRG messages during conversation, are ignored (Requirement 12).
10. If no CRG message is received till CRG timer expire, the circuit is released with the cause value timer expiry (Requirement 13).
11. If ACM, ANM, CON, or CPG message is received with “no charge” value for charge indicator in backward call indicator parameter, CRG timer is not started and the received correct CRG messages are not reported to CM (Requirement 14).
12. ISUP INFO log (PM189) is generated in XPM to inform the maintenance about the actions numbered from 6, 7, 8, 9 and 11.

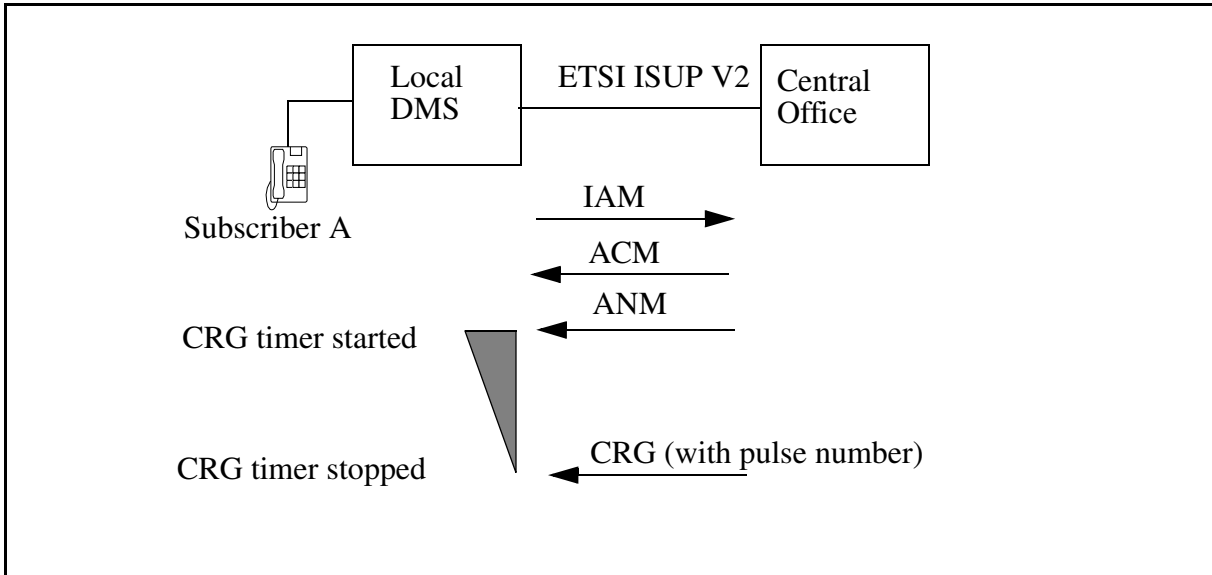
For free calls, ACM, ANM, CON and CPG messages are received with “no charge” value for charge indicator in backward call indicator parameter. In this case received CRG message is not reported to CM.

If charge indicator in backward call indicator parameter is “charge” and a CRG message is received with zero pulse number during conversation, the call is dropped with the cause value Service or option not available. But, if charge indicator is “no charge” then, this CRG message with zero pulse number is ignored.

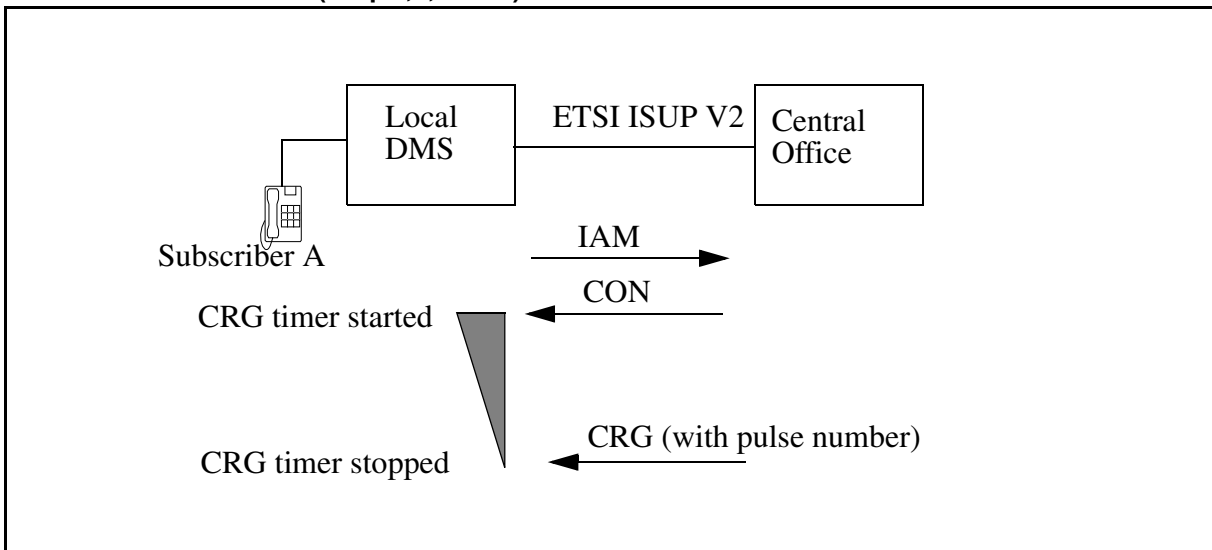
Successful calls for distance type backward metering

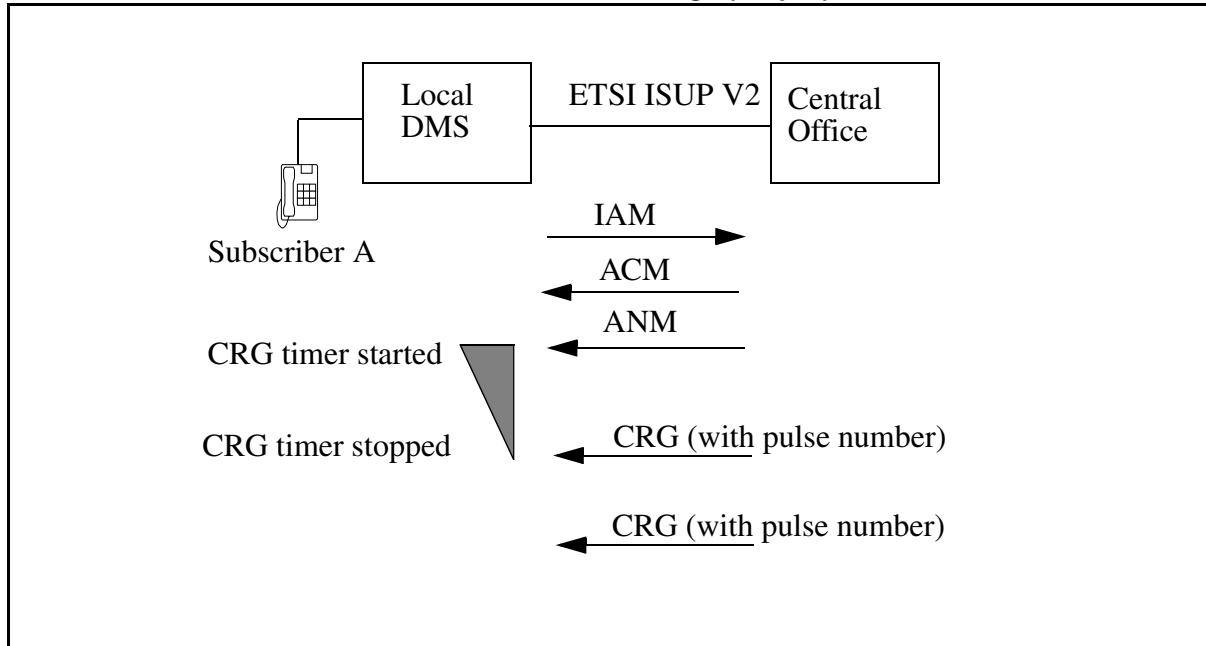
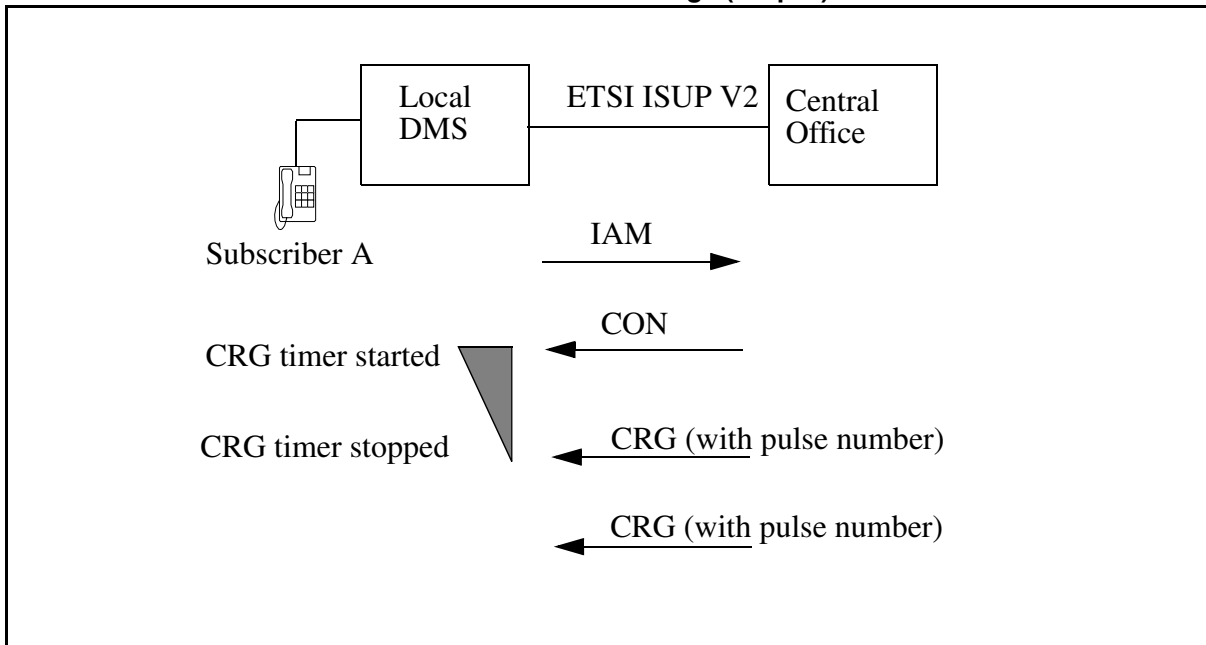
Refer to Table “Status of CRG message for distance type backward metering” on page 1664 for the status of CRG message in this subsection.

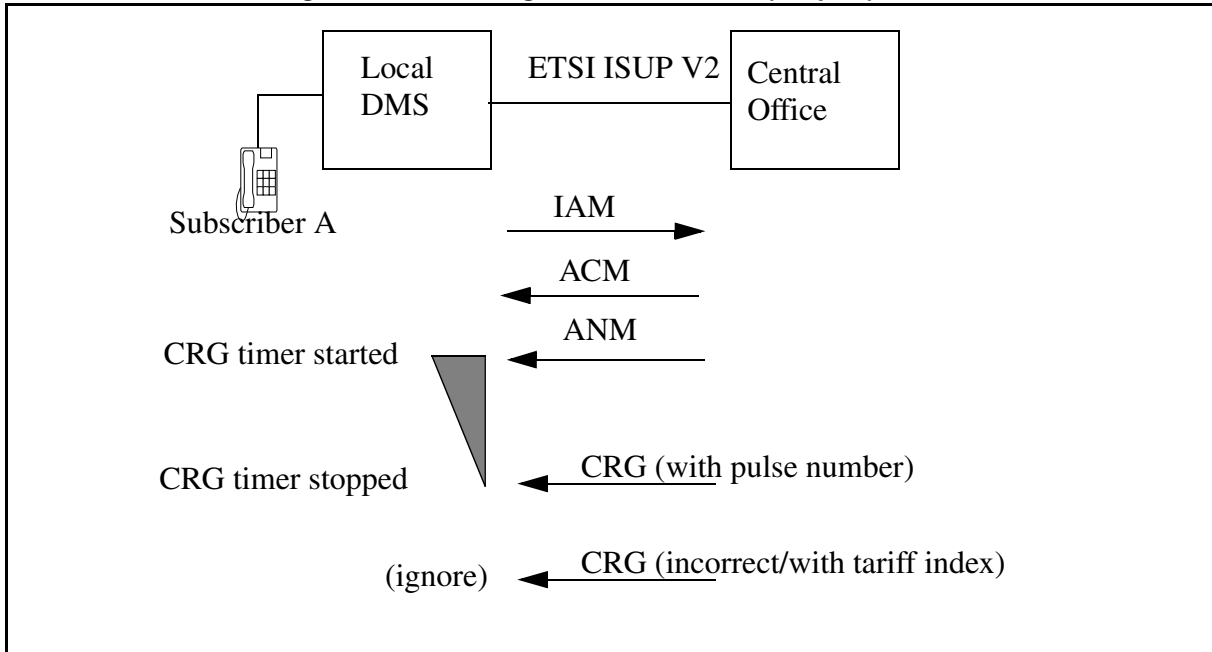
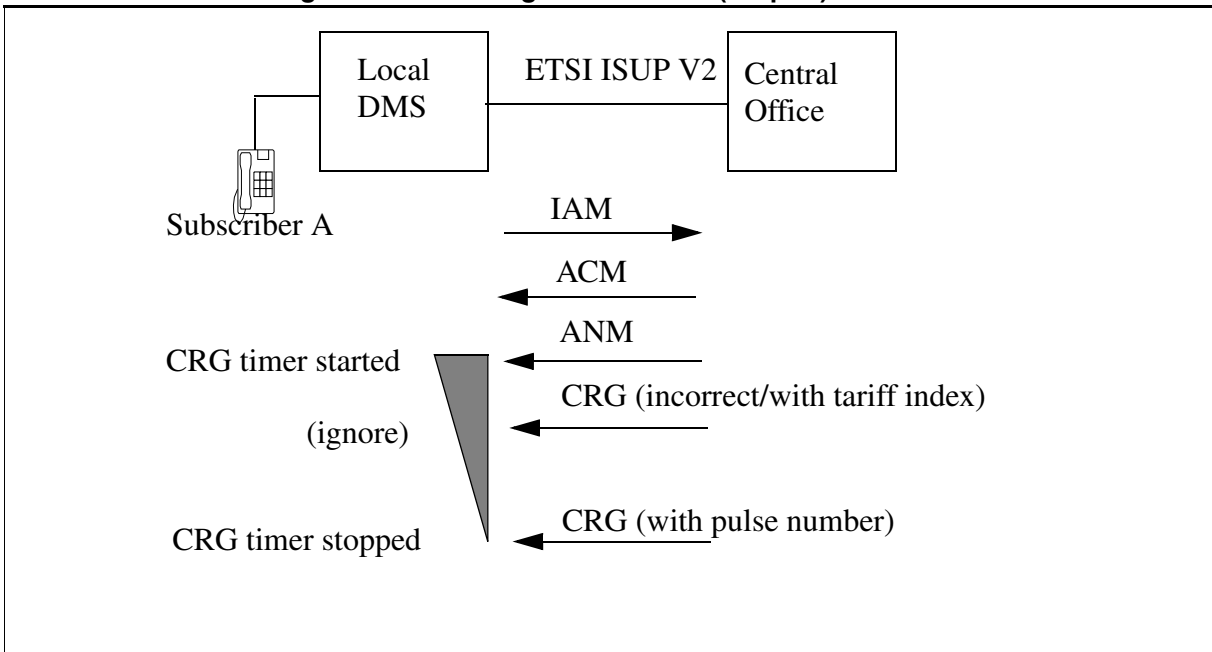
**CRG received after ANM (Req. 7,8, and 9)**



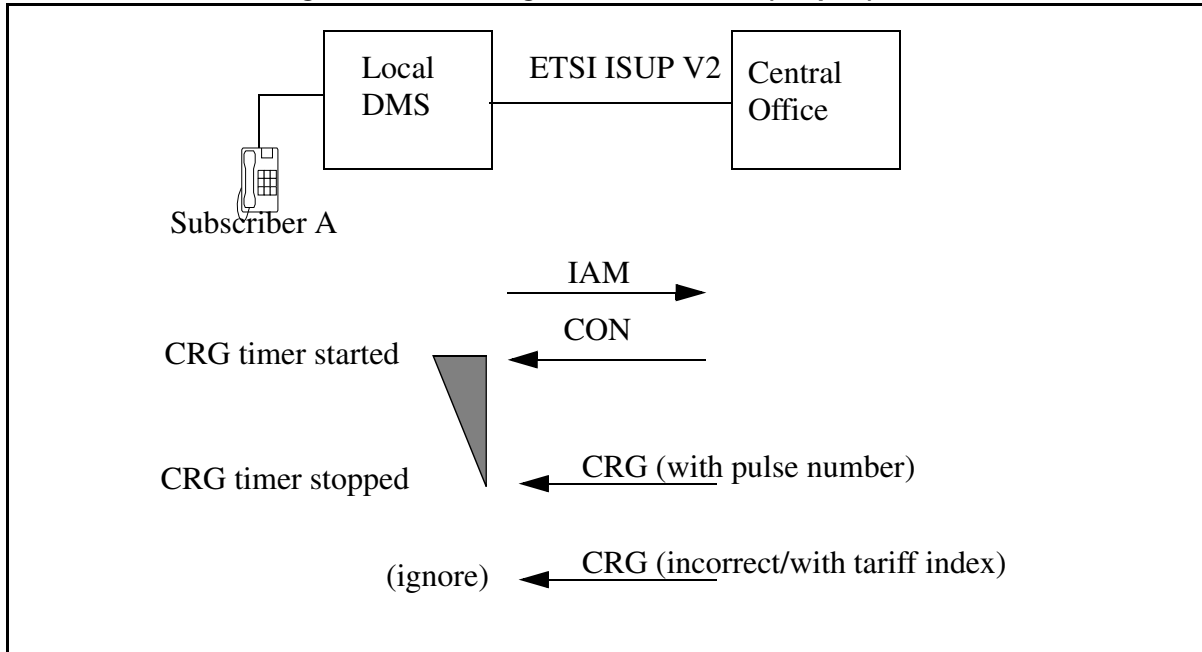
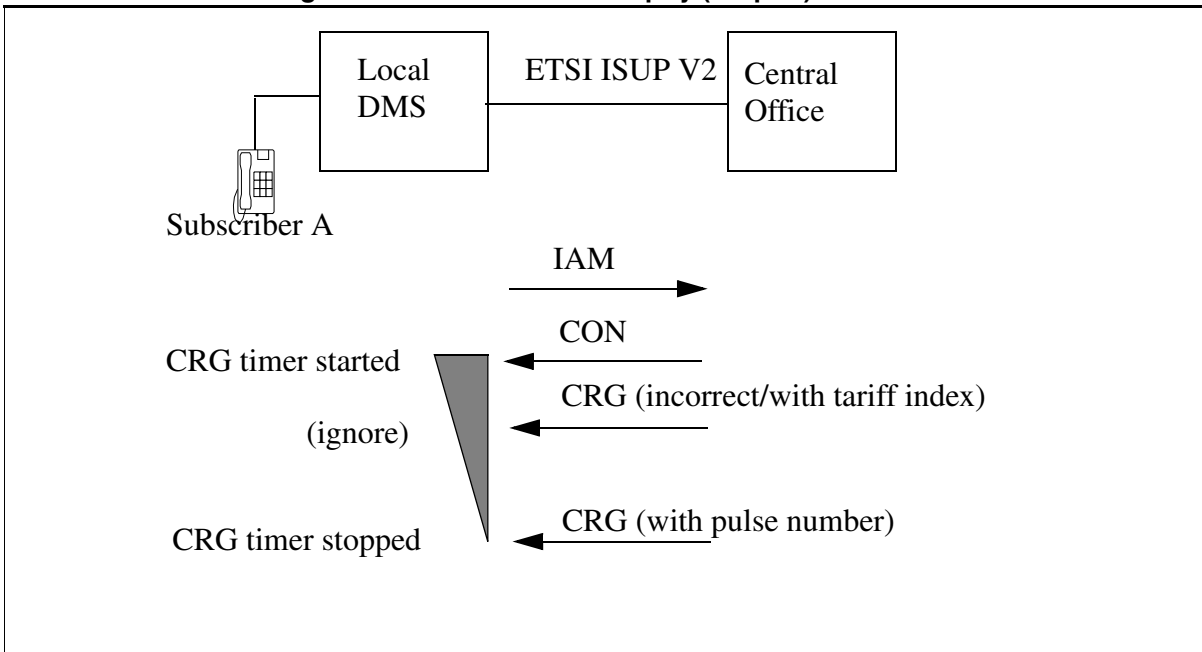
**CRG received after CON (Req. 7,8, and 9)**

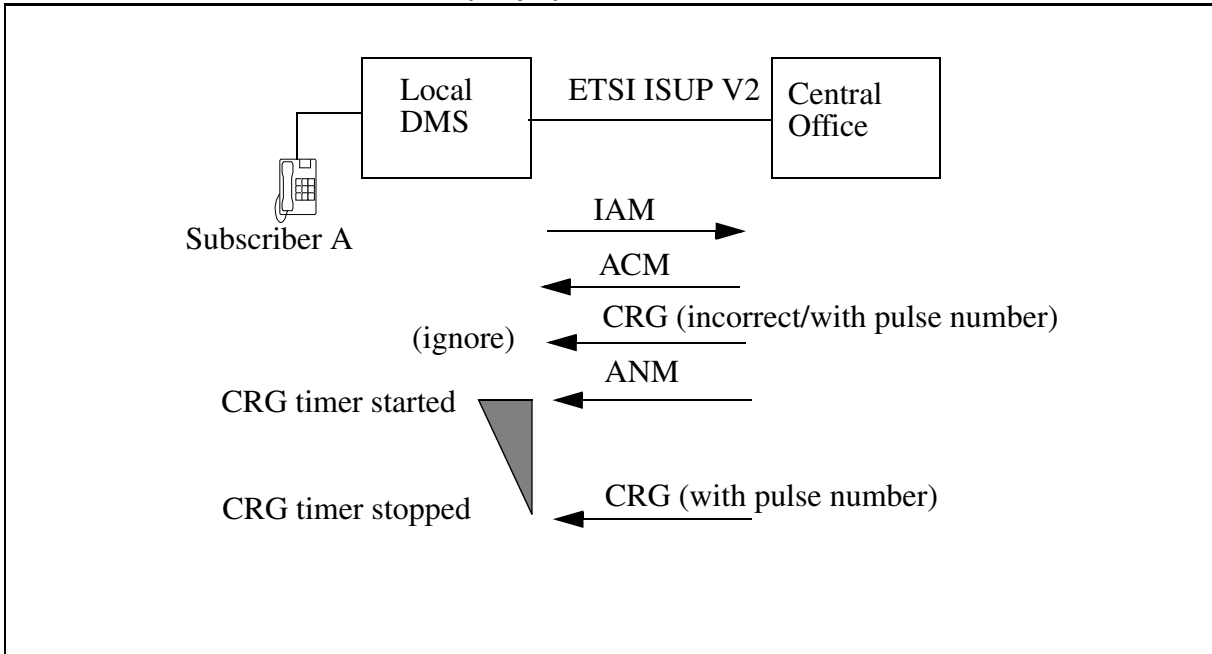
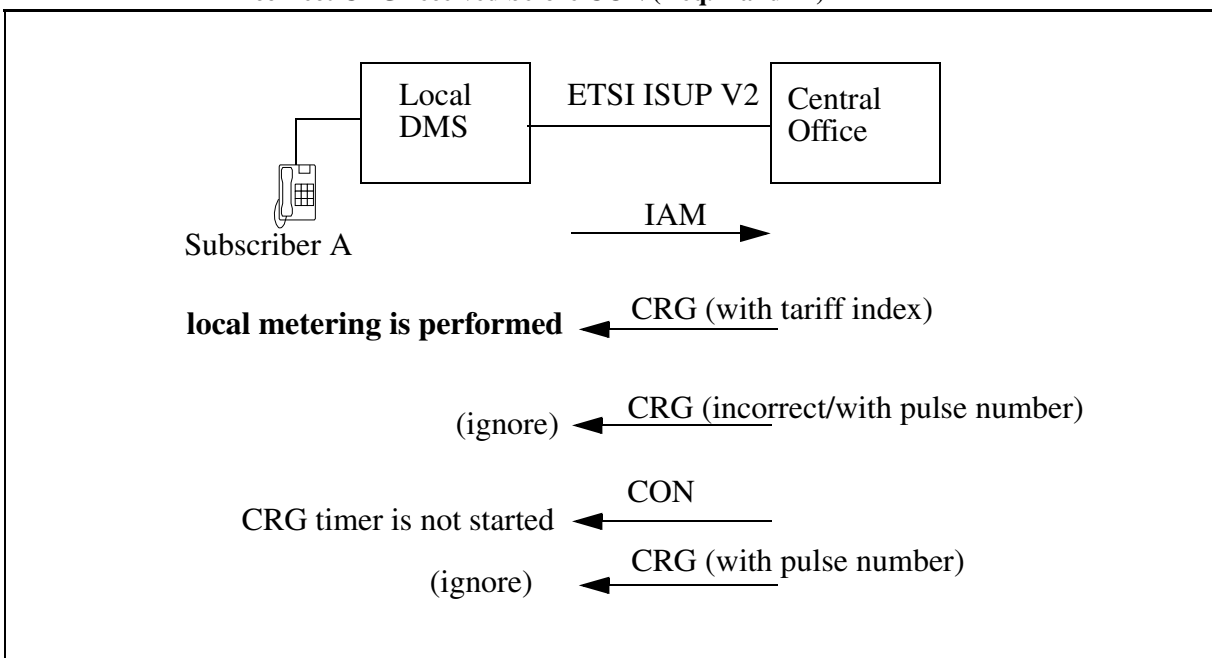


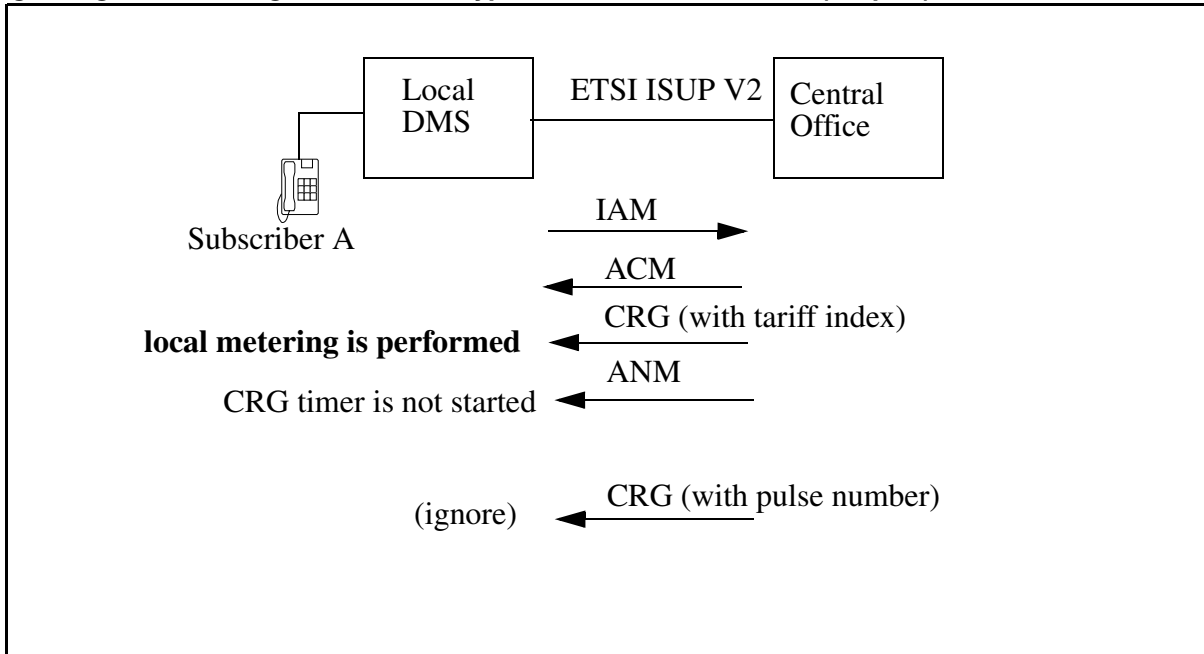
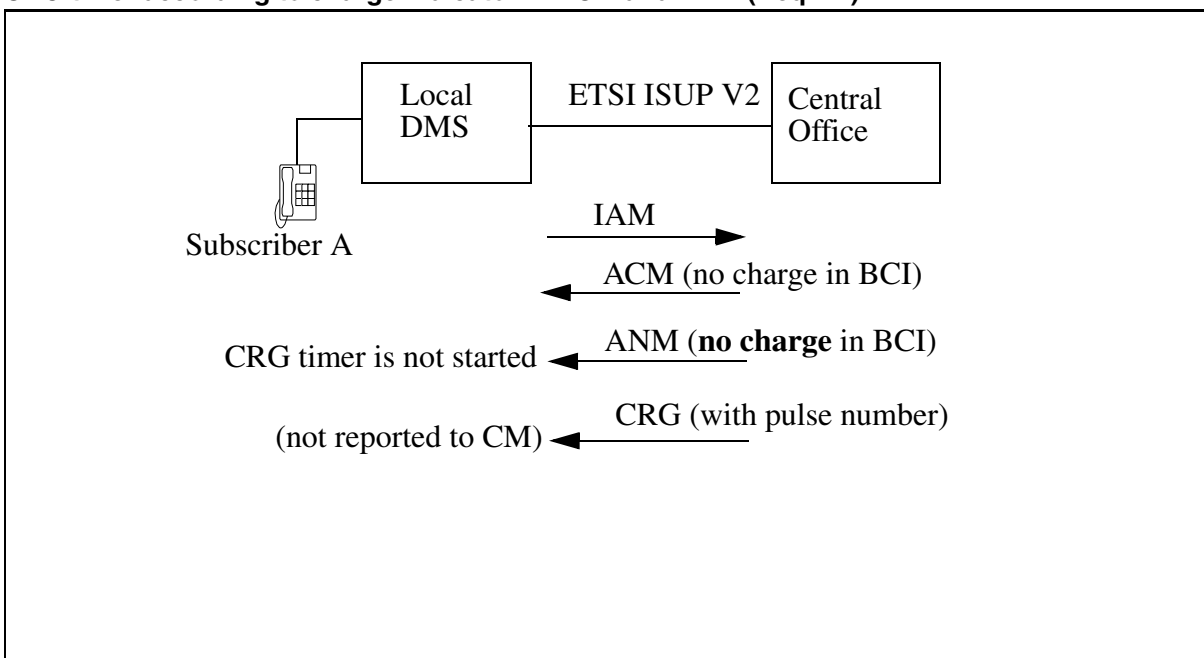
**More than one correct CRG received after ANM message (Req.10)****More than one correct CRG received after CON message (Req.10)**

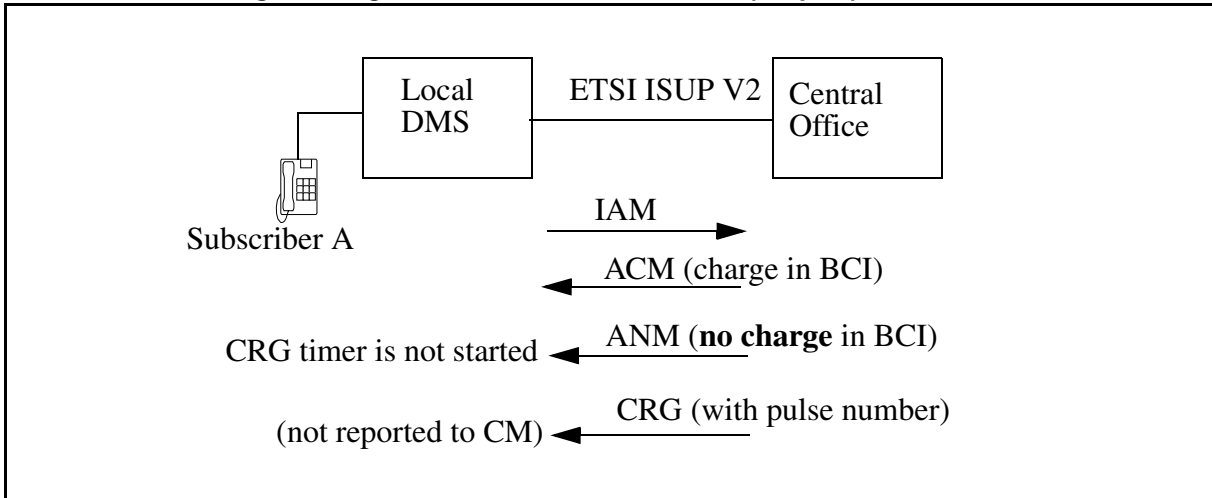
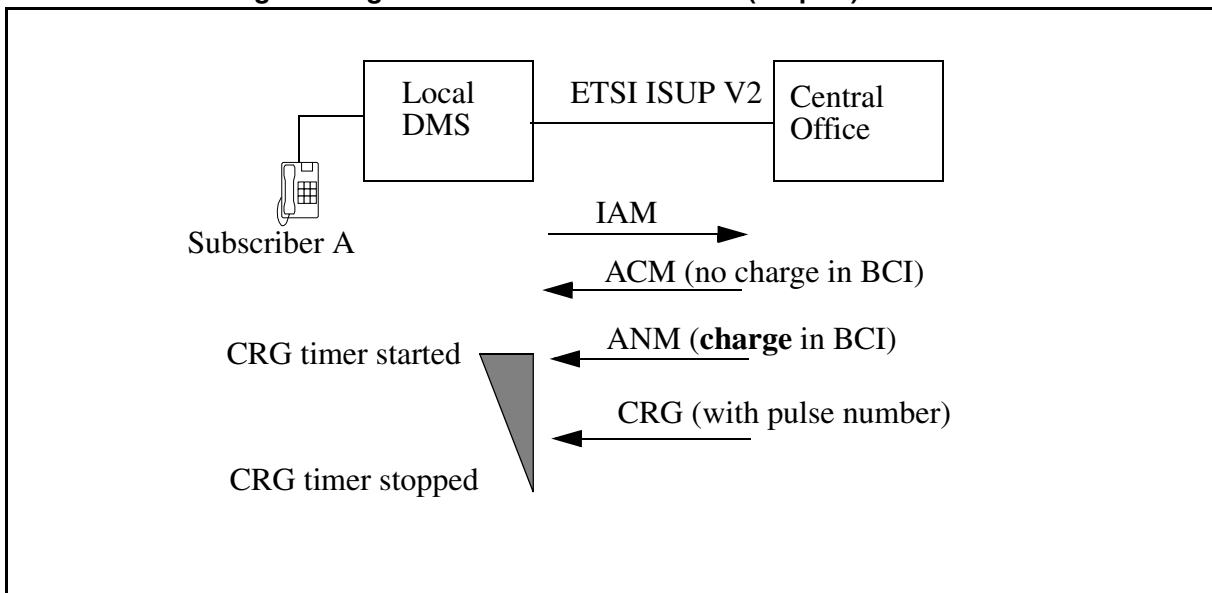
**Incorrect/invalid message received during the conversation (Req. 11)****Incorrect/invalid message received during conversation (Req. 11)**

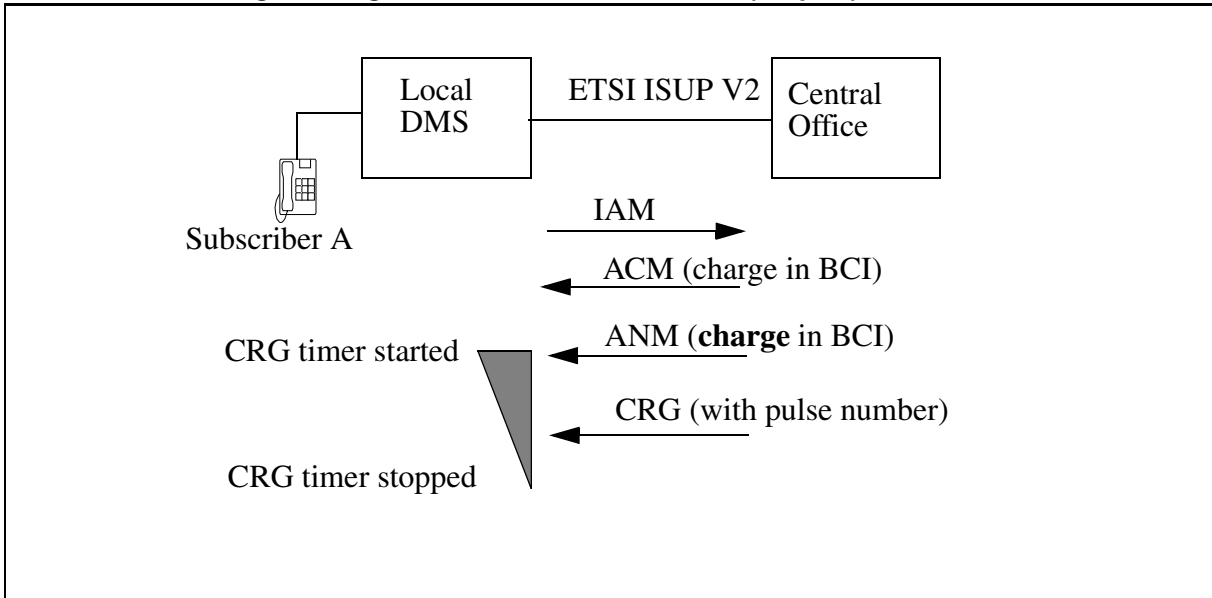
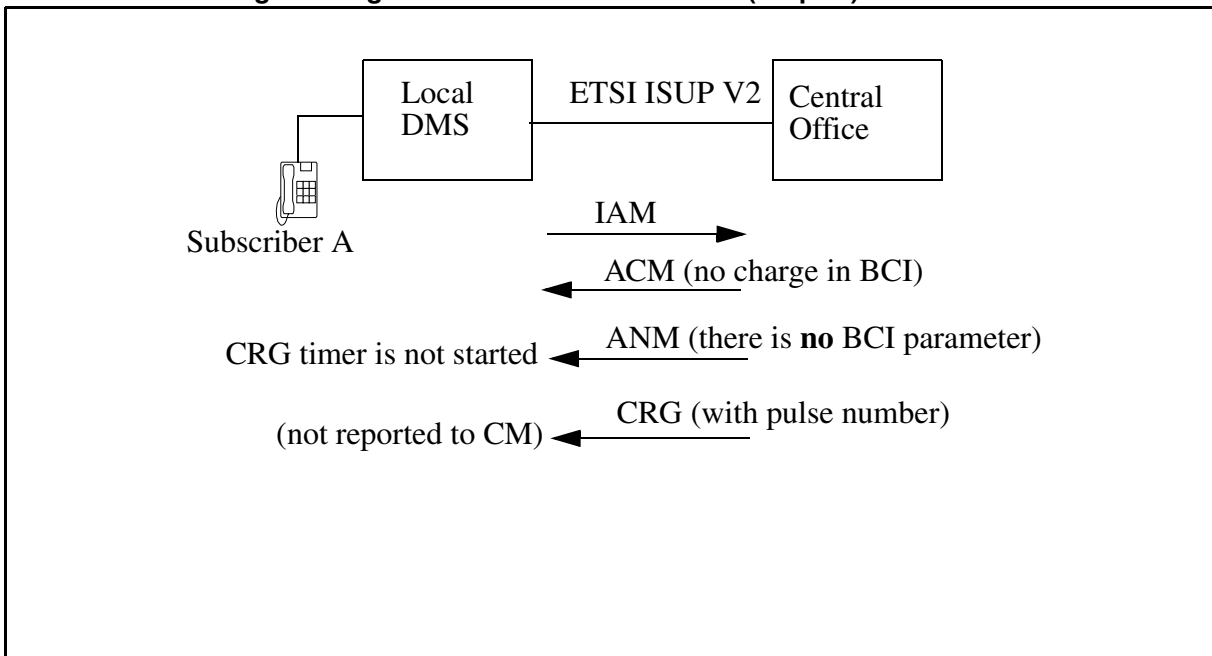


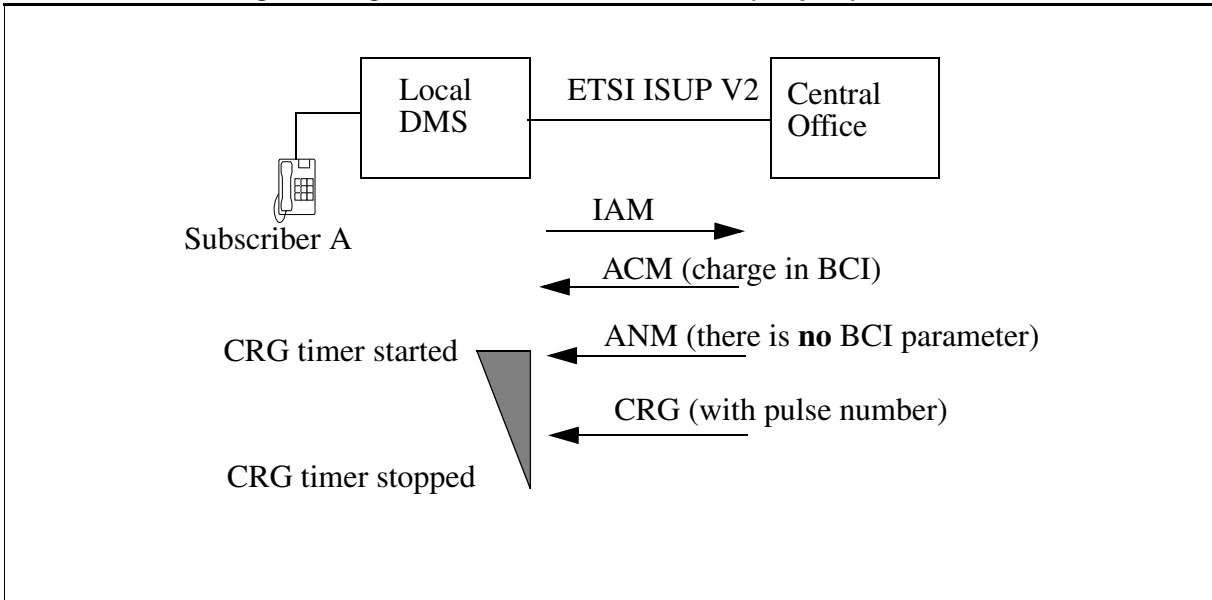
**Incorrect/invalid message received during the conversation (Req. 11)****Incorrect/invalid message received before timer expiry (Req. 11)**

**Incorrect CRG received before ANM (Req. 4)****Incorrect CRG received before CON (Req. 4 and 12)**

**Ignoring CRG message for the local type backward metered call (Req. 12)****CRG timer according to charge indicator in ACM and ANM (Req. 14)**

**CRG timer according to charge indicator in ACM and ANM (Req. 14)****CRG timer according to charge indicator in ACM and ANM (Req. 14)**

**CRG timer according to charge indicator in ACM and ANM (Req. 14)****CRG timer according to charge indicator in ACM and ANM (Req. 14)**

**CRG timer according to charge indicator in ACM and ANM (Req. 14)****Metering behavior for successful distance type backward metering calls:**

For successful distance type backward metering calls, charging of the originating agent will be done using the total of the received CRG pulse counts up to disconnect stage.

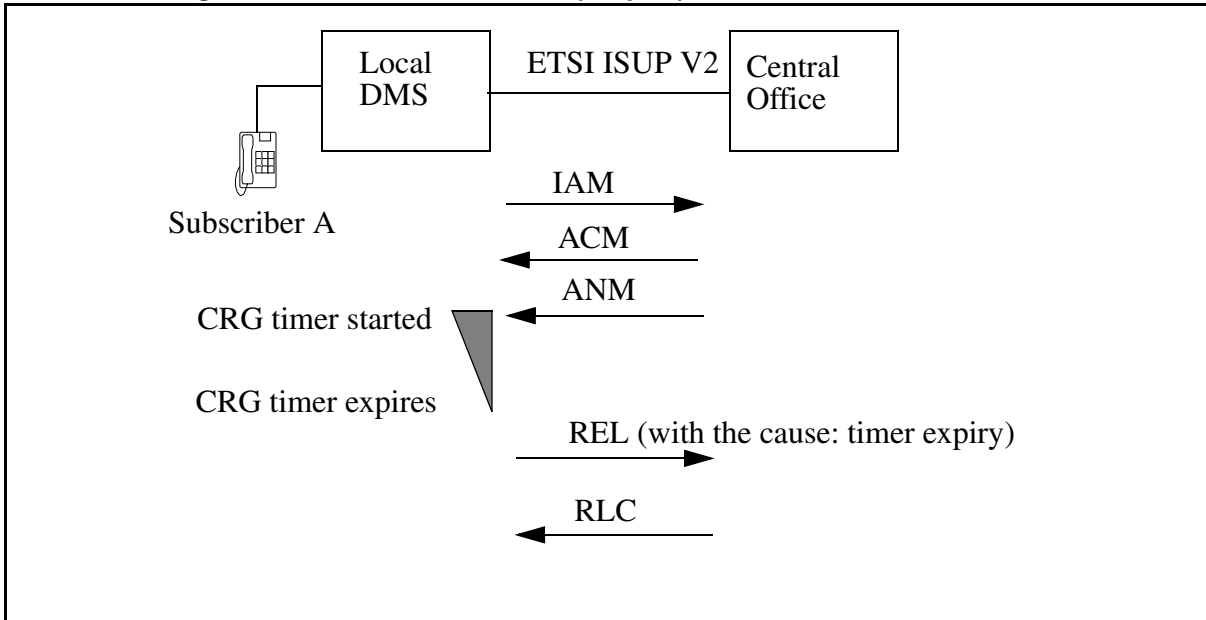
If an ANM, ACM, CON or CPG message with no charge in BCI parameter is received, then the call will not be charged.

For SPM/COIN subscribers, hardware pulses will be generated for the originating agent using the CRG pulse count received. CRG pulses will be transmitted to originating SPM/COIN line as soon as the CRG message is received.

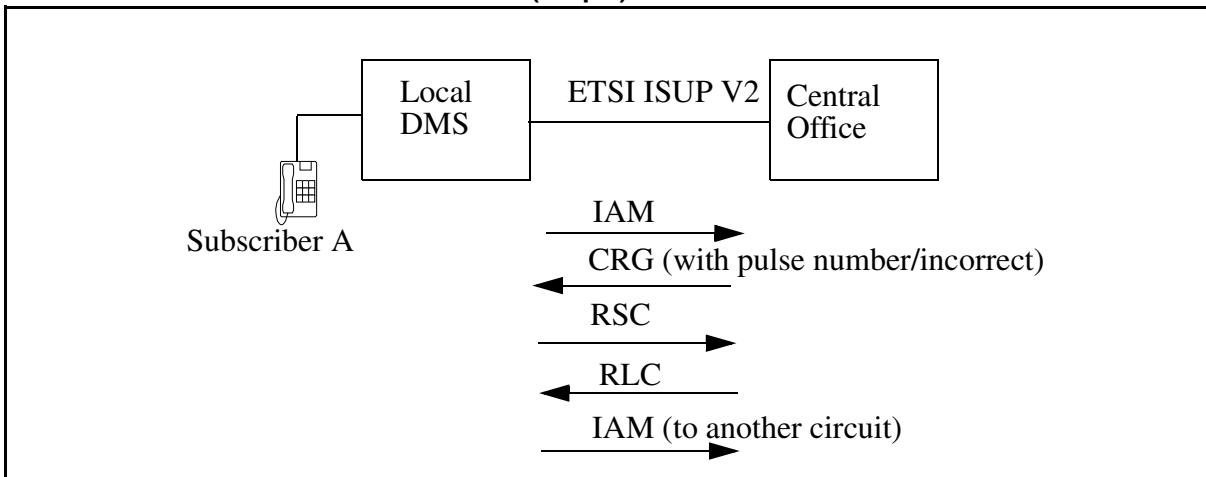
At the end of the call, if a mismatch occurs between received meter count and reported hardware metering pulse count for the originating line, then an MTR162 log is generated.

**Unsuccessful calls for distance type backward metering**

Refer to Table “Status of CRG message for distance type backward metering” on page 1664 for the status of CRG message in this subsection.

**No CRG message received within CRG timer (Req. 13)**

If CRG timer is expired after ANM/CON message for distance type backward metered call, call is not metered.

**Correct/incorrect CRG received after IAM (Req. 3)****Charge Timer**

The new CRG timer is provisioned in table C7UPTMR. This timer only applies at a local office for line to ISUP interworking. This timer is only started for the calls that need backward charging.

The CRG timer is started after receiving of ANM/CON messages to wait for a CRG message. If ACM and ANM messages are received with “no charge”

value for charge indicator in backward call indicator parameter, CRG timer is not started and CRG message is reported to CM.

It is stopped when the first correct CRG message (with pulse number) is received during conversation.

If the new timer is not provisioned in table C7UPTMR, CRG timer is not started, incoming CRG messages are ignored and not reported to CM.

#### CRG timer values

| Minimum value | Maximum Value | Default value |
|---------------|---------------|---------------|
| 0.5 seconds   | 4 minutes     | 20 seconds    |

### Long Duration Call Interactions with Backward Metering

A call which is active longer than a pre-determined time is identified as a long duration call. For ordinary metered long duration calls, charge count is calculated each time the long duration audit is invoked and software meters of the originator are updated.

Long duration support is available for both local and distance type Morocco backward metering calls.

- For local type backward metering calls, long duration behavior is similar with ordinary metering. Each time the long duration audit is invoked, charge value for the audit period is calculated for the received tariff index, and then software meter of the originator is updated.
- For distance type backward metering calls, pulses are received inside CRG messages. Each time the long duration audit is invoked, received backward metering pulses are accumulated and software meters of the originator are updated with that value.

### Backward Metering Line Feature Interactions

Backward metering is not supported in complex call scenarios. Feature activations are restricted when it is decided that some part<sup>7</sup> of call is being backward metered.

Controlling FLASH usage defines the behaviour of backward metering in most of IBN CEPT feature interaction scenarios which involves more than one leg (e.g. Call Switching, Three/Six Way Conference, Call Transfer, Call Diversion, Call Waiting, etc.).

In ETSI BRI lines, usage of HOLD functionality is allowed with some limitations. Activation of ECT, 3PTY and 6PTY are not allowed if one of call legs is being backward metered.

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7. Any leg in complex call scenarios



Call Diversion features are restricted for both IBN and ETSI BRI lines, when 2nd leg is a backward metered call.

Feature interactions of COIN lines are not discussed, since COIN is not compatible with CEPT services (i.e. Features that COIN is incompatible with are CWT, CXR, ENQ, CT, CWT, I3WC, I6WC, MDN, MTR, SCR, SPM, 3WC, and VOWDN).

Please note that IGNR\_FLSH parameter in table ISERVOPT must be N, in order to enable flash usage of SPM agents.

IBN and ETSI BRI features, whose existing functionality is changed/limited by this activity are discussed below. Functionality of other features, which are not mentioned in this document, remains the same.

### **Interaction with IBN CEPT Services**

#### **Restricting FLASH Usage**

Flash usage is not allowed in backward metered calls. So any feature activated by flash (i.e. Call Transfer, 3WC, 6WC, Hold) is not allowed in backward metered calls.

#### **FLASH Activation When Active Call is Backward Metered**

Flash usage is not allowed when active call is Backward metered.

Consider the following scenario:

- A (IBN Agent) calls B (A - B Call Backward metered).
- A flashes and takes A-B call on hold (in order to make a new call, or activate a feature, etc.)

Flash is ignored in this case, and A-B call continues.

#### **Backward Metered Call Initiation after FLASH**

Initiation of a backward metered call, via flashing during a local type backward metered call, is not allowed. Such calls are routed to treatment when it is decided that call will be backward metered.

Consider the following scenario:

- A (either IBN agent) calls B (A-B Call is not backward metered).
- A flashes (A-B call on hold now), and calls C (A - C call Backward metered).

A - C call is sent to treatment from routing, and A-B call continues when A flashes again. A is given FNAL (LINE138 Log) treatment.

### Call Diversion Services (CFU, CFD, CFF, CFU)

Call Diversion feature is not allowed if call is being diverted to a backward metered call. Please note that feature meter count of agent B is incremented for the usage of CFW feature (amount to be incremented is datafilled in MTRFEAT table, by 'usage' field), since this scenario is successful in terms of CFW operation, but is blocked by the terminating trunk.

### Backward Metering Option on the second (Diverted) Leg

Consider the following scenario:

- B is programmed for being diverted to C (B - C Call Backward metered).
- A calls B.

In this case call diversion is not allowed, and a treatment is applied to A.

Treatment given in this case varies depending on the trunk/line treatment mappings on the first leg (A-B above).

In case

- a. A - B is a line to line call, FNAL (LINE 138 Log) treatment is applied to orig agent (A).
- b. a trunk (May be either ISUP, R2, PRI etc.) is involved in A - B call, type of treatment being applied to A depends on the treatment and release cause mapping datafills of related trunk. Hence treatment applied here may not be necessarily FNAL treatment. You can find treatment/release cause mappings in related signalling protocol documentation.

Please note that, if type of diversion applied is CFD (Call Forward Do Not Answer), if subscriber B does not answer the call in predefined amount of time (specified by CFDATIM option in table CUSTSTN), call is attempted to be delivered to C. This diversion is not allowed since B-C call is backward metered, and B continues ringing<sup>8</sup>, since diversion is rejected (general behavior of CFD). In CFD cases, an FNAL(LINE138) LOG might be reported, depending on the signalling protocol (i.e A-B call is line to line, R2, ISUP, PRI, etc.).

### Backward Metering Option on the first Leg

Consider the following scenario:

- B is diverted to C.
- A calls B (A - B Call Backward metered).

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8. If B is an ETSIBRI agent, A-B call is taken down too.

This scenario is not possible since backward metering generation is not supported in current office, only tandeming is supported.

#### ICWT/CWT (CEPT Call Waiting)

Call Waiting will be restricted since usage of FLASH in backward metered calls has been restricted already, and agent with ICWT/CWT option will not be able to take the call.

Consider the following scenario:

- A has ICWT/CWT option
- A calls B.
- A - B Call Active (Backward Metered)
- C calls A.

C gets busy tone, and A is not informed about second call request.

The following scenario is not possible since meter pulse generation is not supported in DMS100 MMP Office:

- A and/or B has ICWT/CWT option
- A Calls B.
- A - B Call Active.
- C calls either A or B (A-C Call backward metered).

#### Interaction with ETSI BRI Services

##### ETSI HOLD

The existing functionality of ETSI HOLD service is not affected, except that **silent tone**<sup>9</sup> is given to the held party if a backward metered call is taken hold.

Consider the following scenario for ETSI BRI agents:

- A (ETSI BRI Agent) calls B (A - B Call Backward metered).
- A holds A-B call.

A - B call is held, and B is applied silent tone. Now a new call can be initiated from A, and subscriber can turn back to A - B call via HOLDing the active call.

#### ECT (Explicit Call Transfer)

Call Transfer is not allowed if any of legs is a backward metered call.

---

9. instead of HOLD announcement/tone

Consider the following scenario for ETSI BRI agents:

- A(ETSI BRI Agent with ECT option) - B call is active (A - B call backward metered, and A is the originator).
- A - C call (any call) is on hold.

A attempts to transfer B - C, and call transfer is not allowed.

Call Transfer is rejected again, if backward metered call was on HOLD and call transfer was requested from the other leg.

3PTY (Three Way Conference)

3PTY is not allowed, if ETSI BRI agent (who is the controller of conference) is the originator of a backward metered call on any leg (might be either HELD or IDLE leg).

Consider the following scenario:

- A (ETSI BRI agent with 3PTY option).
- A - B call is on HOLD. (A-B call backward metered and A is the originator).
- A - C call is active, and A requests 3PTY.

3PTY is not allowed, and conference is not established. Calls on both legs are preserved, and A might switch between calls via HOLD.

3PTY is again rejected if 3PTY is requested from the backward metered leg in the above scenario.

6PTY (Six Way Conference)

Initiation of 6PTY is not allowed if the controller is the originator of current backward metered call.

- A (ETSI BRI Agent with ECONF option).
- A - B call is active and backward metered.
- A attempts to initiate a 6 way conference, and conference request is rejected.

Also, addition of a backward metered call to an existing conference is not allowed.

A (ETSI BRI Agent with ECONF option), and is the controller of the ongoing conference.

- A takes the conference on HOLD, and initiates A-B call (backward metered).
- When B answers the call, A attempts to add A-B leg to the conference.
- Request of A for add-on leg is rejected.

#### Call Diversion Services

Behavior of call diversion services for ETSI BRI lines in backward metered calls are as described in the Call Diversion Section for IBN lines.

### Hardware Requirements or Dependencies

These activities are supported

- only for SX05 PDTC
- only for SX05 GPP and QPO load
- MX77 (development will be done) PLGC and OLG load
- SX05 (only for basic sanity tests will be done) PLGC, QGI loads.

### Software Requirements or Dependencies

None

### Limitations and restrictions

- If more than one pulse count is received in CRG message, generation of all received pulses to SPM/COIN lines is not guaranteed for distance type backward line hardware metering.
- Maximum supported CRG message rate is 1 message per 0.52 seconds for distance type backward line hardware metering.
- In case CRG timer is not datafilled in C7UPTMR local software metering is done instead of backward metering.
- Trunk software metering is not supported for Morocco ISUP V2.
- Retranslation scenarios are not supported in Morocco ISUP V2 backward metered calls, similar to existing metering functionality.

### Interactions

None

### Applicable customer facing sections

Fault Management

Logs

X

Alarms

N/A

**Configuration**

|                    |     |
|--------------------|-----|
| Data Schema        | X   |
| User Interface     | N/A |
| Element Management | N/A |
| Security           | N/A |
| Service Order      | N/A |
| Office Parameters  | N/A |

Accounting (includes AMA billing) N/A

Performance (includes operational measurements) N/A

**Glossary**

None

**Recommended Reading/References**

- Maroc Telecom Specific Requirements, High Level, v 1.5
- A39005695: ETSI ISUP V2 Backward Metering for Morocco
- TA0600: Backward Metering in Morocco Network
- ITU-T Recommendation Q763: Signalling System No.7 - ISDN User Part Formats and Codes
- A00004563: Moroccan ISUP V2 on DMS100
- A00004551: Backward Metering for Morocco
- A59012394: Turkish ISUP V1/V2
- A59018055: Turkish ISUP V2 - Line interworkings
- A59007794: Line Hardware Metering Base
- DMS-100 MMP Metering Guide -NTP 297-9051-020

***Fault Management for A00004565*****Fault management strategy**

N/A

**Fault management tools and utilities**

N/A

## Logs

### MTR161

#### Explanation

Log Title: MTR161

Name: BCKMTR DATAFILL

Description: The metering (MTR) subsystem generates this report if a corresponding MTRTARIF tuple could not be found for a received tariff index within ISUP CRG message.

Event type: Failure

#### Format

MTR161 mmmdd hh:mm:ss ssdd FAIL BCKMTR DATAFILL

LEN <len> DN <dn>

CALLED DR <dn>

NO TARIFF DATAFILL AVAILABLE

FOR THE RECEIVED TARIFF INDEX : <taridx>

LNET = <lnetval> MZONE = <mzoneval>

#### Example:

XXXX MTR161 DEC12 10:49:18 4900 FAIL BCKMTR DATAFILL

HOST 00 0 00 10 DN 1027835405

CALLED DR 7835406

NO TARIFF DATAFILL AVAILABLE

FOR THE RECEIVED TARIFF INDEX : 3

LNET = LOC MZONE = 0

**Field descriptions****Field descriptions**

| Field                                               | Value                              | Description                                                                                                                                              |
|-----------------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| FAIL BCKMTR DATAFILL                                | Constant                           | Indicates that backward metering failed because data was missing from the table MTRTARIF                                                                 |
| len                                                 | Alphanumeric (up to 12 characters) | Gives the line equipment number (LEN) of affected equipment                                                                                              |
| dn                                                  | Numeric(up to 15 digits)           | Provides the directory number (DN) associated with the LEN                                                                                               |
| dn                                                  | Numeric(up to 15 digits)           | Identifies the contents of the digit register (the called number)                                                                                        |
| NO TARIFF DATAFILL AVAILABLE FOR THE RECEIVED INDEX | Constant                           | -                                                                                                                                                        |
| taridx                                              | 0 - 255                            | This field gives the received tariff index within CRG message                                                                                            |
| lnetval                                             | Symbolic text                      | This field provides the identifier of the logical network of the call. The entry in the LNETWORK field is in table LNETWORK and specified in translation |
| mzoneval                                            | 0 - 63                             | This field provides the metering zone value of the call specified in translation                                                                         |

**Action**

This log indicates that the MTRTARIF tuple corresponding to the received tariff index in CRG message is missing. An MTRTARIF tuple using the received index value should be datafilled for charging the call.

**Associated Operational Measurements or Performance Measurements**

N/A

**Additional information**

N/A

**MTR162****Explanation**

Log Title: MTR162

Name: BCKMTR RATE MISMATCH



Description: The Metering (MTR) subsystem generates log report MTR162 for two cases:

- When a mismatch occurs between calculated software meter count and reported hardware metering pulse count for local type backward metering
- When a mismatch occurs between received meter count and reported hardware metering pulse count for distance type backward metering

Event type: Information

### Format

```
MTR162 <mmdd hh:mm:ss ssdd> INFO BCKMTR RATE MISMATCH
<cpid of origination> <DN of origination>
PULSE COUNT MISMATCH - NODE <node no> REPORTED INACCURATE CHARGE
BACKWARD METERING TYPE : <bcktmtr type>
LNETWORK: <LNET value> <tariff index>
<pulse info> PULSE COUNT: <CM meter count>
REPORTED PULSE COUNT: <Pulse count from PM>
```

### Examples:

```
XXX MTR162 DEC13 19:05:44 5000 INFO BCKMTR RATE MISMATCH
HOST 01 1 15 11 DN 3923652407
PULSE COUNT MISMATCH - NODE 31 REPORTED INACCURATE CHARGE
BACKWARD METERING TYPE :LOCAL
LNETWORK: NATL TARIFF INDEX: 3
CALCULATED PULSE COUNT: 10
REPORTED PULSE COUNT: 16

XXX MTR162 DEC13 19:05:44 5000 INFO BCKMTR RATE MISMATCH
HOST 01 1 15 11 DN 3923652407
PULSE COUNT MISMATCH - NODE 31 REPORTED INACCURATE CHARGE
BACKWARD METERING TYPE : DISTANCE
LNETWORK: NATL
RECEIVED PULSE COUNT: 10
REPORTED PULSE COUNT: 16
```

**Field descriptions****Field descriptions**

| <b>Field</b>               | <b>Value</b>              | <b>Description</b>                                                                                                           |
|----------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------|
| BCKMTR RATE MISMATCH       | Constant                  | Reports a meter count mismatch between the reported hardware meter pulse and the meter count calculated or accumulated at CM |
| CPID of origination        | Host number               | Identifies the line CP_ID of the originator                                                                                  |
| DN of origination          | Numeric (up to 15 digits) | Identifies the DN number of the originator                                                                                   |
| PULSE COUNT MISMATCH       | Constant                  |                                                                                                                              |
| node no                    | Numeric                   | PM node number                                                                                                               |
| REPORTED INACCURATE CHARGE | Constant                  |                                                                                                                              |
| REPORTED INACCURATE CHARGE | Constant                  |                                                                                                                              |
| BACKWARD METERING TYPE:    | Constant                  |                                                                                                                              |
| bcktmtr type               | local/distance            |                                                                                                                              |
| LNET value                 | Symbolic text             | This field provides the identifier of the logical network of the call. This field is specified in translation.               |
| tariff index               | 0 to 255                  | Received tariff index within CRG message for local backward metering.                                                        |
| pulse info                 | CALCULATED/<br>RECEIVED   | This field is set to 'CALCULATED' for local backward metering and to 'RECEIVED' for distance backward metering               |
| PULSE COUNT:               | Constant                  |                                                                                                                              |
| CM meter count             | Numeric                   | Calculated or accumulated meter count in CM                                                                                  |
| REPORTED PULSE COUNT:      | Constant                  |                                                                                                                              |
| Pulse count from PM        | Numeric                   | Reported pulse count generated for the call                                                                                  |

**Action**

For local backward metering, check the metering tables and the static data for differences.

For distance backward metering, no action is necessary. The log is generated only for information.

**Associated Operational Measurements or Performance Measurements**

N/A

**Additional information**

The amount of meter count mismatch which causes MTR162 log generation is determined by the PULMISTH parameter in MTRSYSPM.

For distance metering, meter count mismatch can occur in case the originator line on hooks before all the received pulses are generated.

**MTR113****Explanation**

Log Title: METER DATAFILL

Name: MTR113

Description: The metering (MTR) subsystem generates this report when the system attempts to meter a call and one of the following tables has invalid or missing data:

- universal translations
- metering

Event type: Failure

**Format**

MTR113 mmmdd hh:mm:ss ssdd FAIL METER DATAFILL  
LEN <len> DN <dn> CALLED DR <dn>  
METERING DATAFILL ERROR  
<rsntxt>  
LNETWORK = <infotxt>

**Example:**

MTR113 MAY04 14:11:16 1886 FAIL METER DATAFILL  
HOST 05 1 00 20 DN 9096210001  
CALLED DR 9096210002  
METERING DATAFILL ERROR.

NO MZONE DATAFILLED IN XLA  
LNETWORK = LOCAL MZONE 63 0 0

## Field descriptions

### Field descriptions

| Field     | Value                              | Description                                                        |
|-----------|------------------------------------|--------------------------------------------------------------------|
| LEN       | Alphanumeric (up to 12 characters) | Gives the line equipment number (LEN) of affected equipment        |
| DN        | Numeric (up to 15 digits)          | Provides the directory number (DN) associated with the LEN         |
| CALLED DR | Numeric (up to 15 digits)          | Identifies the contents of the digit register (the called number)  |
| rsntxt    | Alphanumeric                       | Provides information on the condition that caused metering to fail |
| infotxt   | Symbolic and numeric               | The LNET and MZONE value for the call obtained from translation    |

## Action

When this log is generated, the missing table datafill for the call stated in the rsntxt field should be completed in order to meter the call. Either translation or metering table datafills can be missing.

## Associated Operational Measurements or Performance Measurements

N/A

## Additional information

Only change for the existing log is a new rsntxt added for backward metering. The new rsntxt is as below:

BACKWARD METERING: NO LNET IN XLA

### Example output for the new log text

```
MTR113 MAY04 14:11:16 1886 FAIL METER DATAFILL  
HOST 05 1 00 20 DN 9096210001  
CALLED DR 9096210002  
METERING DATAFILL ERROR  
BACKWARD METERING: NO LNET IN XLA  
LNETWORK =      MZONE      63          0          0
```

An mtr 113 log with the new rsntxt is generated if no LNET datafill is found for a translation with BCKWMTR option.

**Related documentation**

N/A

***Configuration for A00004565*****Hardware and Software Requirements**

This activities are supported

- only for SX05 PDTC loads
- only for SX05 GPP with QPO load
- MX77 (development will be done) PLGC and OLG load
- SX05 (only for basic sanity tests will be done) PLGC, QGI loads.

**Initial Configuration**

None

**Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

**Upgrade Impact**

N/A

**Data schema (DS) (CM, MIBS, RDB)****New/modified tables, MIBs, or Database Schema**

New or modified tables

| Table/MIB name                                                         | NEW/CHANGED<br>/ or DELETED/ | Table Control<br>(NEW/OLD/UNCHANGED) |
|------------------------------------------------------------------------|------------------------------|--------------------------------------|
| C7UPTMR                                                                | CHANGED                      | UNCHANGED                            |
| ISUPSVC                                                                | UNCHANGED                    | UNCHANGED                            |
| xxHEAD<br>(PXHEAD, OFCHEAD, CTHEAD, ACHEAD,<br>FAHEAD, AMHEAD, FTHEAD) | CHANGED                      | UNCHANGED                            |
| xxCODE<br>(PXCODE, OFCCODE, CTCODE,<br>ACCODE, FACODE, FTCODE, AMCODE) | CHANGED                      | UNCHANGED                            |

## Table/MIB/Remote Database Schema information

### Table C7UPTMR

Common Channel Signalling No.7 ISUP Timers

#### Functional description

Table C7UPTMR contains call processing and maintenance timers. The timers are datafilled according to trunk subgroup. A new ISUP timer “CRG” is datafilled in table C7UPTMR. CRG timer is started to wait CRG messages after ANM/CON messages in backward metered ISUP calls. This timer is provisioned only for OG and 2W trunks.

#### Usage sequence and implications (CM Only)

Current datafill order unchanged.

#### Size

The minimum and maximum number of tuples allowed in the table C7UPTMR is not changed by this activity.

#### Fields/OIDs

Table field descriptions

| Field | New or Changed | Subfield or refinement | Entry       | Explanation and action            |
|-------|----------------|------------------------|-------------|-----------------------------------|
| CRG   | new            | no                     | {5 TO 2400} | Charge timer in 100 milliseconds. |

#### Datafill example

The following example shows sample datafill for table C7UPTMR.

#### Sample C7UPTMR datafill

TABLE: C7UPTMR

TMRKEY C7UPDIR TMRS OPTIONS

```

-----
OGN7 OG Q767 15 180 326 60 90 20 180 10 60 10 60 1000 10 120
40 10 (CRG 400) $
ICN7 IC Q767 15 180 326 60 90 15 5 15 10 60 10 60 10 60 10
60 10 60 10120 240 10 20 4 $

```

In this datafill example CRG timer is datafilled as 400 (40 seconds) in C7UPTMR for the tuple OGN7. That “OGN7” is datafilled in TMRNAME field of TRKSGRP table. So the trunk subgroups whose tmrname is OGN7 has a charge timer with the value 40 seconds.

**Table release history update**

None

**Supplementary information**

None

**Translation verification other tools**

None

**Table ISUP SVC**

ISUP Services

**Functional description**

This table holds entries for every service that is intended to be switched on or off by datafill. At present it allows entries for INR/INF and IDR/IRS applications.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size**

The minimum and maximum number of tuples allowed in the table ISUP SVC is not changed by this activity.

**Fields/OIDs**

Current fields are not changed.

**Datafill example**

The following datafill shows default datafill for Moroccan ISUP V2 in table ISUP SVC.

**Default Tuple in table ISUP SVC**

```
>table isupsvc
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ISUP SVC
>lis all
TOP
      KEY                                     SERVICE
-----
MOROCCAN_EIV2  (INR_INF GENERATION_AND_RECEPTION (CGN_REQUESTED)
                (CPC_REQUESTED) $)$
BOTTOM
>
```

**Table release history update**

None

**Supplementary information**

None

**Translation verification other tools**

None

**xxHEAD Tables**

- PXHEAD - Prefix Digits
- OFCHEAD - Office Code Digits
- CTHEAD - Country Code Digits
- ACHEAD - Access Code Digits
- FAHEAD - Foreign Area Digits
- AMHEAD - Ambiguous Codes
- FTHEAD - Feature

**Functional description**

The function of head tables are unchanged.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size****Table size**

| Abbreviated table name                                                  | Minimum tuples | Maximum tuples | Information on memory         |
|-------------------------------------------------------------------------|----------------|----------------|-------------------------------|
| xxHEAD<br><br>(PXHEAD, OFCHEAD, CTHEAD, ACHEAD, FAHEAD, AMHEAD, FTHEAD) | Same           | Same           | Current limits are unchanged. |

**Fields/OIDs**

The following table lists fields for HEAD tables.

**Table field descriptions**

| Field | New or Changed | Subfield or refinement | Entry                                     | Explanation and action                                                                  |
|-------|----------------|------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------|
| DFOP  | changed        | OSEL                   | RTE<br>(BCKWMTR)<br><br>CONT<br>(BCKWMTR) | BCKWMTR option is added to the OSEL (option selector) field of HEAD translation tables. |



**Datafill example**

The following example shows sample datafill for table PXHEAD (Usage in other head tables is the same).

**Sample Datafill in Table PXHEAD**

|                   |       |
|-------------------|-------|
| TABLE: PXHEAD     |       |
| >                 |       |
| XLANAME           | DFLT  |
|                   | DFOP  |
| CON MAXIDX        |       |
| -----             |       |
| NETXLA            | SDFLT |
| DFOP (BCKWMTR) \$ |       |
| NOCON F           |       |

**Table release history update**

A new translation option, BCKWMTR, is added to be datafilled in OSEL field of head tables.

**Supplementary information**

NONE.

**Translation verification other tools**

The following example shows the output from traver when it is used to verify BCKWMTR option in table PXHEAD.

**Traver Example**

```

>traver 1 7835479 7835489 b
TABLE IBNLINES
HOST 02 0 00 09 0 DT STN IBN 7835479 CUST783A 0 0 102 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP REALKC
INAP Origination Attempt TDP: no subscribed trigger.
INAP Info Collected TDP: no subscribed trigger.
TABLE NCOS
CUST783A 0 0 0 $ ( CBQ 0 0 Y 1) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME NETXLA1
TUPLE NOT FOUND
Default from table XLANAME:
NETXLA1
      (NET N Y 0 N NDGT N Y GEN (LATTR 1 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
1 IBN NONE NT 0 0 NILSFC 0 PX NETXLA NIL 00 102_NPRT_1 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
NETXLA SDFLT DFOP BCKWMTR $ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
7835489

```

**Traver Example (Cont)**

```

TABLE PXCODE
NETXLA 783 783 CONT ( PF 3) ( MM 7 7) ( CLASS LCL) ( XLT OFC OFC783)$
TABLE OFCHEAD
OFC783 DFLT TRMT ( OFC VACT)$ NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 5489
TABLE OFCCODE
OFC783 5 5 RTE ( DEST 1)$
TABLE: OFCRTE
KEY: OFC783 1
. T OFRT 783
. . TABLE OFRT
. . 783 DN 102 783 4
. . . TABLE TOFCNAME
. . . 102 783 $
. . . TABLE DNINV
. . . 102 783 5489 L HOST 02 0 10 09
TABLE DNFEAT
TUPLE NOT FOUND
. . . TABLE DNATTRS
. . . TUPLE NOT FOUND
. . . TABLE DNGRPS
. . . TUPLE NOT FOUND
. . EXIT TABLE OFRT
EXIT TABLE OFCRTE
TABLE TRIGGRP
REALKC INFOANAL
. GENTRIG ( CDPN REALKC)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.
INAP Route Select Failure TDP: no subscribed trigger.
INAP Termination Attempt TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1027835489 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 MESAJ2
2 OFL
3 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

**xxCODE Tables**

- PXCODE - Prefix Digits
- OFCCODE - Office Code Digits
- CTCODE - Country Code Digits
- ACCODE - Access Code Digits

- FACODE - Foreign Area Digits
- AMCODE - Ambiguous Codes
- FTCODE - Feature

### Functional description

The function of code tables are unchanged.

### Usage sequence and implications (CM Only)

Current datafill order unchanged.

### Size

#### Table size

| Abbreviated table name                                                    | Minimum tuples | Maximum tuples | Information on memory         |
|---------------------------------------------------------------------------|----------------|----------------|-------------------------------|
| xxCODE<br><br>(PXC CODE, OFCCODE, CTCODE, ACCODE, FACODE, AMCODE, FTCODE) | Same           | Same           | Current limits are unchanged. |

### Fields/OIDs

The following table lists fields of HEAD tables.

#### Table field descriptions

| Field   | New or Changed | Subfield or refinement | Entry                               | Explanation and action                                                                  |
|---------|----------------|------------------------|-------------------------------------|-----------------------------------------------------------------------------------------|
| XLADATA | changed        | OSEL                   | RTE (BCKWMTR)<br><br>CONT (BCKWMTR) | BCKWMTR option is added to the OSEL (option selector) field of CODE translation tables. |

### Datafill example

The following example shows sample datafill for table PXC CODE (Usage in other code tables is the same).

**Sample Datafill in Table PXHEAD**

```
TABLE: PXCODE
>
>lis
  XLANAME          FROMD          TOD          XLADATA
-----
  NETXLA          783          783
CONT (PF 3) (MM 7 7) (CLASS LCL) (XLT OFC OFC783) (BCKWMTR) $
>
```

**Table release history update**

A new translation option, BCKWMTR, is added to be datafilled in OSEL field of code tables.

**Supplementary information**

NONE.

**Translation verification other tools**

The following example shows the output from traverser when it is used to verify BCKWMTR option in table PXCODE.

**Traver Example**

```

>traver 1 7835479 7835489 b
TABLE IBNLINES
HOST 02 0 00 09 0 DT STN IBN 7835479 CUST783A 0 0 102 $
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP REALKC
INAP Origination Attempt TDP: no subscribed trigger.
INAP Info Collected TDP: no subscribed trigger.
TABLE NCOS
CUST783A 0 0 0 $ ( CBQ 0 0 Y 1) ( OCTXLA OCTCEPT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
CUST783A NXLA NETXLA1 NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNXLA: XLANAME NETXLA1
TUPLE NOT FOUND
Default from table XLANAME:
NETXLA1
      (NET N Y 0 N NDGT N Y GEN (LATTR 1 102_NPRT_1 NLCA_NILLA_1) $ $)$ 9
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
1 IBN NONE NT 0 0 NILSFC 0 PX NETXLA NIL 00 102_NPRT_1 NLCA_NILLA_1 $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE XLAPLAN
102_NPRT_1 NSCR 102 NPRT NONE N $ GG
TABLE RATEAREA
NLCA_NILLA_1 NLCA NIL NILLATA $
TABLE PXHEAD
NETXLA SDFLT NODFOP NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:
7835489

```

**Traver Example (Cont)**

```

TABLE PXCODE
NETXLA 783 783 CONT ( PF 3 ) ( MM 7 7 ) ( CLASS LCL ) ( XLT OFC OFC783 )
(BCKWMTR) $
TABLE OFCHEAD
OFC783 DFLT TRMT ( OFC VACT)$ NODFOP NOCON STD
THE DIGITS USED TO INDEX THE NEXT TABLE ARE: 5489
TABLE OFCCODE
OFC783 5 5 RTE ( DEST 1)$
TABLE: OFCRTE
KEY: OFC783 1
. T OFRT 783
. . TABLE OFRT
. . 783 DN 102 783 4
. . . TABLE TOFCNAME
. . . 102 783 $
. . . TABLE DNINV
. . . 102 783 5489 L HOST 02 0 10 09
TABLE DNFEAT
TUPLE NOT FOUND
. . . TABLE DNATTRS
. . . TUPLE NOT FOUND
. . . TABLE DNGRPS
. . . TUPLE NOT FOUND
. . EXIT TABLE OFRT
EXIT TABLE OFCRTE
TABLE TRIGGRP
REALKC INFOANAL
. GENTRIG ( CDPN REALKC)$ NIL
Trigger INAPV8 GENTRIG is applicable to office.
INAP Info Analyzed TDP: trigger criteria not met.
INAP Route Select Failure TDP: no subscribed trigger.
INAP Termination Attempt TDP: no subscribed trigger.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE 1027835489 ST

TREATMENT ROUTES. TREATMENT IS: GNCT
1 MESAJ2
2 OFL
3 LKOUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++

```

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

Not impacted by this activity

***Product = World Trade*****A00004743 -- Line Originations CLI modification through CALLCNTL (Succession on DMS)*****Functional Description***

Customers want the ability to send a different CLI dependent on the dialed digits and calling digits for their ONE NUMBER service.

All ONE NUMBER VoIP lines have a real DN (original DN) that is datafilled on the call server and a virtual DN (new CLI), where the original DN is changed into the new CLI when the called number is in a special range.

Features A59028780 and A59033687 (from MMP15 and tested in Succession ISN loads) provide a capability through table CALLCNTL and related tables to perform CLI modification based on the called number and calling number. These features work well in a trunk to trunk scenario.

The translations can also be applied in line originated calls (line to trunk and line to line) correctly. However, the CLI presented at the terminating display or in the outgoing message of the trunk terminating call, is not modified, and remains as the original CLI, but the Orig Open Digs in AMA log is the modified CLI.

This feature enhances the capability in ISN07 to modify the CLI based on called number and calling number (through table CALLCNTL) for IBN line originating calls. And this feature also provides a datafillable ability to control whether the modified CLI or original CLI is put into the Orig Open Digits field of AMA record.



## Detail description

### CLI for display

Following scenarios are supported by this feature.

- For IBN line -> IBN line calls, the modified CLI is presented at the CLASS display if the CLI needs to be changed to the virtual DN.

**Note:** In order to active this function, CND tuple for ETSI variant must be added in table ISERVOPT (please refer to Figure “Datafill example in table ISERVOPT”), and the called party must be with CND/DDN option.

### Datafill example in table ISERVOPT

```
TABLE: ISERVOPT
>lis
SOPTSKEY SOPTSVAR
-----
CND CND ETSI RS15 N N DEFAULT
```

- For IBN line -> ETSI V2 ISUP trunk calls, the modified CLI is sent in the outgoing IAM if the CLI needs to be changed to the virtual DN.
- For IBN line -> ETSI PRI trunk calls, the modified CLI is sent in the outgoing SETUP message if the CLI needs to be changed to the virtual DN.

As to how to datafill the CLI modification through table CALLCNTL, please refer to features A59028780 and A59033687 for details.

### CLI in Orig Open Digs field of AMA log

BILL\_CLI, a new option in subtable CGPNDATA of table CGPNSCRN and subtable CDPNDATA of table CDPNSCRN, is introduced by this feature to control which CLI is put into the Orig Open Digs field of AMA log.

The modified structure of subtable CGPNDATA of table CGPNSCRN is as below:

**Structure of subtable CGPNDATA of table CGPNSCRN**

```

TABLE: CGPNSCRN CGPNSCRN: CGPNDATA
>ran
 1 FROMDIGS          EDIG_DIG_REG
 2 TODIGS            EDIG_DIG_REG
 3 CGPNINDX          THIRTY_TWO_CHAR_VECTOR
 4 CCOPTION           CALLCNTL_OPTION_VECTOR
 5 CGPNOPT            CDGPNSCRN_OPTION_VECTOR
LOGICAL TUPLE TYPE: CGPNDATA_LOG_TUPLE
>ran 5
 5 CGPNOPT            CDGPNSCRN_OPTION_VECTOR
TYPE IS CDGPNSCRN_OPTION_VECTOR VECTOR OF UP TO 2 MULTIPLES WITH
      CDGPNSCRN_OPTIONS      {CONTINUE, BILLING_CLI} REFINEMENTS:
      {CONTINUE}              MULTIPLE WITH
          CONSUME              {0 TO 31}
      {BILL_CLI}              MULTIPLE WITH
          CLI                  {ORIG, MODIF}

```

The modified structure of subtable CDPNDATA of table CDPNSCRN is as below:

**Structure of subtable CDPNDATA of table CDPNSCRN**

```

TABLE: CDPNSCRN SCRN_PROVIDER12: CDPNDATA
>ran
 1 FROMDIGS          EDIG_DIG_REG
 2 TODIGS            EDIG_DIG_REG
 3 CDPNINDX          THIRTY_TWO_CHAR_VECTOR
 4 CCOPTION           CALLCNTL_OPTION_VECTOR
 5 CDPNOPT            CDGPNSCRN_OPTION_VECTOR
LOGICAL TUPLE TYPE: CDPNDATA_LOG_TUPLE
>ran 5
 5 CDPNOPT            CDGPNSCRN_OPTION_VECTOR
TYPE IS CDGPNSCRN_OPTION_VECTOR VECTOR OF UP TO 2 MULTIPLES WITH
      CDGPNSCRN_OPTIONS      {CONTINUE, BILL_CLI} REFINEMENTS:
      {CONTINUE}              MULTIPLE WITH
          CONSUME              {0 TO 31}
      {BILL_CLI}              MULTIPLE WITH
          CLI                  {ORIG, MODIF}

```

A datafill example in subtable CGPNDATA of table CGPNSCRN is as below:

**Datafill example in table CGPNSCRN**

```
TABLE: CGPNSCRN CLISCRN: CGPNDATA
>lis
FROMDIGS TODIGS CGPNINDEX CCOPTION CGPNOPT
-----
106602 106602 RETURN (DIGMAN CGPN 2) $ (BILL_CLI ORIG) $
```

A datafill example in subtable CDPNDATA of table CDPNSCRN is as below:

**Datafill example in table CDPNSCRN**

```
TABLE: CDPNSCRN CLISCRN: CDPNDATA
>lis
TOP
FROMDIGS TODIGS CDPNINDEX CCOPTION CDPNOPT
-----
106602 106602 RETURN (DIGMAN CGPN 0) $ (BILL_CLI MODIF) $
```

When BILL\_CLI is *ORIG*, the Orig Open Digs in AMA log is the original CLI if the CLI has been modified through table CALLCNTL; When BILL\_CLI is *MODIF*, it is the modified CLI.

**Note:** This function is applied to line and trunk originating calls.

For line originating calls with the CFW service on the called party, if BILL\_CLI is *ORIG*, the Orig Open Digs field in the first AMA log is set to original calling number whereas the filed in the other AMA logs are set to original called number.

If the option is not datafilled, AMA log is not impacted by this feature.

**Hardware Requirements or Dependencies**

N/A

**Software Requirements or Dependencies**

N/A

**Limitations and restrictions**

N/A

## Interactions

### IBN line to IBN line calls

- The CLI from SCP overrides the modified CLI through table CALLCNTL, i.e. the SCP CLI is displayed on the phone.
- The modified CLI is not manipulated through DN reverse translation.

### IBN line to ETSI V2 ISUP trunk calls

- The CLI from SCP overrides the modified CLI through table CALLCNTL, i.e. the CLI from SCP is sent in the outgoing IAM.
- The IN DEFNUM overrides the modified CLI through table CALLCNTL, i.e. the IN DEFNUM is sent in the outgoing IAM.
- The manipulation of CLI through CLIOUTP or CLGDMI option on the outgoing trunk overrides this feature's functionality, i.e. the CLI manipulated by those options is sent in the outgoing IAM.

### IBN line to ETSI PRI trunk calls

- The CLI from SCP overrides the modified CLI through table CALLCNTL, i.e. the CLI from SCP is sent in the outgoing SETUP message.
- The manipulation of CLI through CLIOUTP or CLGDMI option on the outgoing trunk overrides this feature's functionality, i.e. the CLI manipulated by those options is sent in the outgoing SETUP message.

## Applicable customer facing sections

### Fault Management

|        |            |
|--------|------------|
| Logs   | <u>N/A</u> |
| Alarms | <u>N/A</u> |

### Configuration

|                    |            |
|--------------------|------------|
| Data Schema        | <u>Y</u>   |
| User Interface     | <u>N/A</u> |
| Element Management | <u>N/A</u> |
| Security           | <u>N/A</u> |
| Service Order      | <u>N/A</u> |
| Office Parameters  | <u>N/A</u> |

|                                   |            |
|-----------------------------------|------------|
| Accounting (includes AMA billing) | <u>N/A</u> |
|-----------------------------------|------------|

|                                                 |            |
|-------------------------------------------------|------------|
| Performance (includes operational measurements) | <u>N/A</u> |
|-------------------------------------------------|------------|

## ***Configuration for A00004743***

### **Hardware and Software Requirements**

N/A

### **Initial Configuration**

N/A

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

N/A

### **Upgrade Impact**

N/A

### **Data schema (DS) (CM, MIBS, RDB)**

#### **New/modified tables, MIBs, or Database Schema**

| <b>Table name</b>                   | <b>New/ Changed/<br/>or Deleted</b> | <b>Table Control<br/>(New/Old/<br/>Unchanged)</b> |
|-------------------------------------|-------------------------------------|---------------------------------------------------|
| Subtable CGPNDATA of table CGPNSCRN | Changed                             | Unchanged                                         |
| Subtable CDPNDATA of table CDPNSCRN | Changed                             | Unchanged                                         |

#### **Table/MIB/Remote Database Schema information**

##### **Name: Subtable CGPNDATA of table CGPNSCRN**

##### **Functional description**

Please refer to the Functional Description section of this DDOC.

##### **Usage sequence and implications (CM Only)**

Unchanged.

##### **Size**

##### **Table size**

| <b>Abbreviated table name</b>       | <b>Minimum<br/>tuples</b> | <b>Maximum<br/>tuples</b> |
|-------------------------------------|---------------------------|---------------------------|
| Subtable CGPNDATA of table CGPNSCRN | Unchanged                 | Unchanged                 |

##### **Fields/OIDs**

The following table lists changed fields for table Subtable CGPNDATA of table CGPNSCRN.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry                | Explanation and action              |
|---------|----------------|------------------------|----------------------|-------------------------------------|
| CGPNOPT | Changed        | Yes                    | {CONTINUE, BILL_CLI} | Add option BILL_CLI in CGPNOPT list |

BILL\_CLI is type {ORIG, MODIF}.

**Datafill example**

TABLE: CGPNSCRN CLISCRN: CGPNDATA

FROMDIGS TODIGS CGPNINDEX CCOPTION CGPNOPT

-----

106602 106602 RETURN (DIGMAN CGPN 2) \$ (BILL\_CLI ORIG) \$

**Table release history update**

Entry BILL\_CLI is added to field CDGPNSCRN\_OPTIONS in subtable CGPNDATA of table CGPNSCRN.

**Supplementary information**

N/A

**Translation verification other tools**

N/A

**Name: Subtable CDPNDATA of table CDPNSCRN****Functional description**

Please refer to the Functional Description section of this DDOC.

**Usage sequence and implications (CM Only)**

Unchanged.

**Size****Table size**

| Abbreviated table name              | Minimum tuples | Maximum tuples |
|-------------------------------------|----------------|----------------|
| Subtable CDPNDATA of table CDPNSCRN | Unchanged      | Unchanged      |

**Fields/OIDs**

The following table lists changed fields for table Subtable CDPNDATA of table CDPNSCRN.

**Table field descriptions**

| Field   | New or Changed | Subfield or refinement | Entry                        | Explanation and action              |
|---------|----------------|------------------------|------------------------------|-------------------------------------|
| CDPNOPT | Changed        | Yes                    | {CONTINUE, <b>BILL_CLI</b> } | Add option BILL_CLI in CDPNOPT list |

BILL\_CLI is type {ORIG, MODIF}.

**Datafill example**

TABLE: CDPNSCRN CLISCRN: CDPNDATA

FROMDIGS TODIGS CDPNINDEX CCOPTION CDPNOPT

-----

106602 106602 RETURN (DIGMAN CGPN 2) \$ (**BILL\_CLI ORIG**) \$

**Table release history update**

Entry BILL\_CLI is added to field CDGPNSCRN\_OPTIONS in subtable CDPNDATA of table CDPNSCRN.

**Supplementary information**

N/A

**Translation verification other tools**

N/A

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

## ***Product = World Trade***

### **A00004750 -- Even Bit Inversion (EBI) Support on DTCO2 (Succession on DMS)**

#### ***Functional Description***

The intent of this activity is to download even bit inversion feature to DTCO2s. Downloading is enabled/disabled by means of a datafillable entity.

We would normally do not require this feature for DTCO2s. This feature is only needed for some specific scenarios described in the following sections:

#### **Background Information**

Currently, EBI for PLGC and PDTC (DTCO) is defined by features AE0385 'EBI - CC SUPPORT' and AE0334 'EVEN BIT INVERSION'. GSP/GMP customers were complaining about bringing the CCS7 links on the DTCO2s into service while they are making changes in BIT\_INVERSION field of table LIUINV to make the bit inversion compatible with the far-end datafill.

For example, the customers would like to set the BIT\_INVERSION field in LIUINV to Even Bit Inversion (EBI) to make it compatible with the far-end setting. When the customer brings the CCS7 link into service, the link drops into SYStem Busy (SYSB) state and never recovers unless they change the bit inversion to a suitable setting (e.g: No Bit Inversion (NBI)).

Basically, the customer has two offices, one with DTCO and the other with DTCO2 carrying a CCS7 link in between but the link cannot be bring into service when they made an equivalent bit inversion setting in LIUINV.

Customer indicated that they do not have this problem when they move the CCS7 link to a DTCO from DTCO2.

#### **Root-Cause**

Basically, the problem is due to bit conversions done on the network side due to the setting of TYPE\_OF\_NETWORK parameter in table OFCENG.

The two offices in question have different TYPE\_OF\_NETWORK settings. Namely, one office containing MMP load has the setting of INTERNATNL and the other containing GSP/GMP load has the setting of NORTH\_AMERICA.

The TYPE\_OF\_NETWORK parameter is introduced to DMS by the activity AE0385 - EBI CC Support. Based on the network type selection, it does a



conversion on the network side. For example for a PCM30 voice carrier where no conversion is done on the P-side, the bit stream is converted to “CCITT A-Law + EBI A-Law companding” for a setting of INTERNATNL in the network side. However, for a NORTH\_AMERICA setting, this conversion is “True data + ABI Inverted Data” in the network side.

The reader is referred to FN section of activity AE0385 for a detailed explanations of the bit conversions based on the TYPE\_OF NETWORK.

The reader is also referred to DS section of the same document for the datafill details of this activity.

Nevertheless, the GSP/GMP office in question is configured as NORTH\_AMERICA type\_of\_network. This parameter should only be datafilled during the office setup and should not be changed thereafter.

On the other hand, the DTCOs can be added an NT6X44EA optional card in the LTCINV datafill to download the EBI support onto it. Hence the DTCOs can work with the far-end as expected.

The reader is referred to activity AE0385 for a detailed description of NT6X44EA usage.

Unlike the DTCOs, the DTCO2s cannot be datafilled NT6X44EA optional card and therefore the EBI information cannot be downloaded to DTCO2s.

### **The Solution**

In order to overcome this problem, the EBI support should be downloaded to DTCO2s.

A fix has been submitted into TL20 stream to download EBI support to DTCO2s, however, this update may bring new problems as stated in the following section.

### **Potential Problems of the TL20 fix**

Consider an office which has CCS7 links on some of DTCO2 and their associated bit inversion fields in LIUINV are not compatible with the far-end (as in our case, the near-end is NBI and far-end is EBI). Right after an ISN07 upgrade, the DTCO2s may be re-started to download the static data (performing a kind of PM WARM or COLD swact, or a PM REX swact or BSY/RTS of whole PM or a RELOAD RESTART of CM).

As there is no control of the fix submitted into TL20, the EBI feature is downloaded to DTCOs which ultimately impacts the bit inversion and hence causes CCS7 link outages.

To prevent such outages, the customers are expected to change their LIUINV bit inversion datafills and make it compatible with the far-end.

### **The Ultimate Solution**

Ultimately, the fix in TL20 has no control on the downloading of EBI support feature to DTCO2s. Therefore, a datafillable switch should be defined on CM to enable/disable the functionality provided by the fix.

### **Feature Description**

EBI is defined by features AE0334 and AE0385. AE0334, Even Bit Inversion feature enables the time switch card (NT6X44EA) the ability to provide PCM conversions (A-Law, Mu Law, EBI conversion) on per channel basis. This feature uses AE0385, EBI-CC Support Feature which provides Central Control Software in the International DMS-100F Switches. Within an International Network all data is EBI'd and all voice is A-law companding. The conversions required between PCM at the lines or trunks, and PCM within the network is done by peripheral's timeswitch card NT6X44EA.

The reader is referred to activities AE0334 and AE0385 for a wider understanding of how bit inversion is handled within the internal network for different type of networks.

The type of network is determined by the office parameter TYPE\_OF\_NETWORK in table OFCENG. Please refer to activity AE0385 for a description of this parameter.

Unlike the DTCOs where the even bit functionality is downloaded by adding NT6X44EA in LTCINV, the DTCO2's are not allowed to datafill NT6X44EA, hence does not have the ability to download even bit support feature. This activity, as in NT6X44EA, downloads the EBI support feature into DTCO2s by adding a new optional attribute to table LTCINV.

The following table is clone from AE0385 and it shows how bit inversions are done for voice and data in the internal network for different values of TYPE\_OF\_NETWORK setting.

In the table below the following symbols are used

A : CCITT A-Law

A : A + ABI Inverted CCITT A-Law

A : A + EBI A-Law Companding (EBI'd CCITT A-Law)

U : CCITT U-Law

I : U + ABI Inverted CCITT U-Law

Due : U + EBI EBI'd CCITT U-Law

OBI: Odd Bit Inversion

**Network/Carrier Type/Voice Law/Conversion Matrix for a defined link.**

| Network Type  | Carrier Type | Voice Law | Voice Conversion | Data Conversion |
|---------------|--------------|-----------|------------------|-----------------|
| INTERNATIONAL | PCM30        | A-LAW     | NO CONVERSION    | NO CONVERSION   |
| INT.          | PCM30        | MU-LAW    | Ae<-->Ue         | NO CONVERSION   |
| INT.          | DS1          | A-LAW     | OBI              | OBI             |
| INT.          | DS1          | MU-LAW    | Ae<-->Ui         | OBI             |
| A-LAW         | PCM30        | A-LAW     | OBI              | OBI             |
| A-LAW         | PCM30        | MU-LAW    | Ai<-->Ue         | OBI             |
| A-LAW         | DS1          | A-LAW     | NO CONVERSION    | NO CONVERSION   |
| A-LAW         | DS1          | MU-LAW    | Ai<-->Ui         | NO CONVERSION   |
| NORTH AMERICA | PCM30        | A-LAW     | Ui<-->Ae         | OBI             |
| NORTH AMERICA | PCM30        | MU-LAW    | OBI              | OBI             |
| NORTH AMERICA | DS1          | A-LAW     | Ui<-->Ae         | NO CONVERSION   |
| NORTH AMERICA | DS1          | MU-LAW    | NO CONVERSION    | NO CONVERSION   |

**New Optional Attribute Definition in LTCINV Table for EBI Activation**

This activity adds a new optional attribute, namely, “EBI” in table LTCINV.

When it is added into a DTCO2 tuple in LTCINV, it downloads EBI support feature to DTCO2 during static data download. LIUINV table should be compatible with the far end setting.

The reader is referred to Data Schema section of this activity to have a sample datafill.

**Hardware Requirements or Dependencies**

This feature is designed for DTCO2s.

**Software Requirements or Dependencies**

None.

## ONP Requirements

This activity is a follow-up activity for a fix (which uncontrollably downloads EBI support to DTCO2s) made in TL20 timeframe and is intended to eliminate possible CCS7 link failures during/after an ISN07 upgrade.

Without this activity being deployed in TL20, the EBI support feature is downloaded to DTCO2 during a static data download due to PM REX or PM SWACT or CM RELOAD RESTARTs right after an ISN07 upgrade and ultimately, bit inversion in the internal network is changed and hence cause a CCS7 link outage if the bit inversion field in the associated LIUINV tables are not made compatible with the far-end bit inversion settings (for example, near-end is set to NBI and far-end is set to EBI). In these circumstances, the customer may require to set the LIUINV bit inversions correctly.

However, this activity addresses this issue to overcome such problem that may occur right after an ISN07 upgrade.

## Limitations and restrictions

None.

## Interactions

None.

## Applicable customer facing sections

### Fault Management

|        |         |
|--------|---------|
| Logs   | __N/A__ |
| Alarms | __N/A__ |

### Configuration

|                    |         |
|--------------------|---------|
| Data Schema        | __X__   |
| User Interface     | __N/A__ |
| Element Management | __N/A__ |
| Security           | __N/A__ |
| Service Order      | __N/A__ |
| Office Parameters  | __N/A__ |

Accounting (includes AMA billing) \_\_N/A\_\_

Performance (includes operational measurements) \_\_N/A\_\_

## Glossary

| Term  | Description                                                                 |
|-------|-----------------------------------------------------------------------------|
| CCS7  | Command Channel Signalling #7                                               |
| DTCO  | Digital Trunk Controller Offshore                                           |
| DTCO2 | Reduced Footprint DTCO                                                      |
| EBI   | Even Bit Inversion                                                          |
| OBI   | Odd Bit Inversion                                                           |
| A Law | A system of companding used in European and International switching systems |
| U-law | A system of companding used in North American switching systems.            |
| PLGC  | Peripheral Line Group Controller                                            |
| PCM   | Pulse Code Modulation                                                       |

## *Configuration for A00004750*

### Hardware and Software Requirements

DMS office with DTCO2.

### Initial Configuration

N/A

### Office/Subnet parameters (OP/SP) (CM & SESM)

N/A

### Upgrade Impact

N/A

## Data schema (DS) (CM, MIBS, RDB)

### New/modified tables, MIBs, or Database Schema

#### New or modified tables

| Table/MIB name | NEW/CHANGED/ or DELETED/ | Table Control (NEW/ OLD/UNCHANGED) |
|----------------|--------------------------|------------------------------------|
| LTCINV         | CHANGED                  | UNCHANGED                          |

### Table/MIB/Remote Database Schema information

**Name:** <LTCINV>

<LTC Inventory Table>

#### Functional description

#### Usage sequence and implications (CM Only)

This new optional attribute can only be added when:

1. TYPE\_OF\_NETWORK in OFCENG is NORTH\_AMERICA
2. PM is CPM based DTCO2

#### Size

##### Table size

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory              |
|------------------------|----------------|----------------|------------------------------------|
| LTCINV                 | 0              | 4096           | Memory is automatically allocated. |

#### Fields/OIDs

The following table lists fields/OIDs for <LTCINV>.

##### Table field descriptions

| Field  | New or Changed | Subfield or refinement | Entry | Explanation and action                                  |
|--------|----------------|------------------------|-------|---------------------------------------------------------|
| LTCINV | CHANGED        | OPT_ATTR               | EBI   | When added, EBI support feature is downloaded to DTCO2. |

#### Datafill example

The following example shows sample datafill for table <LTCINV>.

```
PDTC0LTEI 7 9 9 C 4MX85AA QCI17AY1( ABTRK UKPDTC)
( PRAB DTCEX)$ (0 32 18 0) (0 32 18 1) (0 32 18 2) (0 32 18 3) (0 32 18
```

4) (0 32 18 5)(0 32 18 6) (0 32 18 7) (0 32 18 8) (0 32 18 9) (0 32 18 10) (0 32 18 11)(0 32 18 12) (0 32 18 13) (0 32 18 14) (0 32 18 15) \$( UTR6 ) ( MSGMX76 HOST )\$TURKR1R2 SX05AA \$ SX05AA \$0SXFWAJ02( CCS7) ( FSTR2) ( EBI)\$6X40FB N

**Table release history update**

Optional Attribute EBI is added to OPT\_ATTR field of LTCINV for DTCO2s.

**Supplementary information**

None

**Service Orders (SO) (CM & SESM)**

N/A

**Software optionality control (SOC)**

N/A

**Element Management**

N/A

**Command interface changes**

N/A

**Security**

N/A

**Configuration Walkthrough**

N/A

***Product = World Trade*****A00005802 -- SPM Companding law provisioning (Succession on DMS)*****Functional Description***

This feature allows an OC3-SPM p-side companding to be a provisionable option to either Mu-law or A-law, instead of the current architecture which always assumes that the p-side companding to be Mu-Law. This feature also provides for a provisionable Bit Inversion Option to either EBI or ABI, instead of basing it from the OFCENG parameter TYPE\_OF\_NETWORK

SPM p-side voice companding and bit inversion option is controlled by datafill. This datafill is done in table MNNODE, and is downloaded to the SPM through DDM framework. The c-side companding law will remain unchanged and will be determined from TYPE\_OF\_NETWORK parameter.

This feature supports OC3-SPM of the DMSCP class. No other variants of SPMs are currently supported.

The p-side companding law and bit inversion option introduced in table MNNODE will have default values such that the current system behavior can be maintained. The default values are determined as follows -

- Over an upgrade from a load without this feature, the default values for p-side companding in table MNNODE will be determined by type of DMSCP SPM (OC3 or STM). The default value of companding for OC3-SPM will be Mu-Law and for STM-SPM it will be A-law in this case.
- For a new SPM that is to be added, if it is desired that the SPM maintain the current system configuration, the field in MNNODE must contain '\$'. If the craftsperson enters the companding law and bit inversion option in table MNNODE, it is assumed that the set defines the required configuration. Also in addition, while the craftsperson datafills MNCKTPAK, a warning message will be displayed if the p-side companding in MNNODE is different from current system behavior for that RM type, and if this is not desired, p-side companding in table MNNODE has to be changed before proceeding. If the craftsperson wishes to continue it is assumed that this is desired, and if the craftsperson does not wish to continue, tuple addition in table MNCKTPAK is aborted and p-side companding must be changed by craftsperson in table MNNODE before proceeding.

Changes to Companding Law and Bit inversion Option in MNNODE are allowed only on an OOS SPM that is in MANB or OFFL state. This is to allow the transfer to data to the local through bulk DDM download.

## **Hardware Requirements or Dependencies**

None.

## **Software Requirements or Dependencies**

None.

## **Limitations and restrictions**

- If TYPE\_OF\_NETWORK is changed over a restart, the companding law and bit inversion option present in MNNODE must be verified if they are in desired configuration. The craftsperson has to manually change the companding and Bit Inversion values of the SPM nodes if necessary. There will be no report or warning to indicate this.



## Interactions

None.

## Applicable customer facing sections

### Fault Management

Logs \_N/A\_

Alarms \_N/A\_

### Configuration

Data Schema \_\_X\_\_

User Interface \_N/A\_

Element Management \_N/A\_

Security \_N/A\_

Service Order \_N/A\_

Office Parameters \_N/A\_

Accounting (includes AMA billing) \_N/A\_

Performance (includes operational measurements) \_N/A\_

## Glossary

|          |                                         |
|----------|-----------------------------------------|
| SPM      | Spectrum Peripheral Module              |
| DMSCP    | Digital Multiplex Switch Call Processor |
| RTS      | Return To Service                       |
| MNNODE   | Managed Network NODE                    |
| MNCKTPAK | Managed Network Circuit Pack            |
| NA       | North American                          |
| INTL     | International                           |
| DDM      | Data Distribution Manager               |
| BSY      | Busy                                    |
| PRSM     | Post Release Software Management        |
| IOAU     | Input / output Audit                    |

## Recommended Reading/References

- a. SPM Settable Companding - Software FRS Version 2.0

## ***Configuration for A00005802***

### **Hardware and Software Requirements**

None.

### **Initial Configuration**

Not Applicable

### **Office/Subnet parameters (OP/SP) (CM & SESM)**

Not Applicable

### **Upgrade Impact**

#### **Dump and Restore**

The feature introduces two new fields in form of a vector in table MNNODE. During the Restore, the type reformat proc for MNNODE will fill this vector set with \$ to indicate current system behavior on the SPM. The current system behavior is MuLaw for OC3-SPMs and Alaw for STM-SPMs.

For upgrades to later releases, the existing companding law and bit inversion option if datafilled in table MNNODE will be retained.

#### **Element Management Upgrade**

None

### **Data schema (DS) (CM, MIBS, RDB)**

#### **Modified tables**

table MNNODE.

table MNCKTPAK

table OFCENG

#### **New or modified tables**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b>                                                        | <b>Table Control (NEW/OLD/UNCHANGED )</b> |
|-----------------------|----------------------------------------------------------------------------------------|-------------------------------------------|
| MNNODE                | CHANGED. Two new fields <b>complaw</b> and <b>bitinv</b> are added for DMSCP class SPM | UNCHANGED                                 |

**New or modified tables**

| <b>Table/MIB name</b> | <b>NEW/CHANGED/ or DELETED/</b> | <b>Table Control (NEW/OLD/UNCHANGED )</b>   |
|-----------------------|---------------------------------|---------------------------------------------|
| MNCKTPAK              | UNCHANGED                       | UNCHANGED, Supplementary information added  |
| OFCENG                | UNCHANGED                       | UNCHANGED, Supplementary information added. |

**Table Schema information****Name:**

Managed Network Node table

**Functional description**

Table MNNODE stores SPM node specific information. This information includes:

- Class/Variant of SPM.
- Clock reference details of the SPM.
- Resource information that a particular SPM can provide.
- Alarm information for different failures for the SPM.
- EXEC information for CallP.
- Capacity index for the DMSCP SPM

This feature adds two new fields **complaw** and **bitinv** of enum type to DMSCP class of SPM as a vector **compopt**. The craft shall be able to change the p-side companding law and bit inversion option for a OC3-SPM of DMSCP class.

**Usage sequence and implications (CM Only)**

Current datafill order unchanged.

**Size****Table size**

| Abbreviated table name | Minimum tuples | Maximum tuples | Information on memory                                                                   |
|------------------------|----------------|----------------|-----------------------------------------------------------------------------------------|
| MNNODE                 | 0              | 86             | The memory is allocated dynamically upon the addition of the tuple from the OAMDB pool. |

**Fields****Table field descriptions for MNNODE**

| Field    | New or Changed | Subfield or refinement               | Entry                                                 | Explanation and action                                                                                                                                                                                                                                                 |
|----------|----------------|--------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NODEKEY  | Unchanged      | NODETYPE<br>NODEID                   | ENUM {0 to 256}<br><br>BYTE {0 to 85}                 | This represents the Node type (e.g. SPM).<br><br>This represents a unique SPM number.                                                                                                                                                                                  |
| ALIAS    | Unchanged      |                                      | Alphanumeric 1 to 12 characters                       | This field represents a unique Alias name for the SPM.                                                                                                                                                                                                                 |
| NODEINFO | Unchanged      | CLASS<br><br>T_SPMNDV_D<br>MSCP_DATA | {0 to 10}                                             | Represents class of SPM (like SMG4, DMSCP etc.)<br><br>(refinement for DMSCP with fields as below in Subfield)                                                                                                                                                         |
|          | Unchanged      | FLOOR                                | {0 to 99}                                             | This field gives the floor position details.                                                                                                                                                                                                                           |
|          | Unchanged      | CLKMODE                              | {SYNC}                                                | This represents CLOCK synchronization mode for the MG4K.                                                                                                                                                                                                               |
|          | Unchanged      | CLKREF                               | {0 to 5}<br>{ <i>Internal, External, Line, Loop</i> } | This represents the source and reference for the clock sync. A newly added SPM should be datafilled as LINE.<br><br><i>Internal</i> : SYNC to MS<br><br><i>External</i> : SYNC to SRM<br><br><i>Line</i> : SYNC to OC3 RM.<br><br><i>Loop</i> : SYNC to active OC3 RM. |

Table field descriptions for MNODE

| Field | New or Changed | Subfield or refinement | Entry                                                                  | Explanation and action                                                                                                                                                                                                                          |
|-------|----------------|------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | Unchanged      | LEDTIMER               | {0 to 1440}                                                            | This type designates time in minutes. If no critical fault has been detected on an SPM for the specified length of time, then LEDs on the SPM will be turned off to extend their life. Value of 0 means that the LEDs will never be turned off. |
|       | Unchanged      | RSRUTLIM               | 1. (table {0 to 27} of {0 to 27}, {10 to 100}))<br>2. 0 to 6           | This field represents the resources that shall be provided by the SPM. This also gives the threshold limit for each of the resources.                                                                                                           |
|       | Unchanged      | ALRMCTRL               | 1. (table {0 to 21} of {0 to 20}, {{0 to 4}, 0 to 1}))<br>2. (0 to 21) | This field represents the Alarm that should be triggered when the SPM goes to a particular state or any failure occurs.<br><br>This also gives the severity of the failure and the information about reporting on to the MAP.                   |
|       | Unchanged      | EXECTAB                | 1. (table {7} of {0 to 63}, {0 to 119})<br>2. (0 to 8)                 | This field represents the EXEC lineup information which is useful for call processing.                                                                                                                                                          |
|       | Unchanged      | CAPINDX                | {STANDARD, ENHANCED, PREMIUM}                                          | This field represents the SPM Call Processing Capacity type                                                                                                                                                                                     |

Table field descriptions for MNNODE

| Field   | New or Changed | Subfield or refinement | Entry              | Explanation and action                                                                                                                                                                                                                 |
|---------|----------------|------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COMPOPT | New            |                        | see subfields      | COMPANDING OPTION. This field consists of a vector of up to 1 entry in subfields complaw and bitinv. Enter \$ to select current system behavior (MuLaw for OC3-SPMs and ALaw for STM-SPMs). This vector is supported only for OC3-SPM. |
|         | New            | complaw                | ALaw, MuLaw        | COMPANDING LAW. This contains the p-side companding law for SPM.                                                                                                                                                                       |
|         | New            | bitinv                 | NBI, OBI, EBI, ABI | BIT INVERSION OPTION. This field contains the bit inversion option for the SPM. Currently only EBI and ABI are supported.                                                                                                              |

**Datafill example**

The following figure shows sample datafill for table MNNODE.

**Datafill example**

Datafill with compopt datafilled -

NODEKEYALIASNODEINFO

```

-----
SPM 1 SPM_1 DMSCP 1 SYNC LOOP 45 (COT 60) (DTMF 60) (ECAN 60) (TONESYN 60)
(MF 60) $ (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT) (SYSBNA CR RPT)
(MANBNA MJ RPT) (COTLOW MN RPT) (DTMFLOW MN RPT) (ECANLOW MN RPT)
(TONESLOW MN RPT) (MFLOW MN RPT) (CMRLOW MN RPT) (PATCHFAIL MJ RPT)
(SMCHLD MJ RPT) (SMCHLD24 CR RPT) (SPMREXBYP MN RPT) $ (ABTRK SPMEX)
(AB250 SPM250) (PRAB SPMEX) (PRAB500 SPM250) $ STANDARD (ALAW EBI) $

```

Datafill where compopt is not required -

NODEKEYALIASNODEINFO

```

-----
SPM 1 SPM_1 DMSCP 1 SYNC LOOP 45 (COT 60) (DTMF 60) (ECAN 60) (TONESYN 60)
(MF 60) $ (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT) (SYSBNA CR RPT)
(MANBNA MJ RPT) (COTLOW MN RPT) (DTMFLOW MN RPT) (ECANLOW MN RPT)
(TONESLOW MN RPT) (MFLOW MN RPT) (CMRLOW MN RPT) (PATCHFAIL MJ RPT)
(SMCHLD MJ RPT) (SMCHLD24 CR RPT) (SPMREXBYP MN RPT) $ (ABTRK SPMEX)
(AB250 SPM250) (PRAB SPMEX) (PRAB500 SPM250) $ STANDARD $

```

**Table release history update****SN07:**

New vector **compopt** is added to table MNNODE for DMSCP variant of the SPM. This vector consists of two fields - **complaw**, which contains the p-side companding information of that SPM whose values are {ALaw, MuLaw}, and **bitinv**, which contains the bit inversion option of the SPM whose values are {NBI, OBI, EBI, ABI}. The default value of the vector is \$ which indicates that SPM confirms to current system behavior of OC3-SPM having MuLaw and STM-SPM having ALaw.

**Supplementary information**

The value for **compopt** can be changed only when the SPM node is in either MANB or OFFL state. Otherwise the following error condition will occur -

***ERROR: Both CEMs must be in MANB or OFFL state with no maintenance for COMPOPT change.***

By default compopt field will take \$ as value over upgrade. If craft datafills value other than \$ then following warning will be displayed -

***Warning: Datafilling companding law and bit inversion is recommended for non-standard configurations. Use of incorrect values will severely affect voice quality of the SPM.***

A warning message will be displayed when **compopt** fields are changed -

***Warning: Changing companding law or bit inversion option may severely affect voice quality of the SPM and must be done with care. Perform the following steps to activate the changes in SPM X:***

- 1. BSY the CEMs if not in MANB state.***
- 2. Issue RESETMOD command on both the CEMs.***
- 3. RTS the CEMs.***

While changing companding law to MULAW from either \$ or ALAW, check is done for STM RM datafill. If STM datafill is found then COMPOPT change will not be allowed. Following error message is displayed.

***ERROR: STM RM is datafilled in table MNCKTPAK. MULAW is not appropriate law for the STM-SPM.***

**Translation verification other tools**

None.

## Table Schema information

### Name:

Managed Network Circuit Pack

### Supplementary information

Table MNCKTPAK is not changed and no new fields are added to this table by this feature. Only new warning messages are introduced as follows -

While adding an OC3-SPM in table MNCKTPAK, if the p-side companding law in table MNNODE is A-law the following message is displayed -

***WARNING: This OC3-SPM has a non-standard companding law datafilled in MNNODE. If this is not desired, please change companding law in MNNODE to the appropriate value before proceeding. If this is desired, please continue.***

***ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT***

**Actions:** If 'Y' is entered, tuple addition of OC3 in table MNCKTPAK will be allowed assuming that OC3-SPM with A-Law is the desired configuration.

If 'N' is entered, tuple addition will be aborted, the craftsperson has to manually change companding law for that SPM in table MNNODE before proceeding.

While adding a STM-SPM in table MNCKTPAK, if the p-side companding law in table MNNODE is MuLaw, the following error message is displayed -

***ERROR: STM-SPM with MuLaw companding is not a supported configuration. Please change companding law in MNNODE before proceeding.***

**Actions:** Tuple addition of STM in table MNCKTPAK is aborted. The craftsperson had to manually change companding law of that SPM in table MNNODE before proceeding.

## Table Schema information

### Name:

OFCENG - Office Engineering Parameter table

### Supplementary information

Table OFCENG is not changed and no new fields are added to this table by this feature. This section mentions the limitation while changing TYPE\_OF\_NETWORK parameter.



If TYPE\_OF\_NETWORK field is changed, all DMSCP SPM tuples in table MNNODE must be verified that the **compopt** field is in the desired configuration for the new TYPE\_OF\_NETWORK. If they are found otherwise, the craftsman must manually change **compopt** field for those SPMs to the desired configuration.

### **Service Orders (SO) (CM & SESM)**

Not Applicable

### **Software optionality control (SOC)**

Not Applicable

### **Element Management**

Not Applicable

### **Command interface changes**

Not Applicable

### **Security**

Not Applicable

### **Configuration Walkthrough**

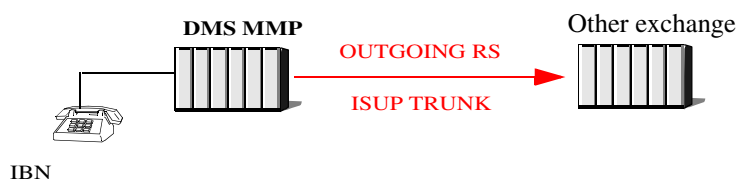
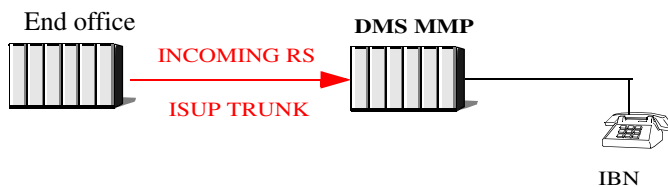
Not Applicable

## ***Product = World Trade***

### **A00006001 -- Russian ISUP and Tones for International SPM (Succession on DMS)**

#### **Overview**

The following figure shows the basic network configuration for Russian ISUP V2+ on DMS-MMP.

**Russian ISUP V2+ Network Configuration****ORIGINATION exchange****TANDEM exchange****TERMINATING exchange**

**Note:** IBN is shown as an example of interworking supported in the network configuration.

**For full list interworking please refer to section 3.3.2.**

This activity will mainly concentrate on what needs to be done to support Russian Isup V2+ on SPMs along with the interworking with other supported lines and trunks. After studying the different activities (as listed below) done to support Russian ISUP V2+ on PDTCS with DMS-MMP switch the following functional areas are needed to support Russian ISUP V2+ on SPMs.

## Description

This activity introduces functionality to enable the DMS MMP to support the Russian V2+ variant using the SPM STM-1 peripheral. Russian ISUP V2+ is a variant of the ETSI ISUP V2 protocol and is dependent on the ETSI ISUP implementation within the SPM. The ETSI ISUP V1 and V2 protocol is provided in the SPM by activity A59012154: ETSI ISUP V1/V2 Base support for STM-1 access on the DMS MMP, in the MMP13/SP13 release.

This activity addresses the ability to support basic calls:

- i. Line(IBN)-Russian ISUP V2+n ISUP on DMS MMP originating exchange
- ii. Russia ISUP-Russia ISUP on DMS MMP tandem exchange
- iii. Russia ISUP-Line(IBN) on DMS MMP terminating exchange

**Note:** Listed above are the basic call scenarios. There are a set of interworking supported by this activity. For full details, please refer to section 3.3.2.

The functionality currently available on the DMS MMP for Russian ISUP V2+, provided by PDTCs remain unchanged by this activity. Unless explicitly stated, the SPM implementation is equivalent to that of the PDTC in the XPM implemented by the activities

- ACT.A00000937 - Russian ISUP V2+ - Phase.1.
- ACT.A00000945 - CIS Tones and Cadences
- ACT. A00000943 - CIS Subscriber Line Parameters
- ACT.A00002033 - Russian ISUP-IBN Line Interworking
- ACT.A00002034 - Russian ISUP-V5.2 Interworking
- ACT.A00001929 - Russian ISUP-ISDN Interworking
- ACT.A00001923 - CIS Subscriber Categories
- ACT.A00002100 - ISUP\_R\_2000 Operator Calls on Busy Subscribers(TBI)
- ACT.A00001921 - CIS Toll Call Ringing
- ACT.A00002172 - SOSM: PROVISIONING
- ACT.A00002173 - SOSM: X.25 MESSAGING & CONNECTION
- ACT.A00002178 - SOSM : CALLP & SERVICE INTERACTIONS
- ACT. A59033579 - Downloadable Tones for SPMs

**Russian ISUP V2+, defined in Russian 2000 requirements document, is based on ETSI ISUP V2. ISUPR2000.AB01 version document in FMDOC will be the requirements used to develop this activity.**

This activity on STM1 SPM implements the following Russian ISUP V2+ requirements on DMS MMP switches for call processing :

- Definition of Russian ISUP V2+
- Basic Russian ISUP V2+ call scenarios
- Basic Russian ISUP V2+ call termination
- Russian specific ISUP messages (CCL, RNG)
- Handling of ISUP messages (FAC, CRG)
- Modifications in mandatory and optional signalling parameters such as
  - iv. Called Party Number - Nature of Address Ind.,
  - v. Nature of Connection Ind.- Satellite Ind.,
  - vi. Backward Call Ind. - Called Party's Category Ind. and
  - vii. Backward Call Ind. - Echo Control Device Ind.
- Handling calling party categories (CPC) for Russian ISUP V2+
- Handling IDR/IRS-INR/INF messages
- Enhancement of ISUP timers: T5, T13, T15, T17, T19, T21, T23
- Support for trunk offering (TBI) procedures at tandem exchanges for backward compatibility.
- Russian Tones and Cadences support

A summary of the activities that are required in SPM STM1 are given in table below.

**Activities Requirement for A00006001**

| Activities    | Title                              | SPM | Core | DT | PV |
|---------------|------------------------------------|-----|------|----|----|
| ACT.A00000937 | Russia ISUP V2+ - Phase.1          | Y   | Y    | Y  | Y  |
| ACT.A00000945 | CIS Tones and Cadences             | N   | N    | N  | Y  |
| ACT.A00000943 | CIS Subscriber Line Parameters     | N   | N    | N  | Y  |
| ACT.A00002033 | Russian ISUP-IBN Line Interworking | N   | N    | N  | Y  |
| ACT.A00002034 | Russian ISUP-V5.2 Interworking     | N   | N    | N  | Y  |
| ACT.A00001929 | Russian ISUP-ISDN Interworking     | N   | N    | N  | Y  |
| ACT.A00001923 | CIS Subscriber Categories          | N   | N    | N  | Y  |

**Activities Requirement for A00006001**

| Activities     | Title                                               | SPM | Core | DT | PV |
|----------------|-----------------------------------------------------|-----|------|----|----|
| ACT.A00000937  | Russia ISUP V2+ - Phase.1                           | Y   | Y    | Y  | Y  |
| ACT.A00002100  | ISUP_R_2000 Operator Calls on Busy Subscribers(TBI) | N   | N    | N  | Y  |
| ACT.A00001921  | CIS Toll Call Ringing                               | N   | N    | N  | Y  |
| ACT.A00002172  | SOSM: PROVISIONING                                  | N   | N    | N  | Y  |
| ACT.A00002173  | OSM: X.25 MESSAGING & CONNECTION                    | N   | N    | N  | Y  |
| ACT.A00002178  | SOSM : CALLP & SERVICE INTERACTIONS                 | N   | N    | N  | Y  |
| ACT. A59033579 | Downloadable Tones for SPMs                         | N   | Y    | Y  | Y  |

Notes: SPM, Core: Yes/No implies that this activity does/does not have any core or Local SPM-STM1 changes to support the activities listed in the table.

Notes: DT, PV: Yes/No implies that this activity does/does not have testing efforts to support the activities listed in the table.

**Notes: DT testing Y or N is determined based on the software changes required as part of this activity in Core or SPM. For eg., there are no core or local SPM changes required to support the activity A00002100. Hence there is no DT/IT required for this activity to test the feature A00002100 supported in MMP20 (iSN07).**

**New ISUP Variant**

This activity defines a new ISUP V2 variant in SPM STM1. This variant is based on the architecture of ETSI ISUP V1 and ETSI SUP V2 on SPM-STM1.

**Basic and Interworking Call Scenarios**

This activity addresses the ability to support basic calls:

1. Line(IBN) - Russian ISUP - Line(IBN)
2. Line (IBN) - Russia ISUP - Russia ISUP - Line (IBN)

Other Interworking supported are:

3. V5.2-on GPP -> Russian ISUP V2-on SPM -> V5.2-on GPP
4. ISDN BRI Line -> Russian ISUP V2-on SPM -> ISDN BRI Line
5. Line -> ETSI PRI -> Russian ISUP V2-on SPM -> ETSI PRI on SPM -> Line
6. Operator calls on Busy subscriber (Toll Break In)  
Russian ISUP variants will be configured on SPM STM1(original actid - A00000937). This interworking will be developed and design tested to support on SPM-STM1.

**Note:** There are two activities identified as part of TBI service. The first original activity is A00000937. This will be supported in SPM-STM1 with necessary software changes. The second activity is A00002100. There were no software changes required in PDTC to support A00002100 activity (ISUP\_R\_2000 Operators calls on Busy Subscribers). Hence this SPM activity (A00006001) will not introduce any software changes to support too. Therefore A00006001 will not perform any DT/IT testing for A00002100.

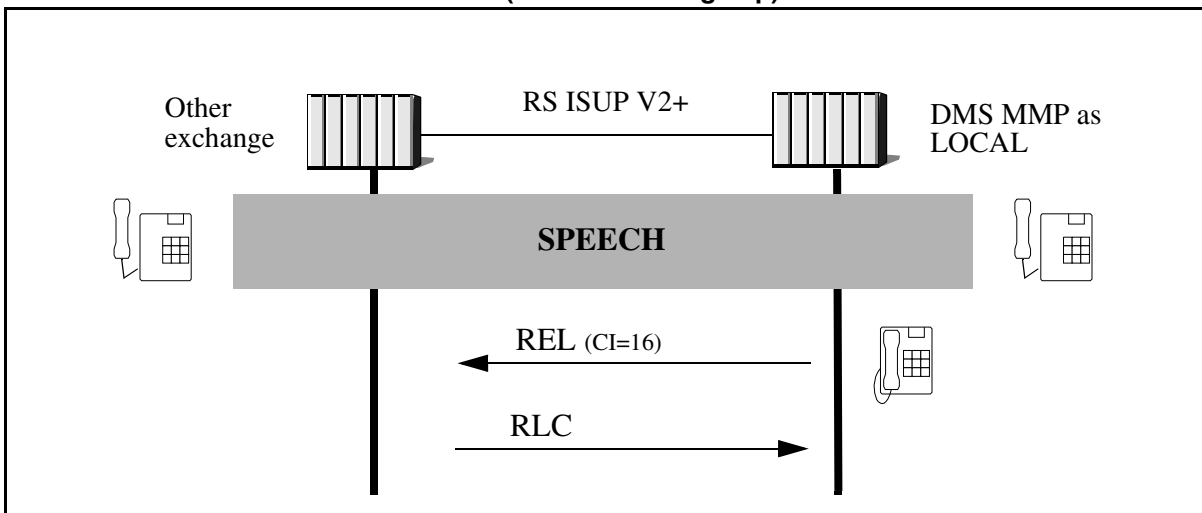
### **Basic Call**

A basic call flow diagram with the ISUP messages on the set-up phase of the call for the scenario (Line -> Russian ISUP V2+ -> Line) is shown in the following figure.



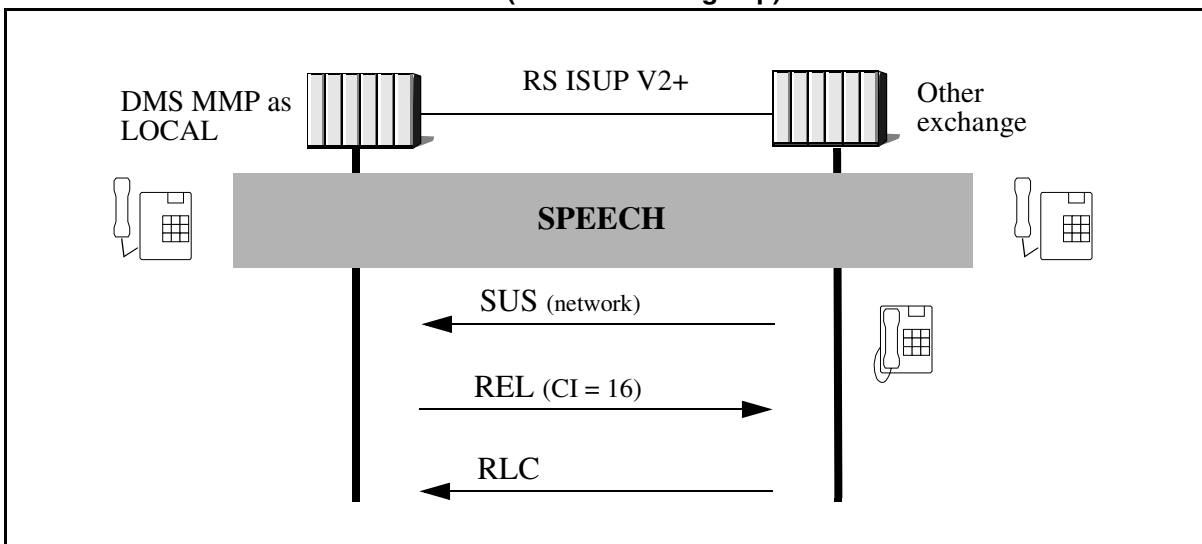
When a called subscriber on-hooks, REL message is sent instead of SUS message as required by interworking specifications. See the following figure.

**Call release with REL (terminator hangs up)**



If network initiated SUS message is received at an originating DMS MMP exchange, REL with “Normal Call Clearing” cause is sent back (instead of starting T6 timer), as given in the following figure, since Russia ISUP V2+ trunks does not support re-answer in automatic calls.

**Call release with SUS (terminator hangs up)**



Additionally, T6 timer is not started at DMS MMP tandem exchanges when network initiated SUS message is received.



Originating and terminating DMS MMP exchanges ignore user initiated SUS messages received over Russia ISUP V2+ trunks instead of starting T2 timer.

When REL message is received over Russia ISUP V2+ trunks at terminating DMS MMP exchange, a datafillable treatment can be applied to the terminating subscriber. This functionality can be achieved by datafilling Y for the office parameter FLEXIBLE\_FAIL\_CAUSE\_TO\_TRMT\_MAP in table OFCENG.

The disconnect treatment, which will be applied to the terminating agent, should be datafilled in table FAILMSG where FLEXIBLE\_FAIL\_CAUSE\_TO\_TRMT\_MAP is datafilled as “Y”. Example datafill of FAILMSG table (for CI=16 (normal call clearing) - Russia ISUP V2+ to line interworking) is given in the following figure.

#### Example FAILMSG datafill

##### INPUTMSG MAPTO LOG RESULT

-----  
Q767 NORMCLR OTHERWISE N TREAT RODR

If FLEXIBLE\_FAIL\_CAUSE\_TO\_TRMT\_MAP parameter in table OFCENG is datafilled as N, DMS MMP applies disconnect timeout treatment (DISC), by default, to the terminating subscriber for all release causes.

Upon reception of REL message over the incoming Russia ISUP V2+ trunk, DMS MMP applies the specified treatment (DISC or datafilled treatment) to the terminating subscriber after a certain time interval. This time interval can be determined by datafilling the office parameter FLEXIBLE\_DISCONNECT\_TIMER in table OFCENG. The duration of the interval (in seconds) is 2,5 times the parameter value. FLEXIBLE\_DISCONNECT\_TIMER should be datafilled as “0”, if it is required to apply disconnect treatment immediately after REL message is received.

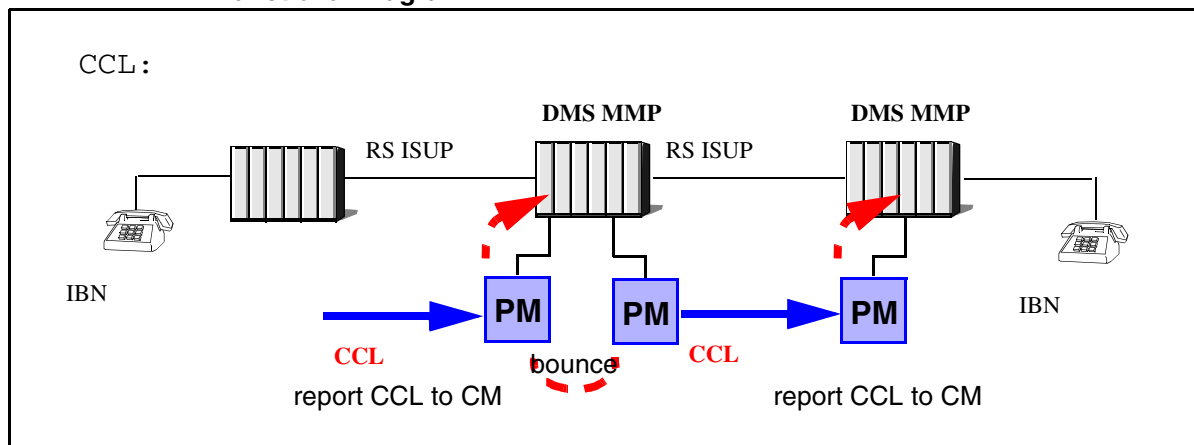
### New Russia Specific ISUP Messages on SPM STM1

As part of this activity there are two new message types supported in SPM which are required by Russia specifications: CCL and RNG.

Other required messages are all existing ISUP messages, and are supported by DMS MMP and SPM-STM1. The list of required messages and parameters for Russia ISUP V2+ is available in ISUPR2000 in FMDOC library.

## Calling Line Clear (CCL)

### Functional Diagram



In this activity, following items will be implemented for CCL message:

- Definition of the CCL message.
- Formatting of the CCL message.
- Handling CCL message in SPM (Originating, Tandem and Terminating exchanges)

**Note:** CCL requirement for this activity is based on ISUPR2000.AB01

### Definition of CCL Message

Calling line clear message (CCL) is a forward message sent instead of RELease signal in malicious call hold (MCH). It is used to provide 'called control disconnection type'. Hold indicator is not supported by the Russia ISUP V2+, instead CCL message is used.

### The CCL message template

|      |              |           |
|------|--------------|-----------|
| *NEW | MESSAGE TYPE | 1111 1100 |
|------|--------------|-----------|

☐ Mandatory fixed parameter

### DMS MMP as Originating Exchange

Generation:

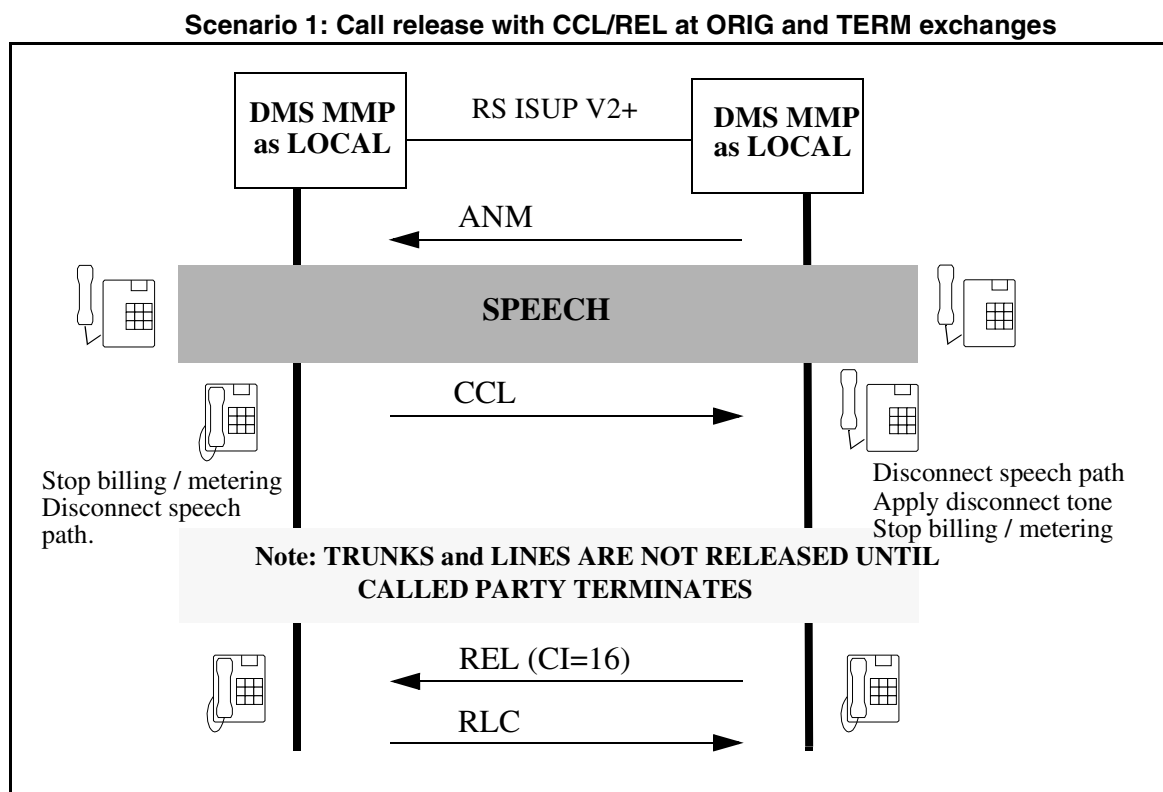
Upon calling subscriber's on-hook during a conversation, DMS MMP sends CCL message if **CALLCTRL** option is datafilled within corresponding tuples of translation tables (XXHEAD / XXCODE) with **CALLED** value. Otherwise REL is sent. In called controlled calls,

**billing and metering of the call stops when originator terminates the call.**

There are 4 possible scenarios for the originating DMS-MMP Generation:

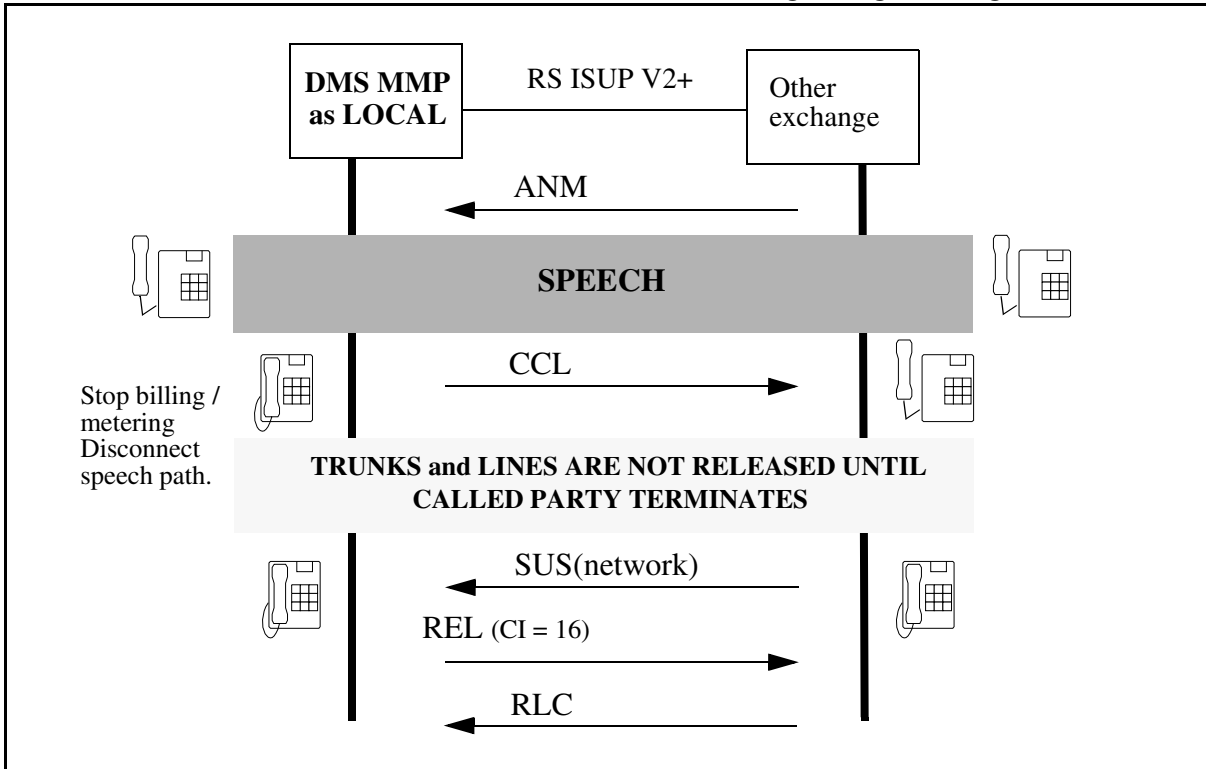
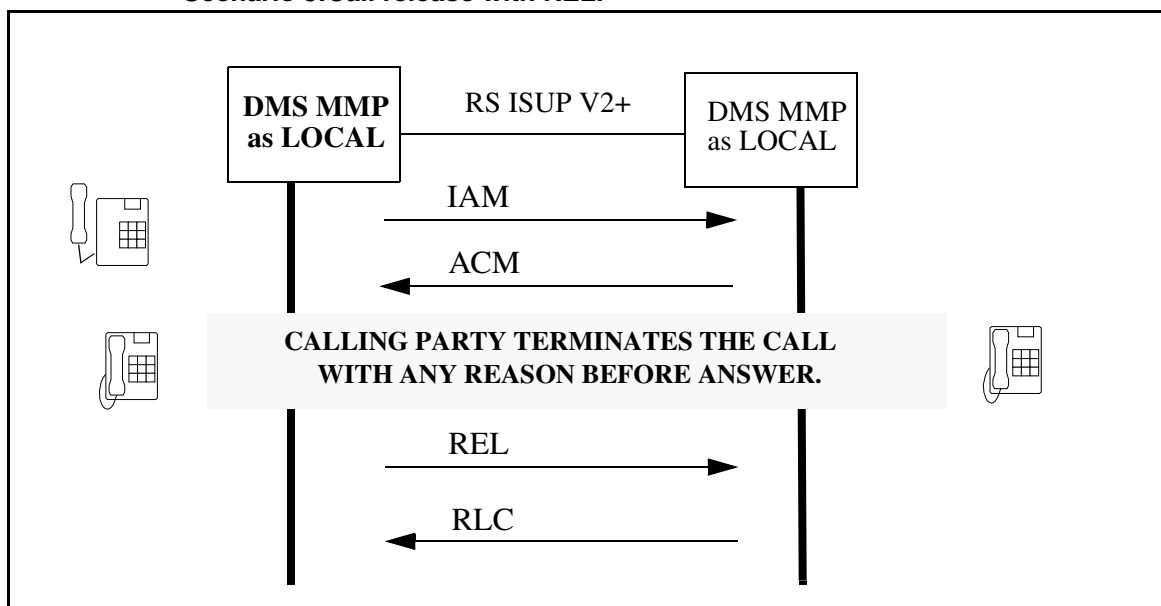
### Scenario 1: CCL Generation at Originating Exchange

Call releases with CCL at Originating DMS MMP Exchange upon calling subscriber's on-hook. Refer to Figure "Scenario 1: Call release with CCL/REL at ORIG and TERM exchanges". If not datafiled with CALLCTRL option, REL will be sent. This will be a normal Call release scenario.



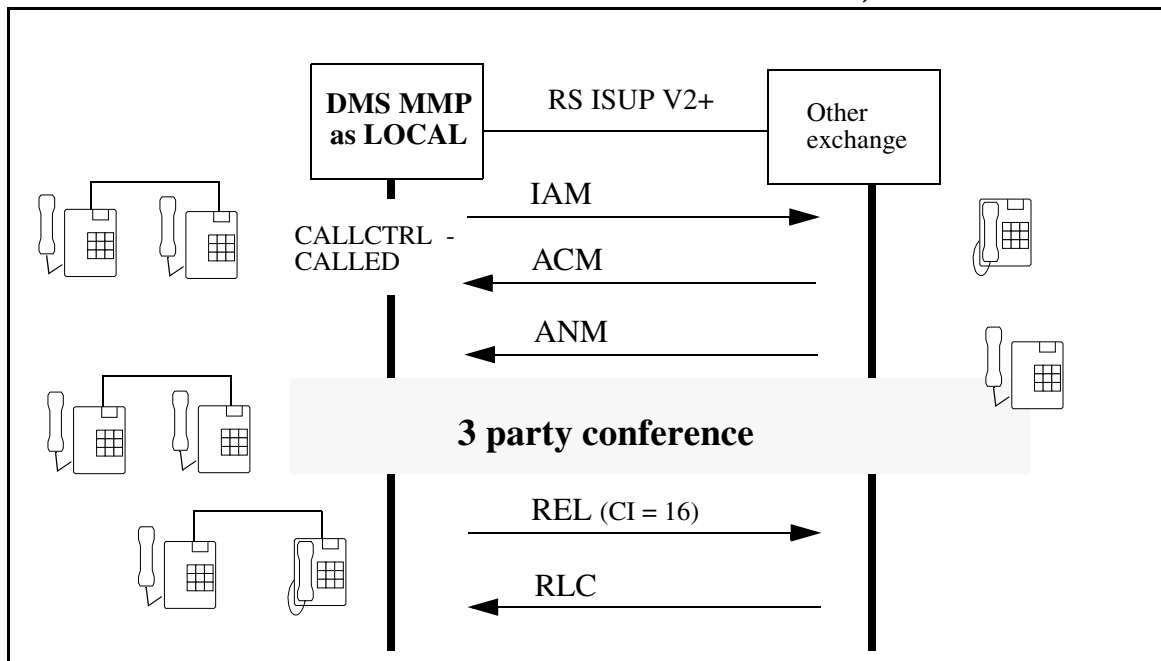
### Scenario 2: CCL Generation at Originating Exchange, Other Exchange Sending SUS

Call release with generating CCL and receiving SUS at Originating DMS-MMP exchange.

**Scenario 2: Call release with CCL/SUS at originating exchange****Scenario 3 : Call release with REL from Originating DMS MMP Exchange****Scenario 3: Call release with REL.**

Scenario 4: Call termination on Originating DMS MMP Exchange with CALLCTRL-CALLED and CEPT-I3WC.

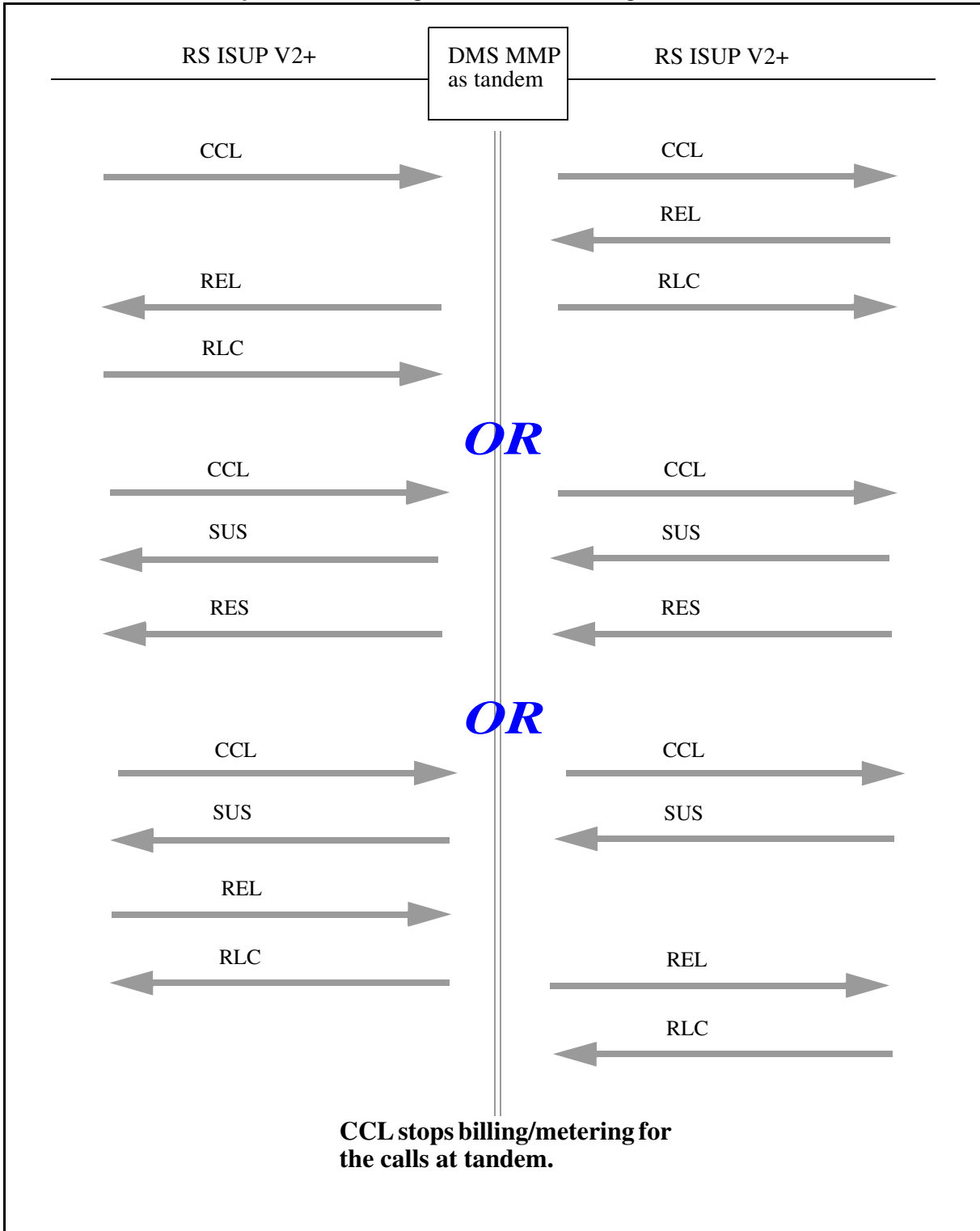
**Scenario 4: Call termination with CALLCTRL-CALLED,CEPT-I3WC**



**DMS MMP as a Tandem Exchange**

DMS MMP transmits CCL message without changing any of its parameters. **CCL message stops billing and metering of the call at tandem exchanges.** There are 3 possible scenarios on a tandem exchange. These 3 scenarios will be supported on DMS-MMP with SPM-STM1 peripheral. (Figure “Receipt of CCL message at tandem exchanges”)

SUS and RES messages, which are received at tandem after CCL, are transmitted without modification.

**Receipt of CCL message at tandem exchanges**

## Reception

DMS MMP stops billing/metering, disconnects speech path, and applies reorder (RODR) treatment to the terminating IBN agent, after CCL message is received, as given in Figure “Call release with CCL/REL at originating and terminating exchanges”. Clearing the call depends on the called subscriber’s action after receiving CCL message.

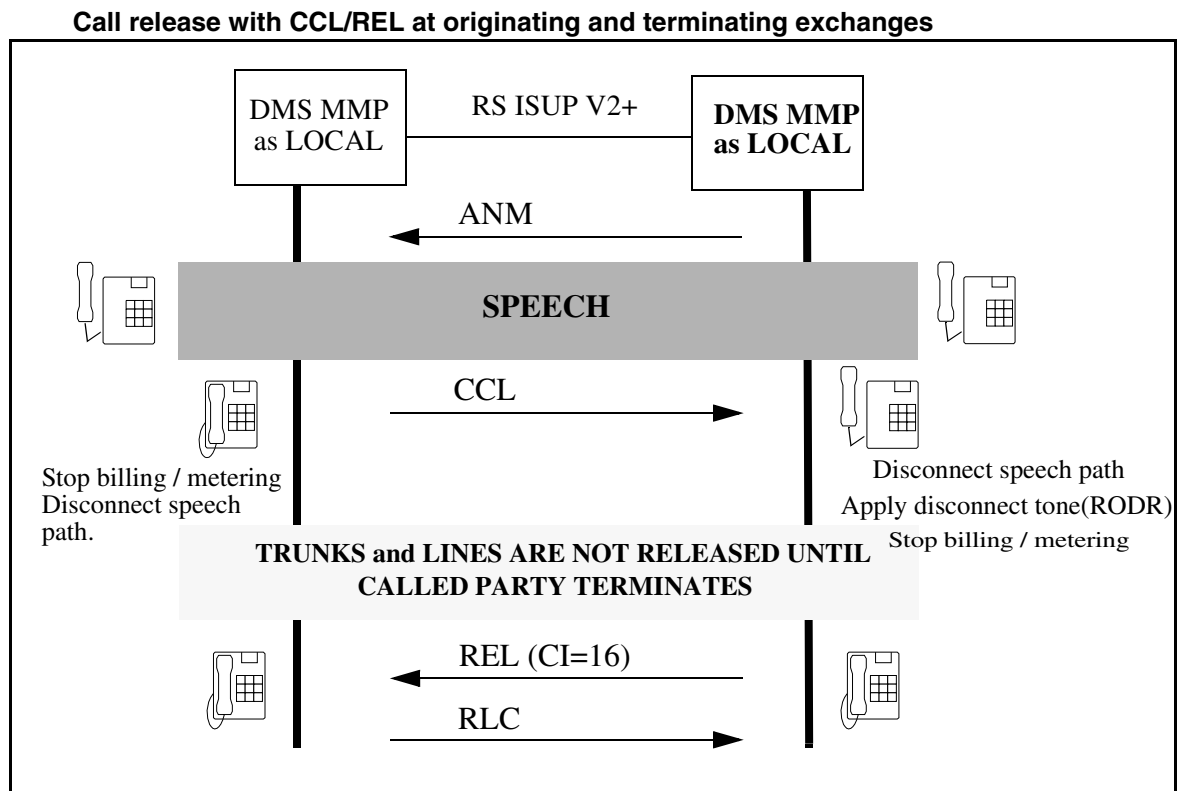
With the use of CCL message, this activity supports called party control functionality, as given in Russia requirements, **only for IBN subscribers** which are routed to Russia ISUP V2+ trunks. **Called party control is not supported for line-to-line calls, and other Russia ISUP V2+ interworkings.**

CCL message, and called party control applies only in basic calls. Calls subject to called-party control shall have the following call transfer related services denied:

- Call Hold
- Call Transfer
- Call Waiting
- 3-Way Calling
- 6-Way Calling

Originating subscribers are not allowed to FLASH within called party controlled calls, after the call is answered.

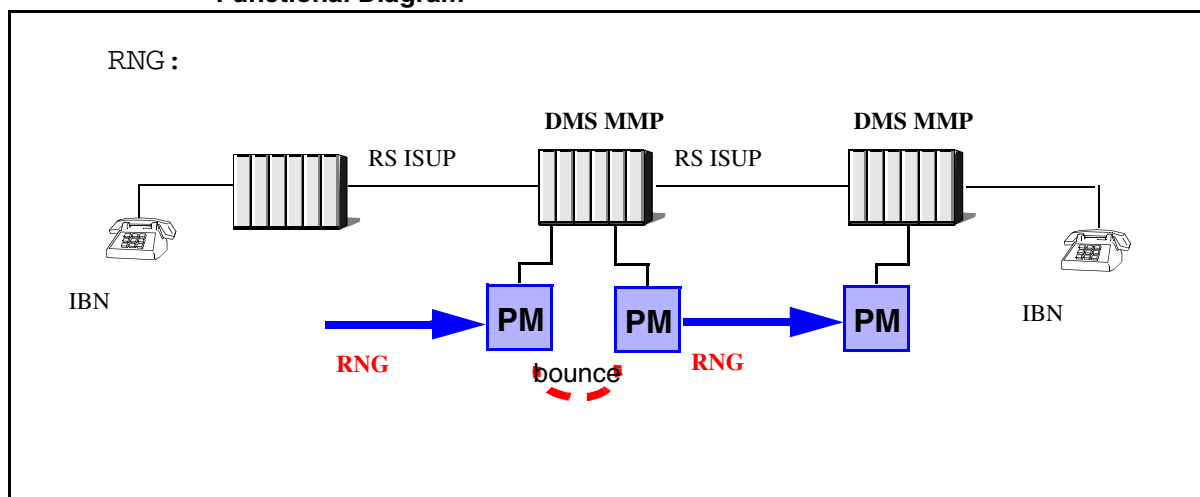
Additionally, called-party control is not supported within multi party calls. In multi party calls, where CALLCTRL-CALLED translation option is introduced after the first call is established, the call transfer related feature shall override called party control as given in Figure “Call release with CCL/REL at originating and terminating exchanges”.



The scenarios, where called subscribers - of called-party controlled calls - involve in complex calls (I3WC, I6WC, ICT, CFX ...etc), are not supported by this feature.

### Ring (RNG) Message

#### Functional Diagram





In this activity, following items will be implemented for RNG message on SPM:

- Definition of the RNG message.
- Formatting of the RNG message.
- Handling RNG message in SPM (Originating, Tandem and Terminating exchanges)

**Note:** RNG is used for Backward Compatibility.

### Definition of RNG Message

Ring message (RNG) is a forward signal sent from an operator-connected exchange towards the line-connected exchange.

#### RNG Message Template.

|      |                                   |           |
|------|-----------------------------------|-----------|
| *NEW | MESSAGE TYPE                      | 1111 1111 |
| *    | POINTER TO START OF OPTIONAL PART | 0000 0000 |

☐ Mandatory fixed parameter

- *Generation:*

In Russia network, RNG message is generated only during a semi automatic call in case of operator's re-ring. Since DMS MMP does not support operator positions, this message will not be generated.

- *Tandem:*

DMS MMP forwards RNG message without changing any of its parameters.

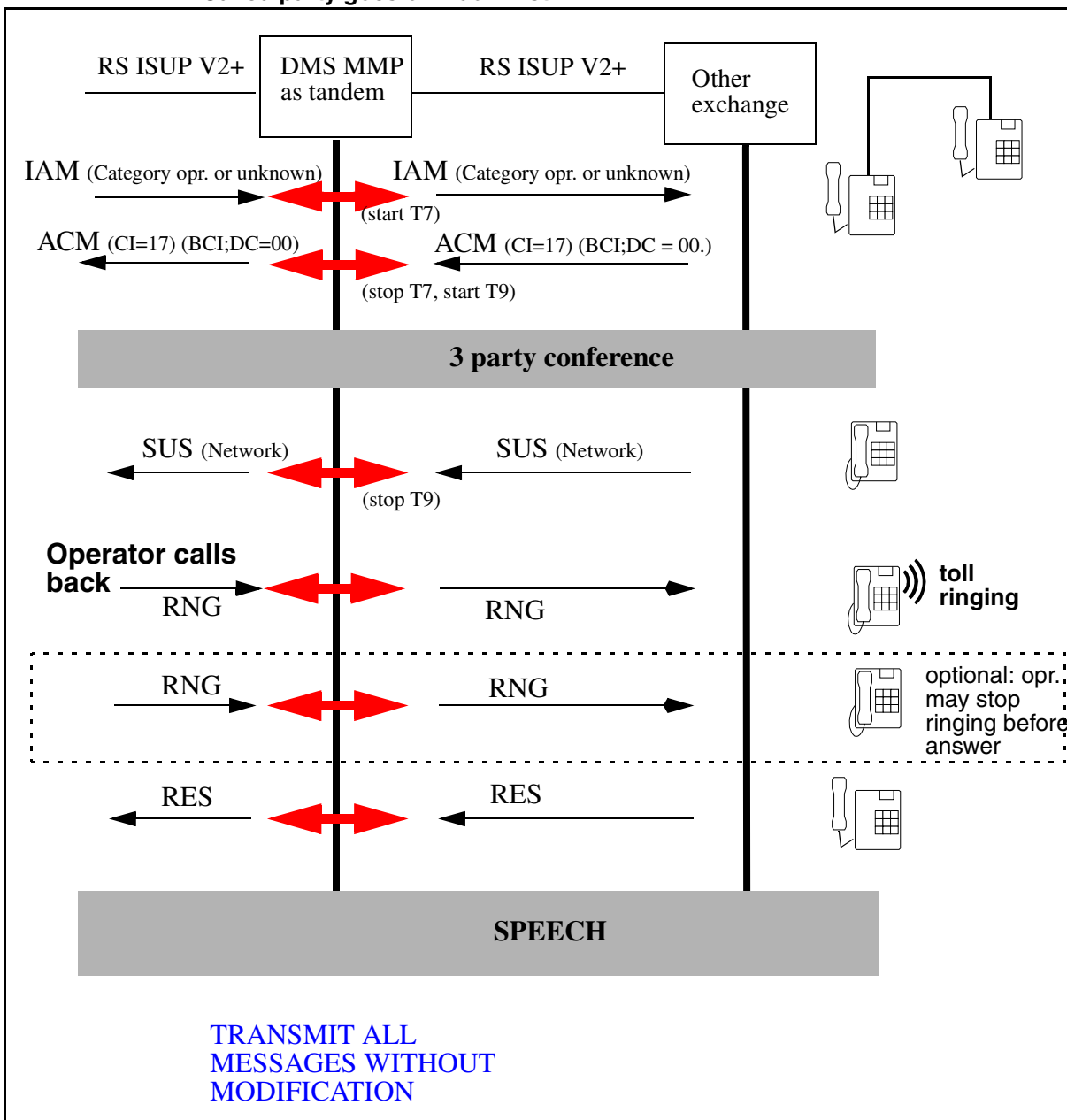
- *Reception:*

This message was previously being used in Russia network for TBI service (Old TBI). However, within ISUPR2000.AB01 specifications, it is indicated that CWT will be used instead of TBI, thus it is not required to process RNG message. DMS MMP ignores RNG message when it is received at terminating exchange.

**Note:** Please note, Old TBI refers to Backward Compatibility for TBI service. Wherever necessary the document will refer the Backward compatibility TBI service to Old TBI

As indicated above, DMS MMP can only receive RNG message within TBI scenarios. TBI scenario at tandem -where RNG message is received- is given in Figure “Called party goes on-hook first” below.

### Called party goes on-hook first



RNG message is supported only for the scenarios similar to Figure “Called party goes on-hook first”, at tandem switches. If RNG message is received after ACM and ANM at an originating or terminating DMS MMP switch, it will be ignored.

If ISUP\_RNG is received in forward direction in operator calls after ACM or ANM at tandem nodes, it will be transmitted unchanged, but it will not be processed. If RNG is received in a non-operator call after ACM or ANM, it will be ignored even at tandem.

In other scenarios (i.e. RNG received after IAM) DMS MMP behaves as described in Q764.2.9.5.1-”Handling of Unexpected Messages”.

For more details on the possible RNG messages on tandem, please refer to the section on Toll Break In (TBI).

### **Toll Break In (old TBI) Support in SPM STM1**

In Russia network, toll operators can establish calls to busy subscribers using TBI feature with ISUP-R-1994 signalling.

DMS MMP does not support TBI feature as an originating or terminating exchange.

Operator calls are distinguished from other calls via CPC parameter in IAM. Possible CPC can be:

- Unknown (#00)
- National Operator (#09)
- Semiautomatic call, categoryI - OCCI (#F1)
- Semiautomatic call, categoryII - OCCII (#F3)
- Semiautomatic call, categoryIII- OCCIII (#F5)
- Semiautomatic call, categoryIV- OCCIV (#F7)

There are 4 possible scenarios in order to support TBI.

RNG message is supported only for the scenarios similar to Figure “Scenario 1: Called party goes on-hook first” at tandem switches. If RNG message is received after ACM and ANM at an originating or terminating DMS MMP switch, it will be ignored.

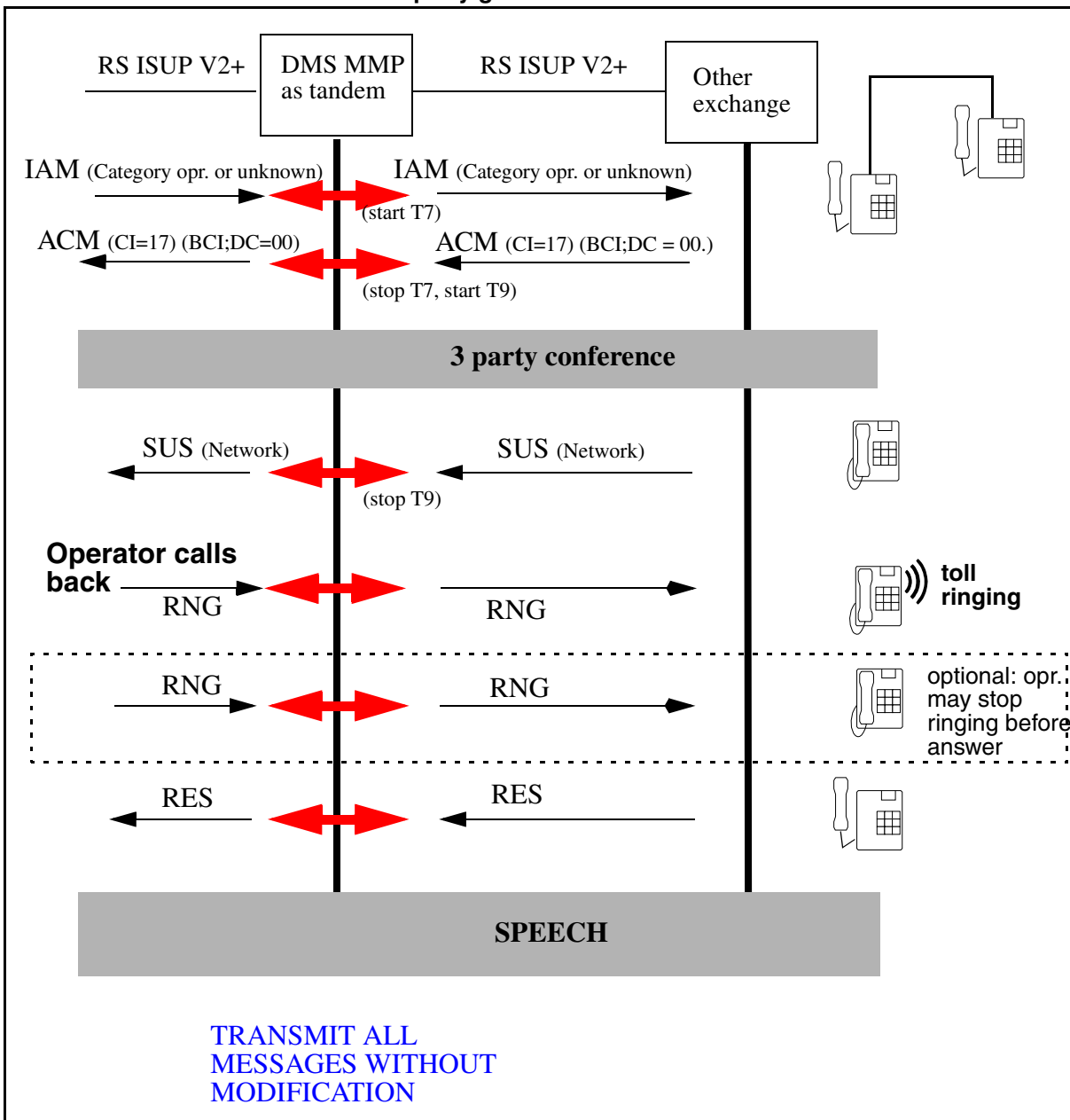
If ISUP\_RNG is received in forward direction in operator calls after ACM or ANM at tandem nodes, it will be transmitted unchanged, but it will not be processed.

If RNG is received in a non-operator call after ACM or ANM, it will be ignored even at tandem.

In other scenarios (i.e. RNG received after IAM) DMS MMP behaves as described in Q764.2.9.5.1-”Handling of Unexpected Messages”.

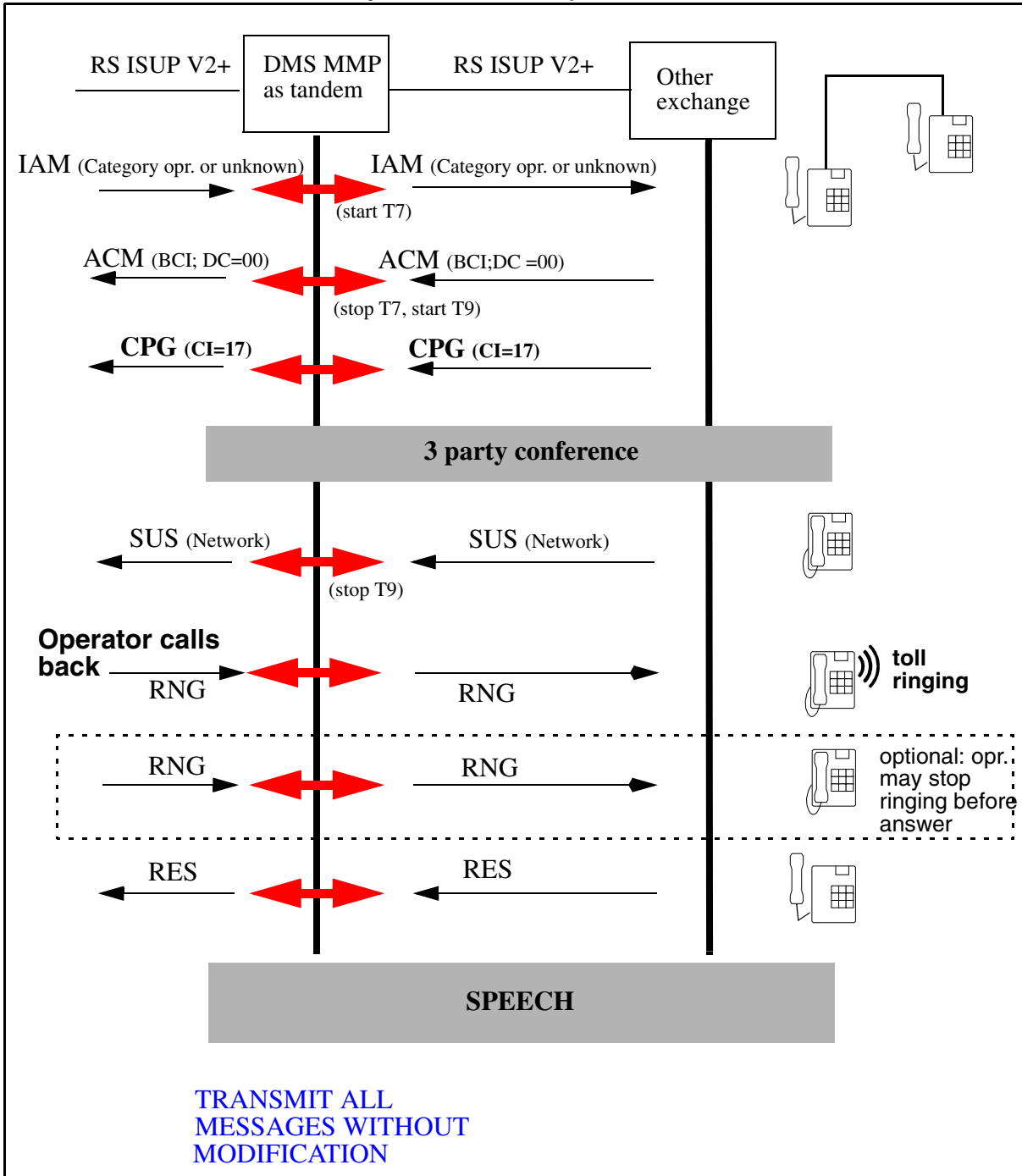
**Scenario 1: Line -> Russian ISUP V2+ -> Russian ISUP V2+ -> Line:  
Called Subscriber busy in TBI - called party goes on-hook (hangs up) first**

**Scenario 1: Called party goes on-hook first**

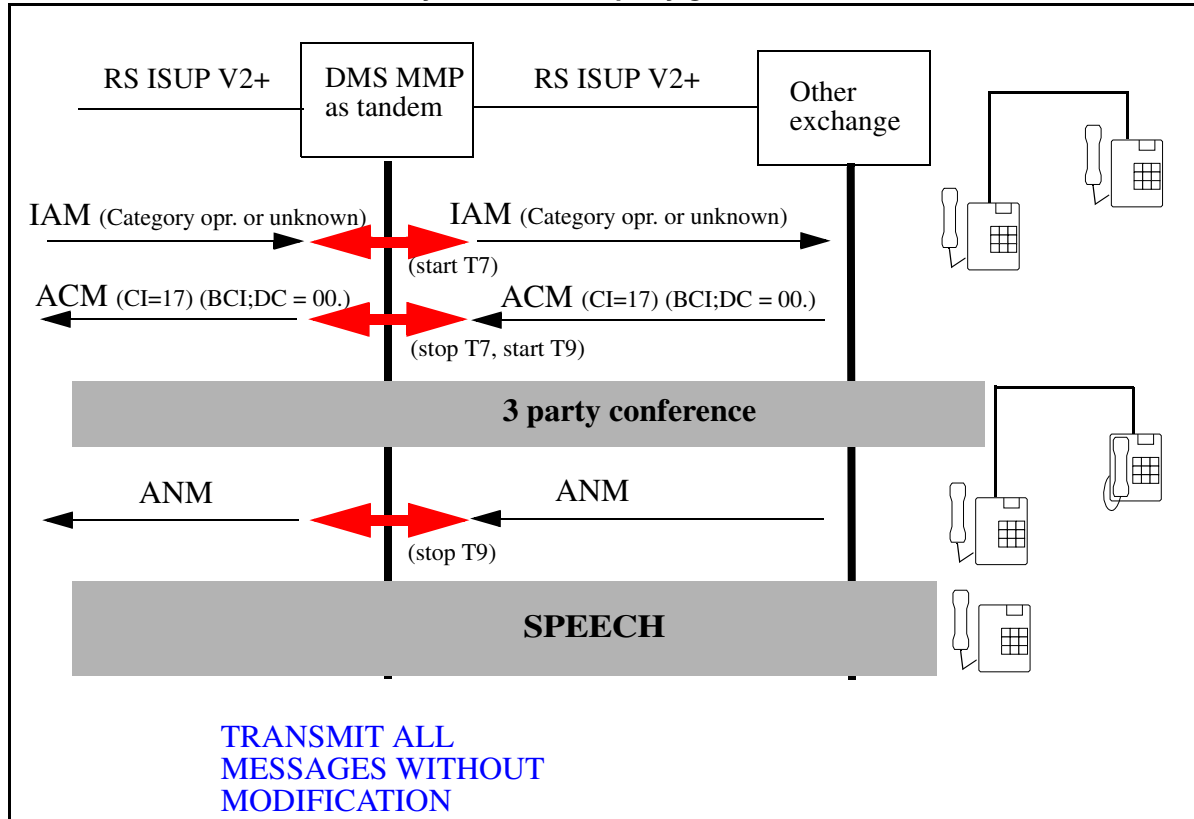


**Scenario: 2 Line -> Russian ISUP V2+ -> Russian ISUP V2+ -> Line**

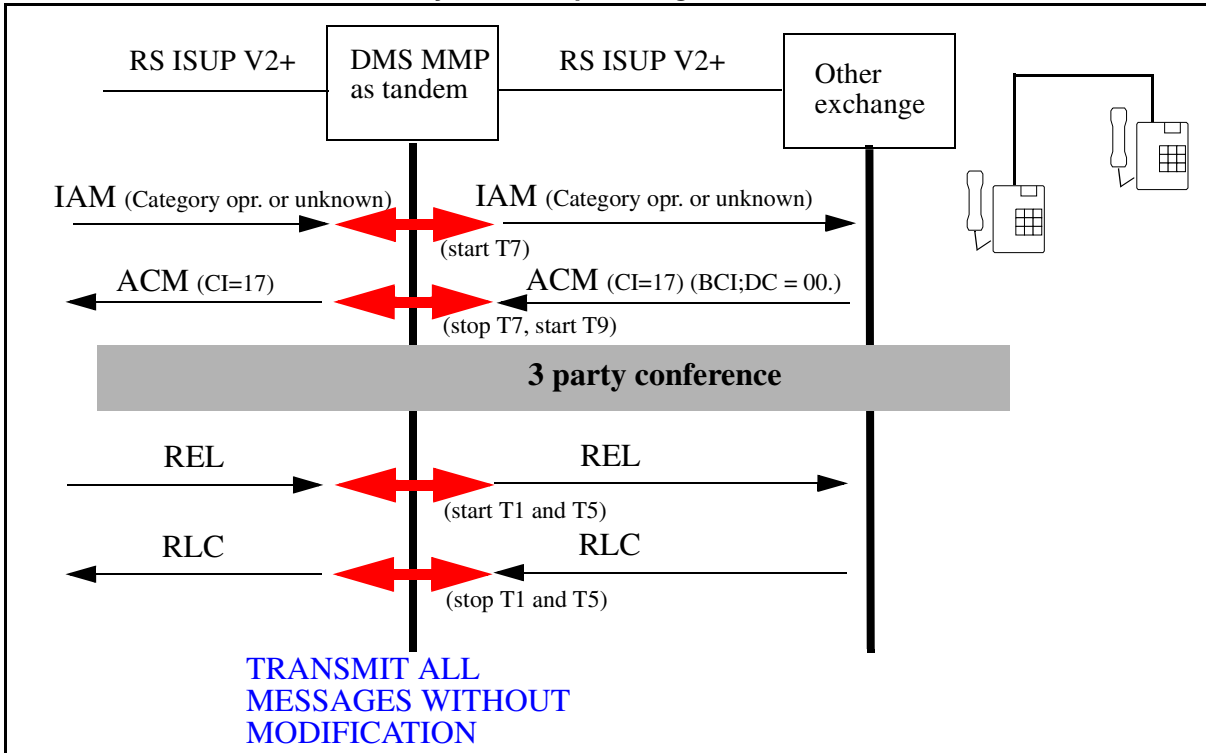
Called Subscriber busy in TBI - call setup with CPG (similar to 1 except the called party is busy )

**Scenario 2: Called subscriber busy in TBI - Call set up with CPG**

**Scenario: 3 Line -> Russian ISUP V2+ -> Russian ISUP V2+ -> Line:**  
**Called subscriber busy in TBI - Third party goes on hook (hangs up ) first**

**Scenario 3: Called subscriber busy in TBI - Third party goes on-hook first****Scenario: 4 Line -> Russian ISUP V2+ -> Russian ISUP V2+ -> Line**

Up to this part, the scenarios in which the called party accepts the operator call are given. In some scenarios, operator gives up. DMS MMP is also capable of tandeming these scenarios. An example to these scenarios is given Figure "Scenario 4: Called subscriber busy in TBI - Operator goes on-hook first" in . IAM with Category : Operator or unknown

**Scenario 4: Called subscriber busy in TBI - Operator goes on-hook first****SWACT Interaction**

If warm swact is applied to the peripherals which are connected to Russia ISUP V2+ trunks -involved in the scenarios in Figure “Scenario 1: Called party goes on-hook first” ( scenario 1 in TBI) and Figure “Scenario 2: Called subscriber busy in TBI - Call set up with CPG” (scenario 2 in TBI) - before ISUP\_RES message is received, the call will be dropped.

**Note:** Operator goes on hook first based on the called party is busy

**Restriction:**

- DMS MMP does not support TBI feature as an originating or terminating exchange. Only on tandem exchanges
- Do not support the feature on warm swact for scenarios 1, 2. But supported on scenario 3.

**ISUP Messages CRG and FAC**

- CRG: Russia specifications require CRG message to be considered as correct, but ignored. Therefore, it will be recognized as a valid message (i.e. no CFN will be sent), but it will not be processed or originated.

- FAC: FAC message is used for ECT(Explicit Call Transfer) and REV (Reverse Charging) services. ECT is an optional service in Russia specifications and partly supported by DMS MMP.

*Note:* This activity supports ISUPR2000.AB01 FAC requirement.

**Originating Exchange Behavior:**

1. CRG: Discards when received CRG at Originating MMP Exchange
2. FAC: No FAC on Originating MMP Exchange.

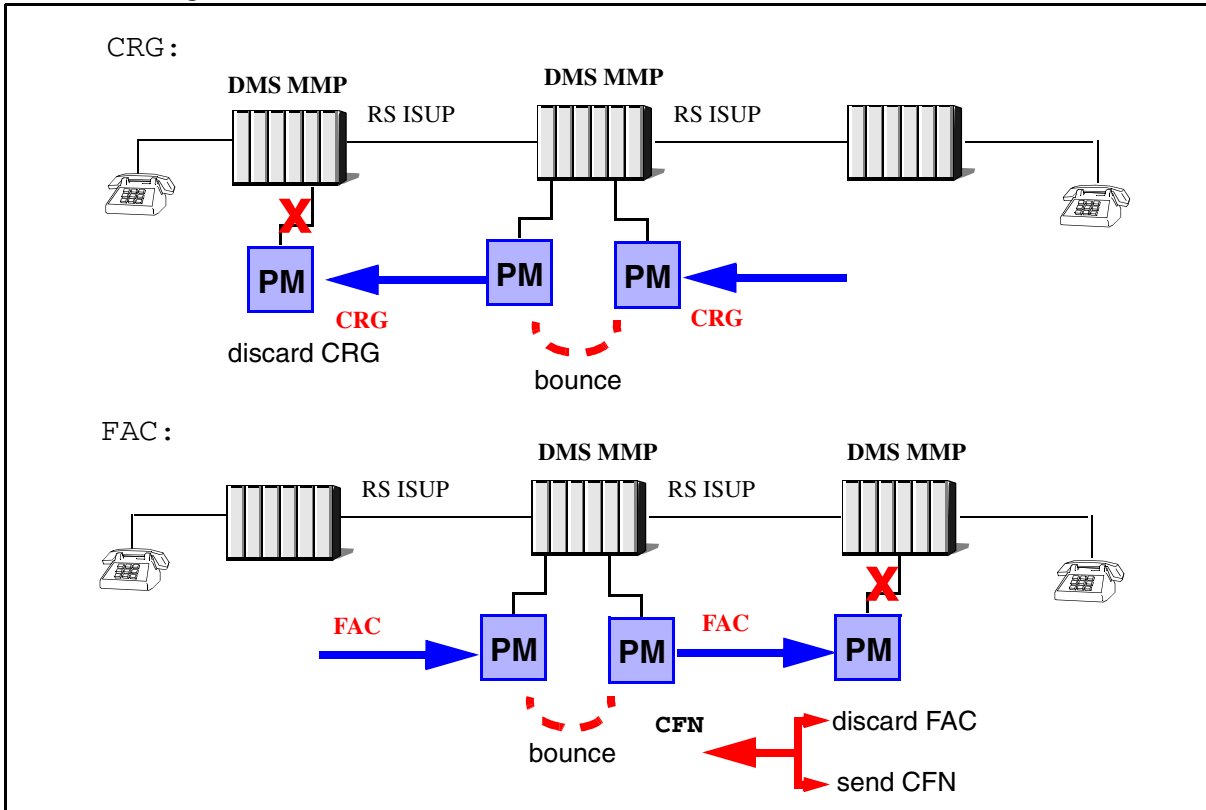
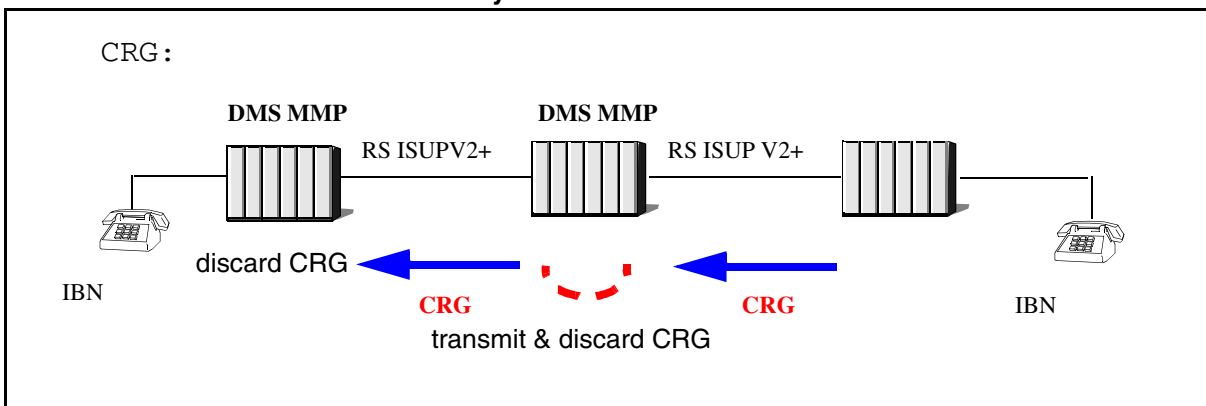
**Tandem Exchange Behavior:**

1. CRG: DMS MMP transmits CRG message if it is received at tandem exchange over Russia ISUP V2+ trunks.
2. FAC: DMS MMP transmits FAC messages -which are received at tandem node over Russia ISUP V2+ trunks- without changing any parameters, without processing this message, and without sending CFN.

**Terminating Exchange Behavior:**

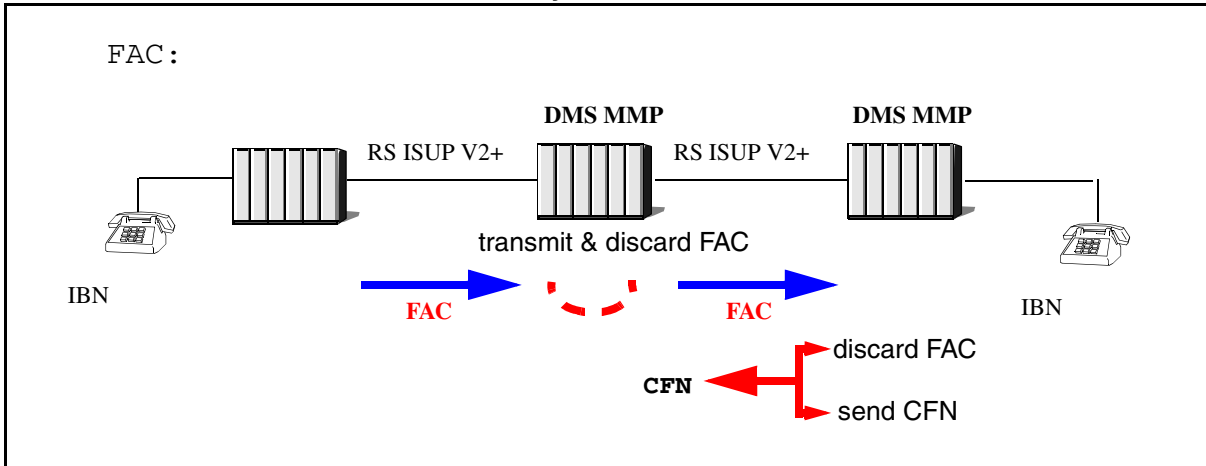
1. If CRG is received at terminating exchange, message will be discarded without notification.
2. FAC message is not supported at terminating switches. CFN message will be sent if FAC is received from an Russia ISUP V2+ trunk at terminating exchange.



**Functional diagram****Provided functionality****Processing CRG message**

The behavior of the CRG message is as follows

- If the CRG is a CC message, we send the message to the facility
- If the CRG is a facility message at a tandem, we will bounce the message
- If the CRG is a facility message at an end-office, the message is discarded.

**FAC Provided functionality****Russian ISUP Message Parameter Compatibility**

Russia specification identify variances in the set of supported optional parameters for ISUP messages. The following table identifies the supported mandatory and optional parameters for each message in SPM STM1.

**Supported Russia ISUP Messages and Parameters**

| Mes sage | Mandatory Parm s        | Optional Parm s                                                                                                                                                                                                                                                                                                                                         | Currently supported by ETSI V2?                                                                |
|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| ACM      | Backward Call Indicator | Access Delivery Information<br>Access Transport<br>Application Transport<br>Call Diversion Information<br>End of Optional Parameters<br>Generic Notification<br>Optional Backward Call Indicators<br>Parameter Compatibility Information<br>Redirection Number<br>Redirection Number Restriction<br>User-To-User Indicators<br>User-To-User information | ETSI V2 supports Cause Indicator and Service Activation Parm s. <b>New formatter required.</b> |
| APM      |                         | Application transport<br>End of Optional Parameters<br>Message Compatibility Information<br>Parameter Compatibility Information                                                                                                                                                                                                                         | Same supported set of parms as ETSI V2.                                                        |

## Supported Russia ISUP Messages and Parameters

| Mes sage | Mandatory Parm s                                              | Optional Parm s                                                                                                                                                                                                                                                                                                                                                                                                      | Currently supported by ETSI V2?                                                                                                                                  |
|----------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANM      |                                                               | Access delivery information<br>Access transport<br>Application transport<br>Backward Call Indicator<br>Call History Information<br>Connect Number<br>End of Optional Parameters<br>Generic Notification<br>Generic Number<br>Optional Backward Call Indicators<br>Parameter Compatibility Information<br>Redirection Number<br>Redirection Number Restriction<br>User-To-User Indicators<br>User-To-User information | ETSI V2 supports Service Activation Parm, but does not support Access transport, BCI, Connect Number or User-To-User information. <b>New formatter required.</b> |
| BLO      |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| BLA      |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| CCR      |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| CCL      |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>New Message, formatter already being developed</b>                                                                                                            |
| CFN      | Cause Indicators                                              | End of Optional Parm s                                                                                                                                                                                                                                                                                                                                                                                               | Same as ETSI V2                                                                                                                                                  |
| CGB      | Circuit Group Supervision<br>Message Type<br>Range And Status |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| CGBA     | Circuit Group Supervision<br>Message Type<br>Range And Status |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| CGU      | Circuit Group Supervision<br>Message Type<br>Range And Status |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |
| CGUA     | Circuit Group Supervision<br>Message Type<br>Range And Status |                                                                                                                                                                                                                                                                                                                                                                                                                      | Same as ETSI V2                                                                                                                                                  |

## Supported Russia ISUP Messages and Parameters

| Mes sage | Mandatory Parm s                        | Optional Parm s                                                                                                                                                                                                                                                                                                                                                                                                                  | Currently supported by ETSI V2?                                                                                                                                  |
|----------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CON      | Backward Call Indicator                 | Access delivery information<br>Access transport<br>Application transport<br>Call History Information<br>Connect Number<br>End of Optional Parameters<br>Generic Notification<br>Generic Number<br>Optional Backward Call Indicators<br>Parameter Compatibility Information<br>Redirection Number<br>Redirection Number Restriction<br>User-To-User Indicators<br>User-To-User information                                        | ETSI V2 supports Service Indicator parm.<br><br><b>New Formatter required.</b>                                                                                   |
| COT      | Continuity Indicators                   |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same as ETSI V2                                                                                                                                                  |
| CPG      | Event Information                       | Access delivery information<br>Access transport<br>Application transport Parameter<br>Compatibility Information<br>Backward Call Indicator<br>Call Diversion Information<br>Call History Information<br>End of Optional Parameters<br>Generic Notification<br>Generic Number<br>Optional Backward Call Indicators<br>Redirection Number<br>Redirection Number Restriction<br>User-To-User Indicators<br>User-To-User information | ETSI V2 supports Cause Indicator and Service Activation parms. Also ETSI V2 does not support the Generic Number Parameter.<br><br><b>New Formatter required.</b> |
| CRG      |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same as ETSI V2.                                                                                                                                                 |
| FAA      |                                         | End of Optional Parameters<br>Parameter Compatibility Information<br>User-To-User Indicators                                                                                                                                                                                                                                                                                                                                     | Same as ETSI V2                                                                                                                                                  |
| FAC      |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same as ETSI V2                                                                                                                                                  |
| FAR      | Facility Indicator                      | End of Optional Parameters<br>Parameter Compatibility Information<br>User-To-User Indicators                                                                                                                                                                                                                                                                                                                                     | Same as ETSI V2                                                                                                                                                  |
| FRJ      | Cause Indicators<br>Facility Indicators | End of Optional Parameters<br>User-To-User Indicators                                                                                                                                                                                                                                                                                                                                                                            | Same as ETSI V2.                                                                                                                                                 |
| GRA      |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same as ETSI V2                                                                                                                                                  |
| GRS      | Range and Status                        |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same as ETSI V2                                                                                                                                                  |

## Supported Russia ISUP Messages and Parameters

| Mes sage | Mandatory Parm s                                                                                                                                                                                            | Optional Parm s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Currently supported by ETSI V2?                                                                                                                                      |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IAM      | <p>Called Party Number<br/>Calling Party's Category<br/>Forward Call Indicators<br/>Nature of Connection Indicators<br/>Transmission Medium Requirement</p> <p><b>Please refer to for more details.</b></p> | <p>Access transport<br/>Application transport<br/>Calling Party Number<br/>Closed user group interlock code<br/>End of Optional Parameters<br/>Generic Notification<br/>Generic Number<br/>Hop Counter<br/>Location Number<br/>Optional Forward Call Indicators<br/>Original Called Number<br/>Parameter Compatibility Information<br/>Propagation Delay Counter<br/>Redirecting Number<br/>Redirection Information<br/>User Service Information<br/>User Teleservice Information<br/>User-To-User Indicators<br/>User-To-User information</p> <p><b>Please refer to for more details.</b></p> | <p><b>Already writing new formatter for IAM message to support new CPC values.</b></p> <p>Checking of optional parms is not required in the SPM.</p>                 |
| IDR      |                                                                                                                                                                                                             | <p>End of Optional Parameters<br/>MCID Request Indicator<br/>Message Compatibility Information<br/>Parameter Compatibility Information</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                                                                                                     |
| INF      | Information Indicators                                                                                                                                                                                      | <p>Calling Party Number<br/>Calling Party's Category<br/>End of Optional Parameters<br/>Parameter Compatibility Information</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>ETSI V2 supports all optional parms except DmsPartyInfo. This message is processed per leg basis and not on ball basis.</p> <p><b>New formatter required.</b></p> |
| INR      | Information Request Indicators                                                                                                                                                                              | <p>End of Optional Parameters<br/>Parameter Compatibility Information</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>ETSI V2 supports all optional parms except DmsPartyInfo. This message is processed per leg basis and not on ball basis</p> <p><b>New formatter required.</b></p>  |
| IRS      |                                                                                                                                                                                                             | <p>Access transport<br/>Calling Party Number<br/>End of Optional Parameters<br/>Generic Number<br/>MCID Response Indicator<br/>Message Compatibility Information<br/>Parameter Compatibility Information</p>                                                                                                                                                                                                                                                                                                                                                                                   | Same as ETSI V2.                                                                                                                                                     |

## Supported Russia ISUP Messages and Parameters

| Mes sage | Mandatory Parm s          | Optional Parm s                                                                                                                                                                                                                                     | Currently supported by ETSI V2?                                                             |
|----------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| REL      | Cause Indicaotrs          | Access delivery information<br>Access transport<br>End of Optional Parameters<br>Parameter Compatibility Information<br>Redirection Number Restriction<br>User-To-User Indicators<br>User-To-User information<br>ACG (Automatic Congestion Control) | ETSI V2 supports automatic congestion level parameter. <b>New formatter required.</b>       |
| RES      | Suspend/Resume Indicators | End of Optional Parameters                                                                                                                                                                                                                          | Same as ETSI V2.                                                                            |
| RLC      |                           | Cause Indicators<br>End of Optional Parameters                                                                                                                                                                                                      | Same as ETSI V2.                                                                            |
| RNG      |                           |                                                                                                                                                                                                                                                     | <b>New Message, formatter already being developed</b>                                       |
| RSC      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| SAM      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| SGM      |                           | Access transport<br>End of Optional Parameters<br>Generic Notification<br>Generic Number<br>Message Compatibility Information<br>User-To-User information                                                                                           | ETSI V2 supports Generic Digits parameter. <b>New formatter required.</b>                   |
| SUS      | Suspend/Resume Indicators | End of Optional Parameters                                                                                                                                                                                                                          | Same as ETSI V2.                                                                            |
| UBL      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| UBA      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| UPA      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| UPT      |                           |                                                                                                                                                                                                                                                     | Same as ETSI V2.                                                                            |
| USR      |                           | Access Transport<br>End of Optional Parameters<br>User-To-User Information                                                                                                                                                                          | ETSI V2 does not support User-To-User information parameter. <b>New formatter required.</b> |

## Message Formatter for Optional Parameters

In order to support all of the necessary parms, specific Russia message formatters will have to be created for the following messages:

- ACM

- ANM
- CCL
- CON
- CPG
- IAM
- INF
- INR
- REL
- RNG
- SGM
- USR/UUI

### **Modification of Mandatory/Optional Parameters in Russia ISUP V2+**

Russia specifications require four mandatory parameter fields to be enhanced:

- a. Called Party Number-Nature of Address Indicator,
- b. Nature of Connection Indicator-Satellite Indicator,
- c. Backward Call Indicator - Called Party's Category Indicator and
- d. Backward Call Indicator - Echo Control Device Indicator.

Original activity A00000937 addresses these requirements in the core. This activity will ensure that SPM STM1 handles these mandatory and optional parameters correctly when received. For more details, please refer to A00000937.

### **Called Party Number - Nature Of Address Indicator**

In Russia network, different contents of IAM has been observed. IAM's observed in Russia network don't cause any problem in DMS MMP. Russia ISUP V2+ meets the market requirements (except NOA and address signals) for IAM.

The following table shows the call types and the corresponding 'Nature of Address Indicator' (NOA) values.

**NOA values for different call types**

| Call Types     | Nature of Address Indicator   |
|----------------|-------------------------------|
| Local Calls    | Subscriber Number             |
| National Calls | National (significant) Number |

**NOA values for different call types**

| Call Types          | Nature of Address Indicator |
|---------------------|-----------------------------|
| International Calls | International Number        |

“01-Subscriber Number” is the default value for Called Party Number-NOA.

**Nature Of Connection Indicators-Satellite Indicator**

In Russia specifications, “00-ISUP No Satellite”, “01- ISUP 1 Satellite”, and “02-ISUP 2 Satellite” values for “Nature Of Connection Indicators-Satellite Indicator” are required. These values of “Satellite Indicator” are already supported by the existing ETSI ISUP V2 base variant.

In order to set Satellite Indicator, SAT field of the TRKSGRP table tuple should be set for a trunk group. However, this datafill is not enough to allow 02-ISUP 2 Satellite value at tandem exchanges.

Table SATOVER is used to determine the routes that will allow double satellite hops. In Figure , "Datafilling TRKSGRP and SATOVER tables" a sample datafill for SATOVER table is given.

**Datafilling TRKSGRP and SATOVER tables****TABLE TRKSGRP**

```
- Outgoing RS ISUP V2+ Trunk -
OGRSISUPAB 0 DS1SIG C7UP OG N Y UNEQ NONE Q767 THRH 0 DMS N N RUSSIA
100_WHITE $ 2WN7 CIC

- Incoming RS ISUP V2+ Trunk -
ICRSISUPBA 0 DS1SIG C7UP IC N Y UNEQ NONE Q767 THRH 0 DMS N N RUSSIA
100_WHITE $ 2WN7 CIC

- 2-Way RS ISUP V2+ Trunk -
2WRSISUPBA 0 DS1SIG C7UP 2W N Y UNEQ NONE Q767 THRH 0 DMS N N RUSSIA
100_WHITE $ 2WN7 CIC
```

**TABLE SATOVER**

| FROM       | TO         | OVERRIDE |
|------------|------------|----------|
| ICRSISUPBA | OGRSISUPBC | Y        |

**Backward Call Indicator - Called Party's Category Indicator**

DMS MMP sends CPC\_PAYPHONE within Backward Call Indicator-Called Party's Category field of ACM message, when a call -over Russia ISUP V2+ trunk- terminates to an IBN-COIN line.



### Backward Call Indicator - Echo Control Device Indicator

DMS MMP sends ECHO\_CONTROL\_DEVICE\_INCLUDED within Backward Call Indicator-Echo Control Device Indicator field of ACM message, if ESUPR field of TRKSGRP table is datafilled as “H” for the incoming Russia ISUP V2+ trunk, at terminating DMS MMP exchange.

### New Calling Party Categories (CPC)

New calling party category (CPC) values required by Russia network are given in the following table.

#### New CPC values

| Category              | Meaning                                                           |
|-----------------------|-------------------------------------------------------------------|
| 0000 1001             | National Operator                                                 |
| 0000 1110             | Spare                                                             |
| 0000 1111             | Toll Payphone                                                     |
| 0001 0000 - 1101 1111 | Spare                                                             |
| 1110 0000             | Spare. Subscriber category 0                                      |
| 1110 0001             | Hotel Subscriber. Subscriber category 2                           |
| 1110 0010             | Subscriber free of charge. Subscriber category 5                  |
| 1110 0011             | Subscriber with access to special services. Subscriber category 7 |
| 1110 0100             | Local network subscriber. Subscriber category 3                   |
| 1110 0101             | Local payphone. Subscriber category 9                             |
| 1110 0110 - 1110 1111 | Spare. For national use.                                          |
| 1111 0000             | Automatic call , category I- ACCI                                 |
| 1111 0001             | Semiautomatic call, categoryI - OCCI                              |
| 1111 0010             | Automatic call , category II- ACCII                               |
| 1111 0011             | Semiautomatic call, categoryII - OCCII                            |
| 1111 0100             | Automatic call , category III- ACCIII                             |
| 1111 0101             | Semiautomatic call, categoryIII - OCCIII                          |
| 1111 0110             | Automatic call , category IV- ACCIV                               |
| 1111 0111             | Semiautomatic call, categoryIV - OCCIV                            |
| 1111 1000 - 1111 1110 | Spare. For national use                                           |
| 1111 1111             | Spare                                                             |

Required Calling Party Category (CPC) values are defined in this activity.

## Handling INR and INF Message

Two new message formatters will be required for Russian ISUP V2+ to support INR and INF messages on SPM STM1.

Please refer to the original activity A00000937 for the details on the core configuration/datafill to support INR and INF messages.

## Russia Tones and Cadences

The tone parameters (which are calculated according to frequencies, levels and cadences of tones) for each market are kept in the software modules separately and downloaded from the CM to the SPM. The Russia tones has been made as a downloadable tone. Downloadable tones provides one generic tone player application in the DSP RM and downloading the details of each markets toneset from the Core when needed. The Downloadable Tone feature was provided in the SPM by activity A59033579 in SPSH17.

In SPMs the tone parameters which will be downloaded is based on the entry for TONETYPE in table MNCKTPAK. The Russia toneset is selected by setting the TONETYPE field to "**RUSSIA**". To select the TONETYPE the RSRINFO has to be datafilled with INTTONE. The Figure "Sample Datafill for RUSSIA tone (CHA)" below shows the datafill procedure.

**Sample Datafill for RUSSIA tone (CHA)**

```
pos SPM 1 1 7 DSP 0 1 WORKING
SPM 1 1 7 DSP 0 1 WORKING (COT 36 ) (DTMF 36 ) (ABBIT 8 ) (MF 32 ) $ (SYSB
RPT) (MANB MJ RPT) (ISTB MN RPT) (PROTFail CR RPT)
(PATCHFAIL MJ RPT) $ NTLX65AA 01 DSP20CJ
```

```
>cha
CPKTYPE: DSP
>
UNITNO: 0
>
DSPGRPID: 1
>
WRKSPR: WORKING
>
RSRTYPE: COT
>
NUM: 36
>
RSRTYPE: DTMF
>
NUM: 36
>
RSRTYPE: ABBIT
>
NUM: 8
>
RSRTYPE: MF
>
NUM: 32

RSRTYPE:
>inttone
NUM:
>255
TONETYPE:
>RUSSIA
```

**C7 Timers (Table C7UPTMR)**

In Russia specifications, it is required to enlarge ranges of timers T5 and T17 from 320 seconds to 15 minutes(900 secs). Additionally, ranges of timers T13, T15, T19, T21 and T23 should be enlarged from 640 seconds to 15 minutes. C7 timer values are datafillable in table C7UPTMR based on direction and protocol.

A00000937 activity enhanced the max integer value to 900 secs in core and XPM with PDTC hardware restriction. Please refer to Restriction and Limitation section of the A00000937 FN for PDTC.

In SPMs, the C7 timers will be downloaded with the correct datafilled timers.

## **Hardware Requirements or Dependencies**

N/A

## **Software Requirements or Dependencies**

Will be tested on core MMP20 non combo release load lineup. Patch or merge will be requested in SPM for this activity.

## **Limitations and restrictions**

- As the development is on SPM STM1, any Line related features or services are not required to be supported by this activity
- This feature only defines and transmits Russia specific CPC values. Assigning and processing of these CPC values is not handled by this activity.
- Trunk metering Russia ISUP V2+ is not supported by this activity.
- Enhancements in CCITT timers apply to all CCITT versions/variants. However, enlarged ranges for T5 and T17 timers will be effective only on PDTC's when their both units are equipped with SX05. In other cases (i.e. the PDTC is equipped with MX77 or PM type is different), although it will be allowed to datafill all values between 1-900, highest effective value for T5 and T17 timers will be limited to 320, which is the current maximum for T5 and T17.
- If warm swact is applied to the peripherals which are connected to Russia ISUP V2+ trunks -involved in the TBI scenarios given in section 3.3.5.2 before RES/ANM message is received, the call will be dropped.

## **Interactions**

### **Feature Interactions**

Generation and reception of CCL message has interactions with call transfer related CEPT services.

- Subscribers are not allowed to FLASH within called controlled calls after the call is answered. CCL message, and called party control applies only in basic calls. Calls subject to called-party control shall have the following call transfer related services denied:
  - Call Hold
  - Call Transfer
  - Call Waiting
  - 3-Way Calling
  - 6-Way Calling

- If the originator of a called controlled call is involved in multi-party calls, called-party control will not be activated as given in Figure “Scenario 4: Call termination with CALLCTRL-CALLED,CEPT-I3WC”.
- CCL message is not supported in the scenarios where called subscribers - of called controlled calls - involve in complex calls (I3WC, I6WC, ICT, CFX ...etc).
- This activity does not support the interactions between called party control / CCL and CENTREX features.

### Billing Interactions

Please refer to the original activity A00000937 for any billing interactions.

### Interworking

This activity addresses the ability to support basic calls:

1. Line(IBN) - Russian ISUP - Line(IBN)
2. Line (IBN) - Russia ISUP - Russia ISUP - Line (IBN)

Other Interworking supported are:

3. V5.2-on GPP -> Russian ISUP V2-on SPM -> V5.2-on GPP
  4. ISDN BRI Line -> Russian ISUP V2-on SPM -> ISDN BRI Line
  5. Line -> ETSI PRI -> Russian ISUP V2-on SPM -> PRI -> Line
  6. Operator calls on Busy subscriber (Toll Break In)
- Russian ISUP variants will be configured on SPM STM1.

### References

1. AT.59022404 : ISDN BRI Reverse Charging (REV)
2. AT.A00000937 Russian ISUP V2+ - Phase 1
3. ISUPR2000.AB01 in PLS FMDOC
4. ETSI ISUP Compliance Documents:  
[http://product-planning.europe.nortel.com/product-description/CCS7\\_links/conformance.html](http://product-planning.europe.nortel.com/product-description/CCS7_links/conformance.html)
5. ITU-T Recommendations Q.761-Q764 1993/1997
6. AT.59013592 - Automatic Message Accounting Billing Enhancements for Turkey
7. AT.59033703 - ICR&ICAMA Generation for NCOS on the base of called party code or prefix
8. DMS 100 MMP - AMA Reference Guide

## 9. A59012154: ETSI ISUP V1/V2 Base support for STM-1 access on the DMS MMP

### Applicable customer facing sections

#### Fault Management

Logs \_\_\_\_\_N/A\_\_\_\_\_

Alarms \_\_\_\_\_N/A\_\_\_\_\_

#### Configuration

Data Schema \_\_\_\_\_N/A\_\_\_\_\_

User Interface \_\_\_\_\_N/A\_\_\_\_\_

Element Management \_\_\_\_\_N/A\_\_\_\_\_

Security \_\_\_\_\_N/A\_\_\_\_\_

Service Order \_\_\_\_\_N/A\_\_\_\_\_

Office Parameters \_\_\_\_\_N/A\_\_\_\_\_

Accounting (includes AMA billing) \_\_\_\_\_N/A\_\_\_\_\_

Performance (includes operational measurements) \_\_\_\_\_N/A\_\_\_\_\_

### Glossary

| Term        | Description                      |
|-------------|----------------------------------|
| <b>3WC</b>  | Three Way Call                   |
| <b>ACM</b>  | Address Complete Message         |
| <b>ANM</b>  | Answer Message                   |
| <b>BLA</b>  | Blocking Acknowledgment message  |
| <b>BLO</b>  | Blocking message                 |
| <b>CCR</b>  | Continuity Check Request message |
| <b>CI</b>   | Cause Indicator                  |
| <b>CEPT</b> |                                  |
| <b>CFN</b>  | Confusion message                |
| <b>CGB</b>  | Circuit Group Blocking message   |

|             |                                                 |
|-------------|-------------------------------------------------|
| <b>CGBA</b> | Circuit Group Blocking Acknowledgment message   |
| <b>CGU</b>  | Circuit Group Unblocking message                |
| <b>CGUA</b> | Circuit Group Unblocking Acknowledgment message |
| <b>CON</b>  | Connect message                                 |
| <b>COT</b>  | Continuity message                              |
| <b>CPA</b>  | Calling Party Address                           |
| <b>CPC</b>  | Calling Party Category                          |
| <b>CPG</b>  | Call Progress message                           |
| <b>CUG</b>  | Closed User Group                               |
| <b>CWT</b>  | Call Waiting                                    |
| <b>ECT</b>  | Explicit Call Transfer                          |
| <b>FOT</b>  | Forward-Transfer Message                        |
| <b>GRA</b>  | Circuit Group Reset Acknowledgment message      |
| <b>GRS</b>  | Circuit Group Reset message                     |
| <b>IAM</b>  | Initial Address Message                         |
| <b>REL</b>  | Release message                                 |
| <b>RES</b>  | Resume message                                  |
| <b>REV</b>  | Reverse Charging                                |
| <b>RLC</b>  | Release Complete message                        |
| <b>RSC</b>  | Reset Circuit message                           |
| <b>SAM</b>  | Subsequent Address Message                      |
| <b>SUS</b>  | Suspend message                                 |
| <b>UBA</b>  | Unblocking Acknowledgment message               |
| <b>UBL</b>  | Unblocking message                              |
| <b>XPM</b>  | eXtended Peripheral Module                      |
| <b>NOA</b>  | Nature of Address Indicator                     |







# SN07 IEMS Functionality

## IEMS Northbound Interfaces

### General Information

In SN07 the Integrated Element Management System (IEMS) at the central office level will:

- provide graphical topology and inventory relationships between the Network Elements (NEs) and EMS
- provide aggregation all of the EMS/NE fault data.
- provide integrated fault streams to the Network Management Layer (NML) through Integrated EMS.
- provide a customer choice of OSS fault interfaces (SCC2, SYSLOG, NT STD and SNMP)
- provide centralized performance management for network elements
- provide a centralized fault viewer with filtering capability
- provide context sensitive EMS launching, applications launching (ex TMM, LMM, and NPM) and NE CLUI launching.
- provide enhanced security through a more centralized administration of user accounts and passwords for EMS and NEs.

### New or changed in SN07

#### SN07 IEMS Northbound Interface changes

| Category | SN07 NB Interface Changes? Y/N | Backward Compatible w/SN06,6.2 Y/N/na | Section reference                  |
|----------|--------------------------------|---------------------------------------|------------------------------------|
| Fault    | Y                              | N                                     | " IEMS Northbound Fault Interface" |

| Category           | SN07 NB Interface Changes? Y/N | Backward Compatible w/SN06,6.2 Y/N/na | Section reference                                                                              |
|--------------------|--------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------|
| Performance        | Y                              | N/A (not available prior to SN07)     | Please refer to Section “Northbound Performance Interface” on page 1810.                       |
| Inventory/Topology | Y                              | N/A (not available prior to SN07)     | Please refer to Section “Inventory/Topology Interface” on page 1833.                           |
| Security           | Y                              | Yes                                   | Please refer to Section “Centralized Security Administration (Network Security)” on page 1833. |

- The SN07 release adds NTSTD log format to the list of available Northbound fault feeds from IEMS. For more information see “Northbound NTSTD” on page 1776.
- The SN07 IEMS Northbound SNMP fault interface has been redefined based upon the IETF-compliant MIB. See “Northbound SNMP - IETF MIB specification” on page 1786 for detailed information.
- The IEMS Performance interface is new in SN07 and provides a common point of access for operational and performance data from integrated network elements.
- IEMS provides the ability to generate a snapshot of the entire network inventory and topology configuration to ACSII file for processing by downstream applications.
- Provide support for customer to centrally administer user accounts
- Provide Single Sign-on support - enables a user to log in once and access multiple Succession Network Elements, Applications, and features
- Customer Plug-ability - provides the ability for an OSS to plug-in it's own Authentication/Authorization and/or Single Sign-on solutions.

## IEMS Northbound Fault Interface

### User Setup, Administration, and Customization of Views

For information on initial setup and customization of the Northbound fault feed from IEMS see:

- IEMS Fault Management Guide - NN10334-911

## Device Fault Mapping References for Northbound Interface

The following table shows the log identification criteria for each device, manager, and application supported by IEMS. Log references for table entries defined in *italics* can be found in:

NN10275-909 - Succession Fault Management Logs Reference (volumes 1-3)

See the table below for additional fault documentation

### Fault Correlation for SN07 Devices

|   | NB format -><br>Device/EM                       | SCC2                    | NTSTD                   | SNMP                    | Syslog                  | Document Reference                                |
|---|-------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------------------------------|
| 1 | <b><i>“Audio Provisioning Server (APS)”</i></b> | Specific Problem        | Specific Problem        | Specific Problem        | Specific Problem        | NN10328-911 MS 2000 Series Fault Management       |
| 2 | <b><i>“Call Agent Core”</i></b>                 | log name and log number | log name and log number | log name and log number | log name and log number | see “Fault documentation for Call Agent Core :”   |
| 3 | <b><i>“Call Agent Platform”</i></b>             | Logname and number      | Logname and number      | Logname and number      | Logname and number      | NN10087-911 Call Agent Fault Management           |
| 4 | <b><i>CBM<br/>See “CS2000 Core Manager”</i></b> | log name and number     | log name and number     | log name and number     | log name and number     | <b>See “CS2000 Core Manager”</b>                  |
| 5 | <b><i>“Centrex IP Call Manager (CICM)”</i></b>  | logname and number      | logname and number      | logname and number      | logname and number      | NN10233-911 CICM Fault Management                 |
| 6 | <b><i>“CS2000 Core Manager”</i></b>             | log name and number     | log name and number     | log name and number     | log name and number     | NN10082-911 CS 2000 Core Manager Fault Management |
| 7 | <b><i>“Gateway Controller (GWC)”</i></b>        | Logname and number      | Logname and number      | Logname and number      | Logname and number      | NN10090911 GWC Fault Management                   |

|    | NB format -><br>Device/EM                                             | SCC2                              | NTSTD                  | SNMP                   | Syslog                 | Document Reference                                                                                                        |
|----|-----------------------------------------------------------------------|-----------------------------------|------------------------|------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 8  | <b>“GWC Manager”</b>                                                  | logname and number<br>CMT 300,301 | logname and number     | logname and number     | logname and number     | PLN-07AT<br>OSS SN07<br>OSS Guide<br>(ATM)<br><br>PLN-07IPOSS<br>SN07 OSS<br>Guide (IP)                                   |
| 9  | <b>“Media Application Server (MAS)”</b>                               | Event Id                          | Event Id               | Event Id               | Event Id               | NN10303-111<br>MCP 2.0 MAS<br>Meetme<br>Basics<br><br>NN10297-111<br>MCP 2.0 MAS<br>Adhoc Basics                          |
| 10 | <b>“Multimedia Communication Server (MCS)”</b>                        | logname and log number            | logname and log number | logname and log number | logname and log number | NN10247-111<br>Multimedia<br>Communication<br>Server 5200<br>System<br>Management<br>Console User<br>Guide                |
| 11 | <b>“Multi-Service Data Manager (MDM)”</b>                             | log name and number               | log name and number    | log name and number    | log name and number    | NN10092-911<br>Passport<br>15000 and<br>Preside MDM<br>in Succession<br>Networks Fault<br>Management<br>(PT-AAL1/UA-AAL1) |
| 12 | <b>MDM for BSC</b><br>see <b>“Multi-Service Data Manager (MDM)”</b>   | log name and number               | log name and number    | log name and number    | log name and number    | see <b>“Multi-Service Data Manager (MDM)”</b>                                                                             |
| 13 | <b>MDM - carrier</b><br>see <b>“Multi-Service Data Manager (MDM)”</b> | log name and number               | log name and number    | log name and number    | log name and number    | see <b>“Multi-Service Data Manager (MDM)”</b>                                                                             |

|    | NB format -><br>Device/EM                                          | SCC2                | NTSTD               | SNMP                | Syslog              | Document Reference                                                                                      |
|----|--------------------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------------------------------------------------------------------------------|
| 14 | <b>MDM Client-Server</b><br>see “Multi-Service Data Manager (MDM)” | log name and number | log name and number | log name and number | log name and number | see “ <b>Multi-Service Data Manager (MDM)</b> ”                                                         |
| 15 | <b>“MultiService Switch 7400, 15000, 20000”</b>                    | log name and number | log name and number | log name and number | log name and number | NN10092-911<br>Passport 15000 and Preside MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1) |
| 16 | <b>“Media Gateway 9000 (MG9000)”</b>                               | Logname and number  | Logname and number  | Logname and number  | Logname and number  | NN10325-900<br>ATM/IP Fault Management                                                                  |
| 17 | <b>“MG9000 Manager”</b>                                            | logname and number  | logname and number  | logname and number  | logname and number  | NN10074-911<br>MG9000 Fault Management                                                                  |
| 18 | <b>“MS2000 Series Node”</b>                                        | logname and number  | logname and number  | logname and number  | logname and number  | NN10328-911<br>MS2000 Fault Management                                                                  |
| 19 | <b>“Network Patch Manager (NPM)”</b>                               | logname and number  | logname and number  | logname and number  | logname and number  | N10084911<br>CS2000 Management Tools Fault Management                                                   |
| 20 | <b>“Passport 8600”</b>                                             | logname and number  | logname and number  | logname and number  | logname and number  | 241-6003-110<br>Preside Passport 8600 Device Integration Cartridge User Guide                           |
| 21 | <b>“QoS Collector Application (QCA)”</b>                           | logname and number  | logname and number  | logname and number  | logname and number  | NN10083-911<br>Communication Server 2000 Fault Management                                               |

|    | <b>NB format -&gt;<br/>Device/EM</b>                                                | <b>SCC2</b>                          | <b>NTSTD</b>          | <b>SNMP</b>           | <b>Syslog</b>         | <b>Document<br/>Reference</b>                                                                                          |
|----|-------------------------------------------------------------------------------------|--------------------------------------|-----------------------|-----------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| 22 | <b>“SAM21<br/>Element<br/>Manager”</b>                                              | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10089-911<br>SAM21 Shelf<br>Controller<br>Fault<br>Management                                                        |
| 23 | <b>“SAM21 Shelf<br/>Controller”</b>                                                 | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10089-911<br>SAM21 Shelf<br>Controller<br>Fault<br>Management                                                        |
| 24 | <b>“SDM<br/>Platform”</b>                                                           | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10081-911<br>SDM Fault<br>Management                                                                                 |
| 25 | <b>“Session<br/>Server<br/>Manager”</b>                                             | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10332-911<br>Session<br>Server Fault<br>Management                                                                   |
| 26 | <b>“Succession<br/>Server<br/>Platform<br/>Foundation<br/>Software<br/>(SSPFS)”</b> | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10261-<br>450v2<br>Succession<br>Network<br>Volume 2 of 2                                                            |
| 27 | <b>“Storage<br/>Manager<br/>(STORM)”</b>                                            | logname and<br>number<br><br>STM 800 | logname and<br>number | logname and<br>number | logname and<br>number | NN10088-911<br>Storm Fault<br>Management                                                                               |
| 28 | <b>“Universal<br/>Audio Server<br/>(UAS)”</b>                                       | logname and<br>number                | logname and<br>number | logname and<br>number | logname and<br>number | NN10275-909<br>v3 Succession<br>Fault<br>Management<br>Logs<br>Reference<br><br>NN10073-911<br>UAS Fault<br>Management |

|    | NB format -><br>Device/EM                | SCC2                                                                                          | NTSTD                                                                                         | SNMP                                                                                          | Syslog                                                                                        | Document Reference                         |
|----|------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------|
| 29 | <b>“Universal Signaling Point (USP)”</b> | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | NN10071911<br><br>USP Fault Management     |
| 30 | <b>“XACore”</b>                          | Logname and number                                                                            | Logname and number                                                                            | Logname and number                                                                            | Logname and number                                                                            | 297-8991-510<br>XA-Core Maintenance Manual |

## IEMS Northbound Fault Specifications

In SN07, fault events are available from any of four Northbound interfaces. Log formats supported in this release are: NTSTD, SCC2, Syslog, and SNMP. A description of each of these interfaces is given in the sections that follow.

OSS clients can receive faults in **SCC2** and **NTSTD** formats from IEMS by initiating a TCP socket connection to designated ports on the IEMS server. When a connection attempt is made by a remote host, the IEMS validates the connecting OSS as an authorized client. It then forwards all logs that satisfy the configured filter criteria to the OSS. The port numbers and remote clients eligible to connect to these log streams are configured by the administrator.

**Note: In legacy environments, the ECORE option was used to include the originating node name in the log header for SCC2 and NTSTD formats. This option is NOT supported with Nortel Networks Carrier VoIP solution. All references to ECORE in the following sections will assume this option is disabled.**

Faults can be delivered to hosts via **SNMP** by configuring the IP address and port of the remote management application.

**Note 1: By default, the following attribute values are used for configuring SNMP northbound fault feed. The administrator can change the above attribute values. Refer to the "Changing SNMP attributes for SNMP fault feeds" section to modify these values.**

**Note 2: • SNMP port: 8001**

**Note 3: • read community: public**

**Note 4:** • **write community: public**

**Note 5:** • **SNMP version: v2c**

The standard **Syslog** interface can also be configured as a fault stream for remote management systems.

The following table summarizes the characteristics of the four Northbound fault feeds from IEMS.

**IEMS Northbound Fault Stream Characteristics**

| <b>Fault format</b> | <b>Port</b>                              | <b>OSS Connection</b>                                                                                                                                                                                                                                                                                                                                                      | <b>Stream type</b>           | <b>IEMS Config required</b>                                                                                                                                                  |
|---------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NTSTD               | 8555                                     | Incoming. IEMS waits for connection by remote host                                                                                                                                                                                                                                                                                                                         | ACSII stream over TCP, push  | OSS IP address or hostname                                                                                                                                                   |
| SCC2                | 8556                                     | Incoming. IEMS waits for connection by remote host                                                                                                                                                                                                                                                                                                                         | ACSII stream over TCP, push  | OSS IP address or hostname                                                                                                                                                   |
| SNMP                | user-defined on remote listener          | IEMS forwards SNMP faults as SNMP traps to OSS. OSS can also query IEMS for active alarm data. By default, the following attribute values are used for configuring SNMP northbound fault feed. The administrator can change the attribute values.<br><b>Default Settings:</b><br>SNMP port: 8001<br>read community: public<br>write community: public<br>SNMP version: v2c | SNMP trap events (UDP), push | IP address and port of listener on OSS                                                                                                                                       |
| Syslog              | designated port for Syslog service (514) | IEMS forwards log events to remote host                                                                                                                                                                                                                                                                                                                                    | ACSII data over UDP, push    | syslog.conf requires forwarding entry for log facility<br><br><b>Fault :</b><br>local7.notice<br><br><b>Audit:</b><br>local0.notice<br><br><b>Security:</b><br>local3.notice |

See *NN10321-111 - IEMS User Guide* for details on configuring these streams.





**SCC2 Field Descriptions**

| <b>Fld</b> | <b>Name</b>             | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Example</b> |
|------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| a          | <b>Alarm Severity</b>   | The severity level of the log report. This is a 2 character field left justified and padded with blanks. Possible values are:<br>'*C' = critical alarm,<br>'**' = major alarm,<br>'* ' = minor alarm,<br>' ' = no alarm.                                                                                                                                                                                                                                                                                                                                                                                                                              | '**'           |
| b          | <b>Minute Indicator</b> | This value represents the minutes after the hour. It consists of 2 numeric characters, right justified and padded with zeroes. It ranges from 00 to 59.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | '03'           |
| c          | <b>Log Name</b>         | This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is left justified and padded with blanks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 'PM '          |
| d          | <b>Log Number</b>       | This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs (ie. TRAP, SWERR, INIT, INFO, and LOCK logs) it is a string of 3 spaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                           | '128'          |
| e          | <b>Threshold</b>        | Indicates whether a threshold was set for the given log report. A threshold can be temporarily set by using LOGUTIL. Thresholding will survive any restart by turning on the office parameter threshold_is_sampling in table OFCVAR and datafilling threshold value for individual log report in table LOGCLASS and RLOGCLAS on the CallServer. If THRESHOLD_IS_SAMPLING is on (Y), a log report is generated for every n-th instance of the log report generated. If threshold_is_sampling is off (N), every log report after the n-th report is generated.<br><br>Possible values are:<br>'+' = a threshold was set,<br>' ' = no threshold was set. | '+'            |
| f          | <b>Sequence Number</b>  | This field defines the unique sequence for each log report. It is right justified and padded with zeroes. It represents 4 numeric characters ranging from 0000 to 9999.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | '0417'         |

| Fld | Name                        | Description                                                                                                                                                                                                                                                                                                                                                                  | Example                |
|-----|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| g   | <b>Event Type</b>           | Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report.<br><br>Possible values include:<br><br>' ', 'CBSY', 'EXC ', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'. | 'TBL '                 |
| h   | <b>Event Label</b>          | A variable length character string that represents application event description. It is an optional field.                                                                                                                                                                                                                                                                   | 'ISTB'                 |
|     |                             | <i>The following fields are defined by the applications that generate the log report. These fields are optional and independent of each other.</i>                                                                                                                                                                                                                           |                        |
| i   | <b>Equipment Identifier</b> | A conditional equipment identifier determined by the application. It is a variable length character string.                                                                                                                                                                                                                                                                  | 'LIU7348'              |
| j   | <b>Body Text</b>            | Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces. Most log bodies start with a carriage return character so that none of it appears on the header line.                                                                                                                                             | 'ISTb<br>From<br>InSv' |

### Examples of Logs with SCC2 Header

The sample logs below are shown for example only. They are syntactically correct but field contents may vary.

#### 1 Gateway Controller example

##### **\*\*14 GWC 307 7250 TBL GWC Fault**

Location: GWC-2-UNIT-0

NotificationID: 4

State: Raise

Category: Communications

Cause: Communications subsystem failure

Time: Jan 23 15:15:59 2004

Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit\_0;Software=NODE MTC

Specific Problem: EM not responding, provisioned data loaded from local Flash

Description: Element Manager communication failure.

## 2 Call Server example:

### 56 LINE138 3778 INFO TRMT

```

SLOA 21 1 02 01      DN 2145202111
TREATMENT SET = BUSY   CALLED NO =          5202111
CALLID= 01BE 036D

```

## Northbound NTSTD

NTSTD is an ACSII stream delivered to a Northbound receiving application. The stream is delivered over a TCP socket and is configured by the administrator.

This section provides a detailed description of the NTSTD log format delivered by IEMS.

### NTSTD Format Summary:

<Office Identifier><Alarm Severity><Threshold><Log Name><Log Number><Time MMMMDD hh:mm:ss>< Sequence Number><Event Type><Event Label><Equipment Identifier><Body Text>

## Standard Header Formats

ECORE Format OFF:

```

-----
-----
12345678901234567890123456789012345678901234567890123456789012
3456789
----- |----- |----- |----- |----- |----- |--
-----
a...#cccdeeeffff\ggghh\ii:jj:kk\llll\nnnn\o.../p.../q...
----- |----- |----- |----- |----- |----- |--
-----

```

### Notes:

- 1 The placeholder represented by the pound sign (#) is non-existent if both office parameter log\_office\_id and ecore\_format in table OFCVAR are turned off. The pound sign (#) represents a space in other cases (ie. log\_office\_id is datafilled and ecore\_format is turned off; and whenever ecore\_format is turned on regardless of log\_office\_id).
- 2 The backslash sign (\) signifies a space.
- 3 The forward slash sign (/) signifies a space that only appears if the preceding optional field exists.
- 4 The periods (...) signify variable length data.

- 5 The vertical lines do not appear on the actual report, they are used for presentation purposes in the above figure.
- 6 This notation only represents the header and does not include the application data area (i.e. the rest of the log report).

An example of a standard log header is given below. It is also used in explaining the individual fields in the log header.

#### Standard log header example:

```
SCP2B *+ PM128 OCT20 10:03:42 0417 TBL ISTB LIU7 348
          ISTb      From InSv
```

#### NTSTD format field descriptions

| Fld | Name              | Description                                                                                                                                                                                                                                                                                                  | Example |
|-----|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| a   | Office Identifier | Identifies the switch generating the Identifier log. This is an optional field. It is output if the office parameter log_office_id in table OFCVAR on the CallServer is datafilled. It has variable length from 0 up to 12 characters.                                                                       | 'SCP2B' |
| b   | Ecore Node Name   | Originating node name where this log Node Name report is generated. It is an eight character field, its contents are left justified and padded with blanks. It is contained in the header if the office parameter ecore_format in table OFCVAR is turned on. <b>As of SN07, this option is not supported</b> | 'CM'    |
| c   | Alarm Severity    | The severity level of the log report. This is a 3 character field right justified and padded with blanks. Possible values are:<br>'***' = critical alarm,<br>' **' = major alarm,<br>' *' = minor alarm,<br>' ' = no alarm.                                                                                  | ' *'    |

| <b>Fld</b> | <b>Name</b>             | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Example</b> |
|------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| d          | <b>Threshold</b>        | <p>Indicates whether a threshold was set for the given log report. A threshold can be temporarily set by using LOGUTIL. Thresholding will survive any restart by turning on the office parameter threshold_is_sampling in table OFCVAR and datafilling threshold value for individual log report in table LOGCLASS and RLOGCLAS on the CallServer. If threshold_is_sampling is on (Y), a log report is generated for every n-th instance of the log report generated. If threshold_is_sampling is off (N), every log report after the n-th report is generated.</p> <p>Possible values are:</p> <p>'+' = a threshold was set,<br/>' ' = no threshold was set.</p> | '+'            |
| e          | <b>Log Name</b>         | This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is right justified and padded with blanks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ' PM'          |
| f          | <b>Log Number</b>       | This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs, (ie. TRAP, SWERR, INIT, INFO and LOCK logs) it is a string of 3 spaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | '128'          |
| g          | <b>Month Indicator</b>  | Consists of 3 uppercase characters ranging from 'JAN' to 'DEC' that represent the month.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 'OCT'          |
| h          | <b>Day Indicator</b>    | Consists of 2 numeric characters ranging from 01 to 31 that represent the day of the month                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | '20'           |
| i          | <b>Hour Indicator</b>   | Consists of 2 numeric characters ranging from 00 to 23 that represent the hour of the day.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | '10'           |
| j          | <b>Minute Indicator</b> | Consists of 2 numeric characters ranging from 00 to 59 that represent the minute of the hour.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | '03'           |
| k          | <b>Second Indicator</b> | Consists of 2 numeric characters ranging from 00 to 59 that represent the second of the minute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | '42'           |
| l          | <b>Sequence Number</b>  | This field defines the unique sequence for each log report. It is right justified and padded left with zeroes. Represents 4 numeric characters ranging from 0000 to 9999.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | '0417'         |
|            |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |

| Fld | Name                       | Description                                                                                                                                                                                                                                                                                                                                                           | Example                |
|-----|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| n   | <b>Event Type</b>          | Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report.<br><br>Possible values include: ' ', 'CBSY', 'EXC ', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'. | 'TBL'                  |
| o   | <b>Event Label</b>         | A variable length character string that represents application event description. This field is optional.                                                                                                                                                                                                                                                             | 'ISTB'                 |
|     |                            | <i>The following fields are defined by the applications that generate the log report. These fields are optional and independent of each other.</i>                                                                                                                                                                                                                    |                        |
| p   | <b>Equipmnt Identifier</b> | A conditional equipment identifier determined by the application. It is a variable length character string.                                                                                                                                                                                                                                                           | 'LIU<br>7<br>348'      |
| q   | <b>Body Text</b>           | Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces. Most log bodies start with a carriage return character so that none of it appears on the header line.                                                                                                                                      | 'ISTb<br>From<br>InSv' |

### Examples of Logs with Standard Header

The sample logs below are shown for example only. They are syntactically correct but field contents may vary.

#### 1 Gateway Controller example:

```

RTPU07BU  **  GWC307 Jan23 20:14:38 7250 TBL  GWC Fault
      Location: GWC-2-UNIT-0
      NotificationID: 4
      State: Raise
      Category: Communications
      Cause: Communications subsystem failure
      Time: Jan 23 15:15:59 2004
      Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODEMTC
      Specific Problem: EM not responding, provisioned data loaded from local
      Flash
      Description: Element Manager communication failure.

```

## 2 Call Server example:

```

RTPU07BR      LINE138 Jan23 16:56:30 3778 INFO TRMT
SLOA 21 1 02 01      DN 2145202111
TREATMENT SET = BUSY   CALLED NO =          5202111
CALLID= 01BE 036D

```

## Northbound Syslog

Syslog is a standardized UDP protocol defined by the IETF working group:  
**Syslog Protocol (RFC 3164):** <http://www.ietf.org/rfc/rfc3164.txt>

This ACSII fault stream is delivered to a Northbound receiving Syslog host over the local 7 facility. On the IEMS server, Syslog routing is configured through the SSPFS command line interface. This interface manages any required changes to syslog.conf.

This section covers the vendor-specific information on the format and content of Syslog messages not covered under RFC3164.

The following shows a breakdown of the components of the MSG portion of a Syslog message provided by the IEMS Northbound interface:

```

<Time> <Host> IEMS:
_V2_~I=<NodeId>~H=<Host>~A=<ApplicationName>~S=<Seq.Number>
~~<LogName><LogNumber> <AlarmSeverity> <EventType> <Label> ^M
<LogBody>

```

The following Syslog message will be used to discuss the structure of Syslog messages from IEMS :

```

Feb 23 12:38:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4317~~
MGEM302 NONE TBL MG9K InvalidEMIPAddress^M Location: MG9k EM
Comm Network^M Notification Id: 17180020453^M State:
Cleared^M Category: communications^M Cause: Communications
Subsystem Failure^M Invalid EM IP Address - An invalid EM IP
address has been set on the GW^M Component Id: MG9k EM Comm
Network^M specificProblem: Invalid EM IP Address - An invalid
EM IP address has be^M en set on the GW^M Description:
An invalid EM IP address has been set on the GW

```

**Note:** See “MG9000 Manager” for comparison of this log in all IEMS Northbound formats.



### RFC3164 MSG Fields

Each Syslog message is prefixed by a timestamp and hostname. These fields are shown in *italics* in the example above. Section 4.1.2 of RFC3164 defines these fields as follows:

The **TIMESTAMP** field is the local time and is in the format of "Mmm dd

hh:mm:ss" (without the quote marks) where:

Mmm is the English language abbreviation for the month of the year with the first character in uppercase and the other two characters in lowercase. The following are the only acceptable values:

*Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec*

dd is the day of the month. If the day of the month is less than 10, then it **MUST** be represented as a space and then the number. For example, the 7th day of August would be represented as "Aug 7", with two spaces between the "g" and the "7".

hh:mm:ss is the local time. The hour (hh) is represented in a 24-hour format. Valid entries are between 00 and 23, inclusive. The minute (mm) and second (ss) entries are between 00 and 59 inclusive.

*A single space character **MUST** follow the **TIMESTAMP** field.*

The **HOSTNAME** field will contain only the hostname, the IPv4 address,

or the IPv6 address of the originator of the message. The preferred value is the hostname. If the hostname is used, the **HOSTNAME** field **MUST** contain the hostname of the device as specified in STD 13 [4].

It should be noted that this **MUST NOT** contain any embedded spaces.

The Domain Name **MUST NOT** be included in the **HOSTNAME** field. If the IPv4 address is used, it **MUST** be shown as the dotted decimal notation as used in STD 13 [5]. If an IPv6 address is used, any valid representation used in RFC 2373 [6] **MAY** be used.

*A single space character **MUST** also follow the **HOSTNAME** field.*

### IEMS Header

After the timestamp and hostnames fields, the following constants can be found in the next two fields - separated by a space:

**IEMS:** Indicates the start of fault-specific information

**\_V2\_** - Syslog format version

Immediately following this tag are several attributes specified as name-value pairs (NVPs). NVP tags are prefixed by a tilde '~' <tag>=<value> for easy identification by downstream parsers.

### NVPs for IEMS Syslog message

| Tag name | Description                                                                                                                                               | example                                                  |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| ~I       | Node Identifier                                                                                                                                           | ~I=                                                      |
| ~H       | Host name of                                                                                                                                              | ~H=znc0s0jh                                              |
| ~A       | Reporting Application name                                                                                                                                | ~A=IEMS                                                  |
| ~S       | Log Sequence number                                                                                                                                       | ~S=4317                                                  |
| ~~       | Indicates start of formatted log header from originator.<br><br>**Note: This indicator is NOT actually an NVP. It is followed by a single space character | ~~ MGEM302<br>NONE TBL<br>MG9K<br>InvalidEMI<br>PAddress |

### Parsing Conventions for Formatted Log Data:

The format of the log header and body follow a number of conventions to facilitate parsing by downstream applications:

- 1 Line feeds in message text are identified by the ^M character sequence (this denotes a sequence of the two printable characters: caret and upper case M).
- 2 The log header start can be identified by the ~~ sequence followed by a space. The header is delimited by the line feed indicator (discussed in the previous bullet).
- 3 The log body is separated into lines using ^M sequences defined in bullet 1. Each line is prefixed with eight (8) space characters.
- 4 Line length (including leading spaces) will not exceed 80 characters . See example log above.
- 5 All text in the log header and body will consist of printable ACSII characters.

- 6 Blank lines are not allowed in the formatted log message. This includes both header and body components.

### Log Header

The log header consists of the following fields. These fields map to the corresponding fields defined in both SCC2 and NTSTD.

A typical log header will appear in the following format ( ' ' indicates a space character):

```
~~\<logname><lognumber>\<AlarmSeverity>\<EventType>\<Label>^M<LogBody>
```

### Log Header fields in Syslog message

| Name                  | Description                                                                                                                                                                                                                                                                                                                                                           | Example                      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Log Name</b>       | This value can be 2 to 4 non blank characters. Within this fixed 4 characters, it is right justified and padded with blanks.                                                                                                                                                                                                                                          | ' MGEM'                      |
| <b>Log Number</b>     | This value is always 3 digits ranging from 000 to 999. It is right justified and padded with zeroes. For PROTOLOGs, (ie. TRAP, SWERR, INIT, INFO and LOCK logs) it is a string of 3 spaces.                                                                                                                                                                           | '302'                        |
| <b>Alarm Severity</b> | This field defines the alarm severity and consists of one of the following text strings:<br><br>NONE, MINOR, MAJOR, CRIT                                                                                                                                                                                                                                              | 'NONE'                       |
| <b>Event Type</b>     | Log report event type which is a string of 4 uppercase characters, left justified and padded with blanks. This field is defined by the applications that generate the log report.<br><br>Possible values include: ' ', 'CBSY', 'EXC ', 'FAIL', 'FLT ', 'INFO', 'INIT', 'LO ', 'MANB', 'OFFL', 'PASS', 'PBSY', 'RTS ', 'SUMM', 'SYSB', 'TBL ', 'TRAN', 'TRAP', 'UNEQ'. | 'TBL '                       |
| <b>Label</b>          | A variable length character string that represents application event description. This field is optional.                                                                                                                                                                                                                                                             | 'MG9K<br>InvalidEMIPAddress' |

| Name            | Description                                                                                                                                                                     | Example                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Log Body</b> | Application specific log body text starts here. This may contain several lines. Each new line is indented by eight spaces and delimited by the ^M (caret-M) character sequence. | <pre>         Location: MG9k EMCommNetwork^M Notification Id: 17180020453^M State: Cleared^M Category: communications^M Cause: Communications SubsystemFailure^M Invalid EM IP Address - An invalid EM IP address has been set on the GW^M Component Id: MG9k EMCommNetwork^M specificProblem: Invalid EM IP Address - An invalid EM IP address has be^M en set on the GW^M Description: An invalid EM IP address has been set on the GW' </pre> |

### Notes on Log Body Text

The remainder of the message consists of the log body. The message text in this portion of the message is defined by the originating source. The presentation of this text is constrained only by the rules outlined in [“Parsing Conventions for Formatted Log Data:”](#) on page 1782.

**Note:** See Syslog Protocol (RFC 3164):

<http://www.ietf.org/rfc/rfc3164.txt> for full details on this specification.

### Security and Audit logs

IEMS Security and Audit logs are managed through Syslog and can be forwarded to a remote Syslog host in the same way as fault events. Sample content of each follow:

#### Audit log sample ( /var/log/auditlog ):

```

Jan 16 10:37:55 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" queued
Jan 16 10:38:06 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay
up.
Jan 16 10:38:06 sspfs_svr ID[SUNWcluster.pmf.1019]: "CorbaNotification" restarting too
often ... sleeping 30 seconds.

```

```

Jan 16 10:38:36 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:38:46 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay
up.
Jan 16 10:38:46 sspfs_svr ID[SUNWcluster.pmf.1019]: "CorbaNotification" restarting too
often ... sleeping 30 seconds.
Jan 16 10:39:16 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:41:42 sspfs_svr ID[SUNWcluster.pmf.1018]: "snmpp" Failed to stay up.
Jan 16 10:42:16 sspfs_svr ID[SUNWcluster.pmf.1018]: "omppush" Failed to stay up.
Jan 16 10:42:41 sspfs_svr ID[SUNWcluster.pmf.1018]: "CorbaNotification" Failed to stay
up.
Jan 16 10:42:41 sspfs_svr ID[SUNWcluster.pmf.1020]: "CorbaNotification" requeued
Jan 16 10:42:49 sspfs_svr ID[SUNWcluster.pmf.1018]: "PropServer" Failed to stay up.

```

### Security log sample ( /var/log/securitylog ):

```

Feb  6 22:03:16 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  6 22:03:16 wnc0s0qh last message repeated 1 time
Feb  9 14:34:33 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  9 14:34:33 wnc0s0qh last message repeated 1 time
Feb  9 15:36:20 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb  9 15:36:20 wnc0s0qh last message repeated 1 time
Feb 11 10:15:53 wnc0s0qh IEMS: IEMS class_security.ver01 STAT=SUCCESS SRC.USR=root
EVNT.TYPE =Authentication
Feb 11 10:15:53 wnc0s0qh last message repeated 1 time

```

The following table shows a summary of all Syslog facilities used by IEMS.

**Note:** Only *Fault*, *Audit*, and *Security* streams are supported for use by downstream systems. Shaded entries are intended for support purposes only.

#### IEMS Northbound Syslog Facilities

| Log Stream | Log file location on IEMS Server | Syslog facility |
|------------|----------------------------------|-----------------|
| Fault      | /var/log/iemsCustomerlog         | local7          |
| Audit      | /var/log/auditlog                | local0          |
| Security   | /var/log/securitylog             | local3          |

| Log Stream   | Log file location on IEMS Server | Syslog facility |
|--------------|----------------------------------|-----------------|
| Customer log | /var/log/customerlog             | local1          |
| Debug        | /var/log/debuglog                | local2          |
| SSPFS        | /var/log/sspfslog                | local4          |
| NPM          | /var/log/npm_designlog           | local5          |

### Northbound SNMP - IETF MIB specification

IEMS provides an SNMP interface that forwards faults in trap messages and responds to SNMP requests.

The SNMP Northbound interface is built on an industry standard API that includes features such as alarm synchronization not available with NTSTD or SCC2.

This section provides a high-level description of how to support the IETF Alarm MIB draft defined in the DISMAN working group of the IETF. See the MIBs on the server in the locations specified in the table below. In this document, IEMS is the agent implementing the MIBs for the manager at the OSS level.

### SN07 MIB Loading Sequence

In SN07, the MIB loading sequence for a manager application is as follows:

These MIBs are available on the IEMS server in the locations noted in the following table.

#### MIB Loading Sequence

| Load Order | MIB Name           | IEMS Server File location                                     |
|------------|--------------------|---------------------------------------------------------------|
| 1          | SNMPv2-MIB         | /opt/nortel/iems/current/mibs/<br>SNMPv2-MIB.txt              |
| 2          | SNMP-FRAMEWORK-MIB | /opt/net-snmp/share/snmp/mibs/<br>SNMP-FRAMEWORK-MIB.txt      |
| 3          | INET-ADDRESS-MIB   | /opt/net-snmp/share/snmp/mibs/<br>INET-ADDRESS-MIB.txt        |
| 4          | ALARM-MIB          | /opt/nortel/iems/current/mibs/usp/<br>ALARM-MIB-disman-14.txt |

| <b>Load Order</b> | <b>MIB Name</b>            | <b>IEMS Server File location</b>                                       |
|-------------------|----------------------------|------------------------------------------------------------------------|
| <b>5</b>          | IANA-ITU-ALARM-TC          | /opt/nortel/iems/current/mibs/usp/<br>IANA-ITU-ALARM-TC-disman-14.txt  |
| <b>6</b>          | ITU-ALARM-TC               | /opt/nortel/iems/current/mibs/usp/<br>ITU-ALARM-TC-disman-14.txt       |
| <b>7</b>          | ITU-ALARM-MIB              | /opt/nortel/iems/current/mibs/usp/<br>ITU-ALARM-MIB-disman-14.txt      |
| <b>8</b>          | ITU-IANA-ALARM-TC          | /opt/nortel/iems/current/mibs/usp/<br>ITU-IANA-ALARM-TC-disman-04.txt  |
| <b>9</b>          | NOTIFICATION-LOG-MIB       | /opt/nortel/iems/current/mibs/usp/<br>NOTIFICATION-LOG-MIB-rfc3014.txt |
| <b>10</b>         | NORTEL-MIB                 | /opt/nortel/iems/current/mibs/usp/nortel.mib                           |
| <b>11</b>         | NORTEL-GENERIC-MIB         | /opt/nortel/iems/current/mibs/usp/<br>nortelGenericMIBs-smi2.mib       |
| <b>12</b>         | ENTITY-MIB                 | /opt/nortel/iems/current/mibs/usp/<br>ENTITY-MIB-entmib-03.txt         |
| <b>13</b>         | ENTITY-STATE-MIB           | /opt/nortel/iems/current/mibs/usp/<br>ENTITY-STATE-MIB-entmib-01.txt   |
| <b>14</b>         | NORTEL-ALARM-EXT-MIB       | /opt/nortel/iems/current/mibs/usp/<br>nortel_alarm_ext_smi.txt         |
| <b>15</b>         | NORTEL-NMI-MIB             | /opt/nortel/iems/current/mibs/usp/<br>nortelNMI-smi2.smi               |
| <b>16</b>         | NORTEL-NMI-ALARM-CLEAR-MIB | /opt/nortel/iems/current/mibs/usp/<br>nortelNMIalarmClear_smi.txt      |

Support for the IETF Alarm MIB is new to IETF in the SN07 release. The MIBs defined by the DISMAN working group of IETF are designed to allow surveillance of network elements. We have used this set of MIBs to present the state of our softswitch. The ALARM MIB presents a set of tables that contain

the current alarm information for the device. The alarm MIB does not prescribe the notifications used to set and clear alarms on the device.

Nortel has provided an extension MIB to allow a manager to monitor the system alarm changes through SNMP notifications. These notifications are the primary interface for monitoring faults in the Succession node.

### **Nortel Alarm Extension MIB**

This MIB defines notifications used for alarm asserts and clears in addition to data type definitions and tables related to notifications that can be sent.

A complete listing and description of our fault management MIB may be found in “Appendix 2: Nortel Alarm Extension MIB”.

### **TABLE SUPPORT IN NORTEL ALARM EXTENSION MIB**

The table `nnExtAlarmActiveTable` along with the `AlarmActiveTable` contains all the information required to resynchronize the northbound SNMP agent and to give the OSS a complete view of the active alarms within the scope of the Integrated EMS.

The `nnExtAlarmStateTable` is not supported at this time.

### **NOTIFICATION SUPPORT IN NORTEL ALARM EXTENSION MIB**

All notifications defined in this MIB are supported. All OIDs defined within the notifications are also populated. The alarm notifications include sequence numbers so the SNMP manager can determine if a message is missed. Specific formats are supported as described in the following table.

#### **Alarm Notifications Varbinds**

| Variable name                         | Format                           | OID                           |
|---------------------------------------|----------------------------------|-------------------------------|
| alarmActiveResourceId                 | OID                              | .1.3.6.1.2.1.111.1.2.2.1.10   |
| alarmActiveDateAndTime                | DateandTime                      | .1.3.6.1.2.1.111.1.2.2.1.2    |
| alarmActiveDescription                | Human readable string            | .1.3.6.1.2.1.111.1.2.2.1.11   |
| nnExtAlarmActiveEventType             | Enum                             | .1.3.6.1.4.1.562.29.6.1.1.1.1 |
| nnExtAlarmActiveProbableCause         | Enum                             | .1.3.6.1.4.1.562.29.6.1.1.1.2 |
| nnExtAlarmActiveAdditionalText        | String                           | .1.3.6.1.4.1.562.29.6.1.1.1.3 |
| nnExtAlarmActiveDocumentation Pointer | String: up to 4 chars + 3 digits | .1.3.6.1.4.1.562.29.6.1.1.1.4 |



| Variable name                       | Format                                                                                                                             | OID                           |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| nnExtAlarmActiveResourceDescription | compType=compname;<br>subcompType=subcompName;<br>..... for as many levels of hierarchy is required to identify the alarmed entity | .1.3.6.1.4.1.562.29.6.1.1.1.5 |
| nnExtAlarmActiveManualClear         | enum                                                                                                                               | .1.3.6.1.4.1.562.29.6.1.1.1.6 |
| nnExtAlarmActiveSequenceNumber      | Numeric                                                                                                                            | .1.3.6.1.4.1.562.29.6.1.1.1.7 |

These varbinds are included in all 5 of the alarm notifications supported by the Integrated EMS. As defined all notifications in SNMP, *sysUpTime* and the OID of the notification are included in the varbinds for all notification types (see the following table). Each of the notifications signifies a different severity of the specified alarm. Notifications are defined for critical, major, minor, warning and cleared alarms. The notifications are defined in the table below.

#### Trap OIDs and Alarm Severity

| Trap OID                      | Severity           |
|-------------------------------|--------------------|
| .1.3.6.1.4.1.562.29.6.1.0.306 | nnExtAlarmMessage  |
| .1.3.6.1.4.1.562.29.6.1.0.305 | nnExtAlarmCritical |
| .1.3.6.1.4.1.562.29.6.1.0.304 | nnExtAlarmMajor    |
| .1.3.6.1.4.1.562.29.6.1.0.303 | nnExtAlarmMinor    |
| .1.3.6.1.4.1.562.29.6.1.0.302 | nnExtAlarmWarning  |
| .1.3.6.1.4.1.562.29.6.1.0.301 | nnExtAlarmClear    |

The nnExtAlarmMessage notifications can be used to send informational messages from IEMS. Because these notifications are information, reliability is not addressed. As illustrated in the table below, we populate with information in the message header and bodytext of our NTSTD and CUSTLOG feeds.

#### Message Notification Varbinds

| Variable name             | Format | OID                           |
|---------------------------|--------|-------------------------------|
| nnExtAlarmMessageResource | OID    | .1.3.6.1.4.1.562.29.6.1.3.1.1 |

| Variable name                         | Format      | OID                           |
|---------------------------------------|-------------|-------------------------------|
| nnExtAlarmMessageResourceDescription  | String      | .1.3.6.1.4.1.562.29.6.1.3.1.2 |
| nnExtAlarmMessageDateAndTime          | DateAndTime | .1.3.6.1.4.1.562.29.6.1.3.1.3 |
| nnExtAlarmMessageDocumentationPointer | String      | .1.3.6.1.4.1.562.29.6.1.3.1.4 |
| nnExtAlarmMessageInfo                 | String      | .1.3.6.1.4.1.562.29.6.1.3.1.5 |
| nnExtAlarmMessageResource             | OID         | .1.3.6.1.4.1.562.29.6.1.3.1.1 |

### OTHER DEFINITIONS IN THIS MIB

This MIB also defines OSI state variables that are not defined in the IETF Entity State MIB. These variables and tables are not supported at this time.

### IETF MIB Tables

There are several tables introduced by the IETF Alarm MIB Model. This document will discuss each table and intended use.

#### ALARM MODEL TABLE

This table defines the notifications used by IEMS to express alarm events. Notifications to communicate alarm asserts and clears have been defined by NortelNetworks in a separate MIB. These new notifications are defined in “Nortel Alarm Extension MIB” on page 1788.

This table is not currently supported. This table is a static table and we will look to support this in some future release. This table provides model documentation to OSSes.

#### ALARM ACTIVE TABLE

This table contains a list of active alarms on IEMS and is supported. It, along with 2 other tables - the alarm active variable table and the Nortel Alarm Extension Table - provide a complete view of the active alarms within the scope of the Integrated EMS.

Indexes into this table are: *alarmListName*, *alarmActiveDateAndTime*, *alarmActiveIndex*. *AlarmListName* matches the index *nlnLogName* for *nlnLogTable* from RFC3014 (Notification Log MIB). For our Succession IEMS table we use the string "Nortel\_fault".

The following table describes expected values for entries in this table.

**IETF Alarm Active Entry**

| Sequence Field               | Default Value                                                                        |
|------------------------------|--------------------------------------------------------------------------------------|
| alarmListName                | Nortel_fault                                                                         |
| alarmActiveDateAndTime       | none                                                                                 |
| alarmActiveIndex             | Numerical index defined by agent, unique in table                                    |
| alarmActiveEngineID          | IEMS agent engine ID in SNMPv3; empty string in SNMPv2                               |
| alarmActiveEngineAddressType | Inet address type (IPv4)                                                             |
| alarmActiveEngineAddress     | IPv4 address of active IEMS agent                                                    |
| alarmActiveContextName       | ""                                                                                   |
| alarmActiveVariables         | 12 = number of fields in our alarm set notifications + 2 mandatory entries per alarm |
| alarmActiveNotificationID    | OID of notification sent for this alarm set                                          |
| alarmActiveResourceID        | OID that describes this entry in the Active Alarm Table                              |
| alarmActiveDescription       | none                                                                                 |
| alarmActiveLogPointer        | not implemented - default = 0.0                                                      |
| alarmActiveModelPointer      | not implemented - default = 0.0                                                      |
| alarmActiveSpecificPointer   | not implemented - default = 0.0                                                      |

**ALARM ACTIVE VARIABLE TABLE**

Alarm Active variable table contains the varbinds for all the active alarm notifications. The indexes to the table are: *alarmListName*, *alarmActiveIndex*, *alarmVariableIndex*. For each alarm in the alarm active table there will be 12 entries in the alarm active variable table. The index *alarmVariableIndex* will be from 1 to 12 (also from 1 to *alarmActiveVariables* in the *alarmActiveTableEntry*). The notifications contain some varbinds that are not in the standard table so the OSS can index into this table to get the additional data. (Similarly, the OSS can index into the Nortel Extension Active Alarm Table for the additional information as well.)

Fields in this table for each alarm are as follows:

**Alarm Active Variable Table**

| Alarm Active Variable Entry | Notification Varbind | Default Value |
|-----------------------------|----------------------|---------------|
| alarmActiveVariableIndex 1  | sysUpTime            | sysUpTime     |

| Alarm Active Variable Entry | Notification Varbind                 | Default Value                                           |
|-----------------------------|--------------------------------------|---------------------------------------------------------|
| alarmActiveVariableIndex 2  | snmpTrapOID                          | snmpTrapOID                                             |
| alarmActiveVariableIndex 3  | alarmActiveResourceId                | OID that describes this entry in the Active Alarm Table |
| alarmActiveVariableIndex 4  | alarmActiveDescription               | none                                                    |
| alarmActiveVariableIndex 5  | alarmActiveDateAndTime               | none                                                    |
| alarmActiveVariableIndex 6  | nnExtAlarmActiveEventType            | none                                                    |
| alarmActiveVariableIndex 7  | nnExtAlarmActiveProbableCause        | none                                                    |
| alarmActiveVariableIndex 8  | nnExtAlarmActiveAdditionalText       | none                                                    |
| alarmActiveVariableIndex 9  | nnExtAlarmActiveDocumentationPointer | This is often logname & number                          |
| alarmActiveVariableIndex 10 | nnExtAlarmActiveResourceDescription  | none                                                    |
| alarmActiveVariableIndex 11 | nnExtAlarmActiveManualClear          | none                                                    |
| alarmActiveVariableIndex 12 | nnExtAlarmActiveSequenceNumber       | none                                                    |

### ALARM CLEAR TABLE

This table provides an interface for SNMP managers to clear alarms on devices which support this operation. Manual clears are performed with SNMP SET operations using the alarmActiveIndex of the alarm to be cleared. See section “Manual Clear” on page 1802 for details.

### ACTIVE ALARM STATS TABLE

Not supported.

### ITU ALARM ACTIVE TABLE

Not supported.

### ITU ALARM ACTIVE VARIABLE TABLE

Not supported.

### ITU ALARM ACTIVE STATS TABLE

Supported.

## NLM LOG TABLE (RFC 3014)

NLM Log Table is defined in IETF RFC 3014. Implementation of the MIB is provided to support incremental resynchronization of the OSS. The OSS SNMP managers can reach into the `nmlLogTable` to get missed events. See [Notification Log MIB \(RFC 3014\)](http://www.ietf.org/rfc/rfc3014.txt?number=3014):  
<http://www.ietf.org/rfc/rfc3014.txt?number=3014>.

The Notification Log MIB has 3 different MIB groups:

- configuration parameters dealing with log storage and reporting
- statistics of log reporting
- the actual history of notifications

### Configuration

Configuration defines the size and the aging criteria of the *nmlLogTable*. Table *nmlConfigLogTable* also defines the named log entries supported in the `nmlLogTable`. We use a specific named log entry for allowing fault resync. This table also defines filtering of these logs.

Each entry in the config log table contains: *nmlLogName*, *nmlConfigLogFilterName*, *nmlConfigLogEntryLimit*, *nmlConfigLogAdminStatus*. This table enables Alarm notification resynchronization. The first and only entry in this table has an *nmlLogName* that matches the *alarmListName* index for the active alarm tables above. This index is "Nortel\_fault."

*nmlConfigLogFilterName* is defined as "default". We do not support the correlation of this value to any specific data in the *snmpNotifyFilterTable* in the SNMP Notification MIB.

*nmlConfigLogEntryLimit* defines the size of the log table. This defines the number of alarm events that are available to the SNMP manager through the SNMP agent. Since there is only one entry in this table for Nortel\_fault, this value is over-ridden by *nmlConfigGlobalEntryLimit*.

**Note:** It is recommended that *nmlConfigGlobalEntryLimit* be set to a minimum value as it maintains this history in memory. Do **not** set this value to zero. Setting this value to zero will lead to unlimited entries being saved and lead to potential resource issues in the system.

*nmlConfigLogAdminStatus* is set to enabled (1).

*nmlConfigLogOperStatus* is set to noFilter (3).

*nmlConfigLogStorageType* is a storageType OID. Data associated with this entry is considered volatile and will be lost when the agent is restarted.

SNMP sets for the configuration items in this table are not supported.

### Statistics

The statistics group contains two scalars and a table. The table is required for the resync algorithm. The table *nlmStatsLogTable* augments the *nlmConfigLogTable* and has only two values in each entry: *nlmStatsLogNotificationsLogged* and *nlmStatsLogNotificationsBumped*. Because this table augments the *nlmConfigLogTable*, the index for these notifications uses the same key - "Nortel\_fault"

*nlmStatsLogNotifications* for the named logs in Nortel\_fault is the sequence number (*nnExtAlarmActiveSequenceNumber*) sent in Integrated EMS notifications of the faults. This also provides the secondary index into the *nlmLogTable* for notifications that have been missed - as detected through sequence numbers in those notifications.

It is the responsibility of the SNMP agent sending fault notifications to increment the *nlmStatsLogNotificationsLogged* and include the value in the varbinds of that notification as documented.

*nlmStatsGlobalNotificationsBumped* defines the number of logs that have been removed or "bumped" from the log table due to the limits imposed by the *nlmConfigGlobalEntryLimit* setting.

### Log Table

The *nlmLogTable* contains the history of notifications sent to the manager. The indices are: *nlmLogName* and *nlmLogIndex*. *nlmLogName* is "Nortel\_fault" and the *nlmLogIndex* is the sequence number in the proprietary notifications.

This section defines two tables: *nlmLogTable* and *nlmLogVariableTable*. The first provides the indices for retrieving missed notifications, and the second contains the varbinds for the notifications. We have 2 different size alarm notifications (in terms of number of varbinds)- alarm assert notifications are all the same size, and alarm clear notifications are slightly smaller (1 varbind). Only alarm notifications are stored in the log table, message notifications are not logged in this table.

The structure and implementation of the *nlmLogVariableTable* is the same as that of the *alarmActiveVariableTable* and is not described further.

### Connecting to the NB feed:

The default SNMP Port in which the agent is listening is 8001. This port is configurable through the IEMS client. User can also disable the SNMP agent if he wishes. OSS has to register its SNMP manager host and port to which the traps are to be sent.

### Connection Reliability

There are several scenarios which must be considered by an SNMP manager to ensure that the alarms presented at the OSS layer will be in sync with the actual alarms maintained on the device. Resynchronization will be required when either the OSS or the IEMS system goes through a restart, or when a lost trap is detected. See section “ Message Sequences and Manager Operations” on page 1800 for details on resynchronization of active alarms.

### Lost Traps

If the OSS detects a lost trap via an out-of-order sequence number, the OSS must either try to recover the lost sequence numbers from the notification log table or re-synchronize from the the active alarm table. The notification log MIB will contain the last 25 traps sent. If the sequence number delta is within this range, the notification log table can be used to obtain missed traps. Otherwise, a read of the active alarm table must be used to determine the active alarms in the system.

Additionally, OSS can poll the sequence number of the last alarm or clear sent from the agent. The sequence number of last notification sent will be in the *nlmStatsLogNotifications* table in the *nlmStatsLogNotificationsLogged* variable in the “Nortel\_fault” entry as described above.

**Note:** Since there is only one entry in this table, the scalar *nlmStatsGlobalNotificationsLogged* can also be used to obtain this value.

### SNMP Alarm Events & Correlation

The *alarmActiveResourceID* uniquely identifies an alarm occurrence in the system. To correlate a clear notification to the appropriate assert, the *alarmActiveResourceID* must be used.

### Event Types and ProbableCauses

Each alarm notification and record in the alarm table includes event type and probable cause. Values for these fields are define in the IANA-ITU-ALARM-TC MIB table. These values come from both the X.7xx and M.3100 series of standards.

#### Alarm Event Type Format:

IANAItuEventType - Valid values for this entry are provided here for convenience.

- other (1),
- communicationsAlarm (2),
- qualityOfServiceAlarm (3),
- processingErrorAlarm (4),
- equipmentAlarm (5),

environmentalAlarm (6),  
integrityViolation (7),  
operationalViolation (8),  
physicalViolation (9),  
securityServiceOrMechanismViolation (10),  
timeDomainViolation (11)

**Probable Cause Format:**

IANAItuProbableCause - Valid values for this entry are provided here for convenience.

aIS (1), callSetUpFailure (2), degradedSignal (3),  
farEndReceiverFailure (4), framingError (5), lossOfFrame (6),  
lossOfPointer (7), lossOfSignal (8), payloadTypeMismatch (9),  
transmissionError (10), remoteAlarmInterface (11), excessiveBER  
(12), pathTraceMismatch (13), unavailable (14), signalLabelMismatch  
(15), lossOfMultiFrame (16), receiveFailure (17), transmitFailure (18),  
modulationFailure (19), demodulationFailure (20),  
broadcastChannelFailure (21), connectionEstablishmentError (22),  
invalidMessageReceived (23), localNodeTransmissionError (24),  
remoteNodeTransmissionError (25), routingFailure (26),  
backplaneFailure (51), dataSetProblem (52),  
equipmentIdentifierDuplication (53), externalIFDeviceProblem (54),  
lineCardProblem (55), multiplexerProblem (56),  
nEIdentifierDuplication (57), powerProblem (58), processorProblem  
(59), protectionPathFailure (60), receiverFailure (61),  
replaceableUnitMissing (62), replaceableUnitTypeMismatch (63),  
synchronizationSourceMismatch (64), terminalProblem (65),  
timingProblem (66), transmitterFailure (67), trunkCardProblem (68),  
replaceableUnitProblem (69), realTimeClockFailure (70),  
antennaFailure (71), batteryChargingFailure (72), diskFailure (73),  
frequencyHoppingFailure (74), iODeviceError (75),  
lossOfSynchronisation (76), lossOfRedundancy (77),  
powerSupplyFailure (78), signalQualityEvaluationFailure (79),  
tranceiverFailure (80), protectionMechanismFailure (81),  
protectingResourceFailure (82), airCompressorFailure (101),  
airConditioningFailure (102), airDryerFailure (103),  
batteryDischarging (104), batteryFailure (105),  
commercialPowerFailure (106), coolingFanFailure (107),  
engineFailure (108), fireDetectorFailure (109), fuseFailure (110),  
generatorFailure (111), lowBatteryThreshold (112), pumpFailure  
(113), rectifierFailure (114), rectifierHighVoltage (115),  
rectifierLowFVvoltage (116), ventilationsSystemFailure (117),  
enclosureDoorOpen (118), explosiveGas (119), fire (120), flood (121),  
highHumidity (122), highTemperature (123), highWind (124),



iceBuildUp (125), intrusionDetection (126), lowFuel (127), lowHumidity (128), lowCablePressure (129), lowTemperature (130), lowWater (131), smoke (132), toxicGas (133), coolingSystemFailure (134), externalEquipmentFailure (135), externalPointFailure (136), storageCapacityProblem (151), memoryMismatch (152), corruptData (153), outOfCPUCycles (154), sfwrEnvironmentProblem (155), sfwrDownloadFailure (156), lossOfRealTime (157), applicationSubsystemFailure (158), configurationOrCustomisationError (159), databaseInconsistency (160), fileError (161), outOfMemory (162), softwareError (163), timeoutExpired (164), underlyingResourceUnavailable (165), versionMismatch (166), adapterError (500), applicationSubsystemFailure (501), bandwidthReducedX733 (502), callEstablishmentError (503), communicationsProtocolError (504), communicationsSubsystemFailure (505), configurationOrCustomizationError (506), congestionX733 (507), corruptData (508), cpuCyclesLimitExceeded (509), dataSetOrModemError (510), degradedSignalX733 (511), dteDceInterfaceError (512), enclosureDoorOpenX733 (513), equipmentMalfunction (514), excessiveVibration (515), fileErrorX733 (516), fireDetected (517), framingErrorX733 (518), heatingVentCoolingSystemProblem (519), humidityUnacceptable (520), inputOutputDeviceError (521), inputDeviceError (522), lanError (523), leakDetected (524), localNodeTransmissionErrorX733 (525), lossOfFrameX733 (526), lossOfSignalX733 (527), materialSupplyExhausted (528), multiplexerProblemX733 (529), outOfMemoryX733 (530), outputDeviceError (531), performanceDegraded (532), powerProblems (533), pressureUnacceptable (534), processorProblems (535), pumpFailureX733 (536), queueSizeExceeded (537), receiveFailureX733 (538), receiverFailureX733 (539), remoteNodeTransmissionErrorX733 (540), resourceAtOrNearingCapacity (541), responseTimeExcessive (542), retransmissionRateExcessive (543), softwareErrorX733 (544), softwareProgramAbnormallyTerminated (545), softwareProgramError (546), storageCapacityProblemX733 (547), temperatureUnacceptable (548), thresholdCrossed (549), timingProblemX733 (550), toxicLeakDetected (551), transmitFailureX733 (552), transmitterFailure (553), underlyingResourceUnavailable (554), versionMismatchX733 (555), -  
- The following are defined in X.736 authenticationFailure (600), breachOfConfidentiality (601), cableTamper (602), delayedInformation (603), denialOfService (604), duplicateInformation (605), informationMissing (606), informationModificationDetected (607), informationOutOfSequence (608), keyExpired (609), nonRepudiationFailure (610), outOfHoursActivity (611), outOfService (612), proceduralError (613),



## Northbound Fault Format Summary

| Row# | IEMS Schema     | SYSLOG                    | NTSTD                               | SCC2                                | SNMP                                                                                                                                                                                                                                          |
|------|-----------------|---------------------------|-------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.   | LogName         | Report Name               | LogName                             | LogName                             | Log name&number shown in varbind<br><br><b>Alarm event:</b><br>nnExtAlarmActiveDocumentationPointer<br>.1.3.6.1.4.1.562.29.6.1.1.1.4<br><br><b>Non-alarm event:</b><br>nnExtAlarmMessageDocumentationPointer<br>.1.3.6.1.4.1.562.29.6.1.3.1.4 |
| 4.   | LogNumber       | ReportNumber              | LogNumber                           | LogNumber                           | Log name&number shown in varbind<br><br><b>Alarm event:</b><br>nnExtAlarmActiveDocumentationPointer<br>.1.3.6.1.4.1.562.29.6.1.1.1.4<br><br><b>Non-alarm event:</b><br>nnExtAlarmMessageDocumentationPointer<br>.1.3.6.1.4.1.562.29.6.1.3.1.4 |
| 5.   | Threshold       | -                         | Threshold<br>'+' set<br>' ' not set | Threshold<br>'+' set<br>' ' not set | not supported                                                                                                                                                                                                                                 |
| 6.   | ID(Integer)     | NotificationID            | NotificationID                      | NotificationID                      | last integer in the OID specified by:<br>alarmActiveResourceID<br>.12.78.111.114.116.101.108.95.102.97.117.108.116.25.50.48.48.52.45.49.45.56.44.51.58.50.49.58.53.55.46.49.44.43.48.53.58.51.48. <b>10</b>                                   |
| 7.   | Sequence Number | Generated Sequence Number | Global Sequence Number (generated)  | Global Sequence Number (generated)  | <b>Alarm event:</b><br>nnExtAlarmActiveSequenceNumber<br>.1.3.6.1.4.1.562.29.6.1.1.1.7                                                                                                                                                        |
| 8.   | EventType       | EventType                 | EventType                           | EventType                           | <b>Alarm event:</b><br>not supported                                                                                                                                                                                                          |
| 9.   | EventLabel      | EventLabel                | EventLabel                          | EventLabel                          | not supported                                                                                                                                                                                                                                 |

### Northbound Fault Format Summary

| Row# | IEMS Schema          | SYSLOG           | NTSTD            | SCC2             | SNMP                                                                                                                                                                                                |
|------|----------------------|------------------|------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10.  | Equipment Identifier | Location:        | Location:        | Location:        | <b>Alarm event:</b><br>nnExtAlarmActiveResourceDescription<br>.1.3.6.1.4.1.562.29.6.1.1.1.5<br><br><b>Non-alarm event:</b><br>nnExtAlarmMessageResourceDescription<br>.1.3.6.1.4.1.562.29.6.1.3.1.2 |
| 11.  | Probable Cause       | Cause            | Cause            | Cause            | <b>Alarm event:</b><br>nnExtAlarmActiveProbableCause<br>.1.3.6.1.4.1.562.29.6.1.1.1.2                                                                                                               |
| 12.  | Category             | Category:        | Category:        | Category:        | <b>Alarm event:</b><br>nnExtAlarmActiveEventType<br>.1.3.6.1.4.1.562.29.6.1.1.1.1                                                                                                                   |
| 13.  | Specific Problem     | Specific Problem | Specific Problem | Specific Problem | <b>Alarm event:</b><br>alarmActiveDescription:<br>.1.3.6.1.2.1.111.1.2.2.1.11                                                                                                                       |
| 14.  | NotificationID       | not sent         | not sent         | non sent         | not sent                                                                                                                                                                                            |
| 15.  | ComponentID          | ComponentID      | ComponentID      | ComponentID      | <b>Alarm event:</b><br>nnExtAlarmActiveResourceDescription<br>.1.3.6.1.4.1.562.29.6.1.1.1.5<br><br><b>Non-alarm event:</b><br>nnExtAlarmMessageResourceDescription<br>.1.3.6.1.4.1.562.29.6.1.3.1.2 |
| 16.  | BodyText             | BodyText         | BodyText         | BodyText         | <b>Alarm event:</b><br>alarmActiveDescription:<br>.1.3.6.1.2.1.111.1.2.2.1.11<br><br><b>Non-alarm event:</b><br>nnExtAlarmMessageInfo:<br>.1.3.6.1.4.1.562.29.6.1.3.1.5                             |

## Message Sequences and Manager Operations

### Raise Alarm

This sequence applies to the following alarm event types:

- nnAlarmWarning
- nnAlarmMinor

- nnAlarmMajor
  - nnAlarmCritical
- 1 IEMS forwards alarm from device. The trap contains references to the 12 varbinds depicted in Table , “Alarm Active Variable Table,” on page 1791.
  - 2 The OSS receives the alarm and notes the resource ID of the alarm event to allow correlation with a subsequent alarmClear event. IEMS adds the alarm entry to the *alarmActiveTable*, *alarmActiveVariableTable*, and *nnExtAlarmActiveTable*. The *nlmLogTable* and *nlmLogVariableTable* also maintain a rolling log of the last n alarm events received - where n is defined by the variable *nlmConfigGlobalEntryLimit*.

### Clear Alarm

- 1 IEMS forwards clearAlarm event from device. The trap contains references to all varbinds listed in Please refer to “ Alarm Active Variable Table” on page 1791. except for *nnExtAlarmActiveManualClear* - which is not included in this message.
- 2 The OSS receives the clear event and matches its resource ID in **alarmActiveResourceId** against the ID of its corresponding alarm event in the *alarmActiveTable*.

The corresponding alarm entry is removed from all active alarm tables:

*alarmActiveTable*

*alarmActiveVariableTable*

*nnExtAlarmActiveTable*

An entry is made in the log notification tables for the CLEAR event.

*nlmLogTable*

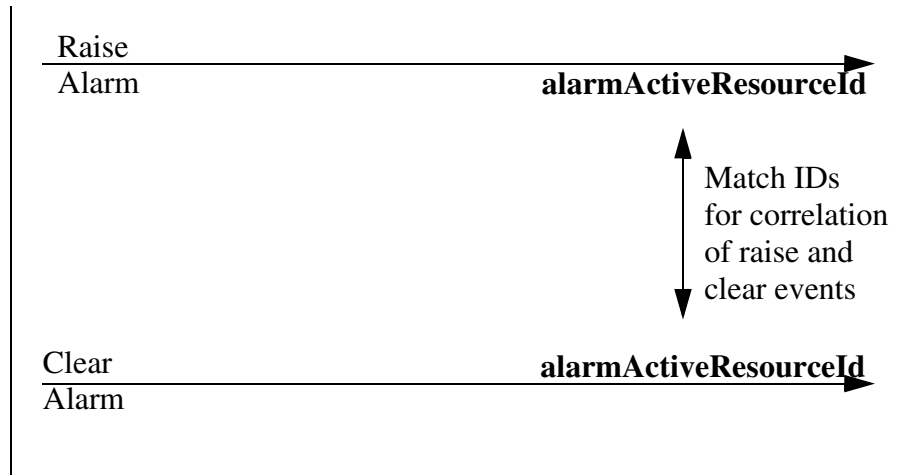
*nlmLogVariableTable*

## Alarm Raise &amp; Clear Correlation

IEMS

OSS

Alarm event forwarded to OSS



## Manual Clear

Each alarm event contains information that indicates whether it can be manually cleared. The value in the varbind *nnExtAlarmActiveManualClear* makes this determination and can have the following values:

- other (1),
- forbidden (2),
- required (3),
- optional (4)

**Note:** Alarms with a value of *forbidden* in this field cannot be manually cleared.

Eligible alarms can be manually cleared by sending a SET request to the alarm clear interface variable *nortelNMIalarmClear* (.1.3.6.1.4.1.562.29.1.8.1) in the NORTEL\_NMI-ALARM-CLEAR-MIB. The alarm to be cleared can be specified by using the *alarmActiveIndex* of the target alarm. The value of the *alarmActiveIndex* is stored as the last element in the *alarmActiveResourceId*.

**Example:** An alarm is generated and stored in the *alarmActiveTable* with the following values:

*alarmsListName*: **Nortel\_fault**

*alarmActiveDateAndTime*: 2004-1-8,3:21:57.1,+05:30

*alarmActiveIndex*: **10**

The resulting *alarmActiveResourceId* will be:

*alarmActiveResourceId*.12.78.111.114.116.101.108.95.102.97.117.108.1  
 16.25.50.48.48.52.45.49.45.56.44.51.58.50.49.58.53.55.46.49.44.43.48.5  
 3.58.51.48.10

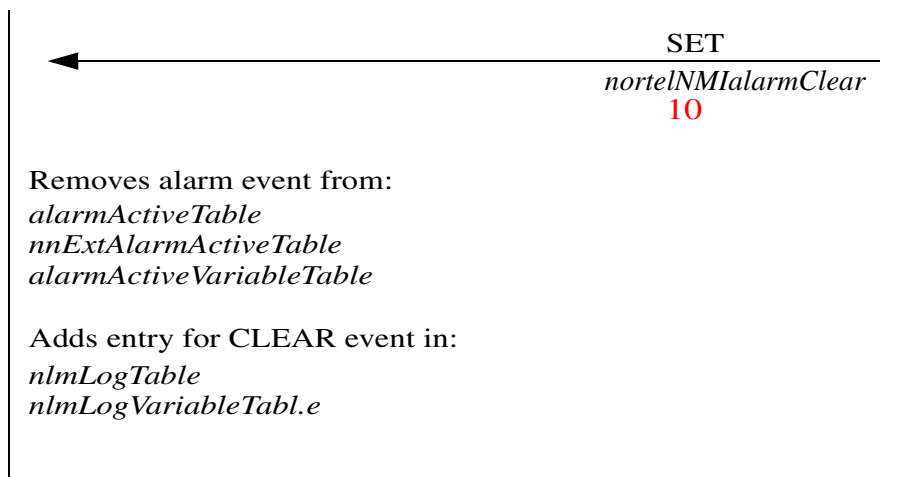
**Note:** *alarmActiveResourceId* is shown fully encoded.

The SET request will be sent with a value of 10. The corresponding alarm entry is removed from the *alarmActiveTable*, *alarmActiveVariableTable*, and *nnExtAlarmActiveTable*. A corresponding entry for the manual clear is then made in *nlmLogTable* and *nlmLogVariableTable*. See the following figure.

#### Manual Clear of Alarm Event

IEMS

OSS



#### Detecting System Restarts

Before an alarm event is forwarded to a downstream manager, the IEMS assigns the current system up-time of the server to the alarm contents. As discussed previously, it can be found in the *sysUpTime* varbind of the alarm. On restart of the IEMS server, this value is initialized to 0 to signal downstream systems of the event. The OSS can use *sysUptime* to monitor system restarts as follows:

#### Correlation with sequence numbers

Since *sysUpTime* will always increase with each sequential alarm event, restart conditions can be detected if the following condition is met:

$(sysUpTime \text{ of current event}) < (sysUpTime \text{ of previous event})$

### Restart Recovery

When the OSS determines that IEMS has been restarted, it must perform a full reload of the active alarms in the system to synchronize its data with the agent. See [“Full Resync of Active Alarms” on page 1804](#) for details.

### Detection of Missing Logs

Each alarm event generated by IEMS contains a unique sequence number that can be used to detect lost notifications. Once an OSS identifies a missing sequence number, it can be re-queried from the IEMS server if the following condition is met:

(sequence# of latest event) - (sequence# of missing event)

$\leq nlmConfigGlobalEntryLimit$  (default = 25)

If this condition is met, then the missing log can be recovered. See “Incremental Resync of missing logs”.

Otherwise, a full resynchronization of the alarm tables will be required. See [“Full Resync of Active Alarms” on page 1804](#).

### Full Resync of Active Alarms

There are two scenarios for which an SNMP manager will be required to perform a complete reload of the active alarms from IEMS:

- on startup of the management application
- when missing alarm notifications are sufficiently old to have been rotated out of the *nlmLogTable*. This table maintains a snapshot of the most recent 25 alarm events. If the missing sequence number cannot be found in this table, then a reload of all active alarms is required.

Active alarm data resides in:

*alarmActiveTable*

*nnExtAlarmActiveTable*

A full table read must be performed on the varbinds in Please refer to “Required Varbinds for Active Alarm resync” on page 1804. to perform the resync:

#### Required Varbinds for Active Alarm resync

| Varbind                | OID                         |
|------------------------|-----------------------------|
| snmpTrapOID            | .1.3.6.1.6.3.1.1.4.1        |
| alarmActiveResourceId  | .1.3.6.1.2.1.111.1.2.2.1.10 |
| alarmActiveDateAndTime | .1.3.6.1.2.1.111.1.2.2.1.2  |
| alarmActiveDescription | .1.3.6.1.2.1.111.1.2.2.1.11 |



| Varbind                              | OID                           |
|--------------------------------------|-------------------------------|
| nnExtAlarmActiveEventType            | .1.3.6.1.4.1.562.29.6.1.1.1.1 |
| nnExtAlarmActiveProbableCause        | .1.3.6.1.4.1.562.29.6.1.1.1.2 |
| nnExtAlarmActiveAdditionalText       | .1.3.6.1.4.1.562.29.6.1.1.1.3 |
| nnExtAlarmActiveDocumentationPointer | .1.3.6.1.4.1.562.29.6.1.1.1.4 |
| nnExtAlarmActiveResourceDescription  | .1.3.6.1.4.1.562.29.6.1.1.1.5 |
| nnExtAlarmActiveManualClear          | .1.3.6.1.4.1.562.29.6.1.1.1.6 |
| nnExtAlarmActiveSequenceNumber       | .1.3.6.1.4.1.562.29.6.1.1.1.7 |

**Note:** These varbinds are retrieved from the *alarmActiveVariableTable*

The manager can perform a full resync with the *alarmActiveTable* in a similar way to that used when performing an incremental resync from the *nlmLogVariableTable* (see “Incremental Resync of missing logs”). As stated earlier, each alarm entry in the *alarmActive* table has a corresponding entry for all of the alarm components in the *alarmActiveVariable* table. The complete set of alarm data can be retrieved for each alarm by first retrieving the *alarmActiveIndex* of the entry in the *alarmActiveTable*, and then using this index to request its corresponding entries from the *alarmActiveVariableTable*. These steps can be summarized as follows:

- 1 Poll the IEMS server for the latest sequence number. Issue a GET request on *nlmStatsLogNotificationsLogged*. Perform steps 2 to 3 until all alarms have been retrieved from IEMS.
- 2 Derive the list of indices to the *alarmActive* table by performing a series of GETNEXT requests on any one of its columns. The *alarmActiveIndex* for entries can be parsed from this data.
- 3 For each *alarmActiveIndex* derived in step 2, determine the alarm type perform a GET request on the *alarmActiveVariableTable* all index fields for the alarm type. The specific index fields requested will be based on the alarm type specified by the *snmpTrapOID* in index 2. See “Incremental Resync of missing logs” for a description of varbinds used in the different event types. This step essentially performs repeated incremental resync operations until complete.
- 4 Based on the alarm type determined in step 3, request all varbinds (GET) in the *alarmActiveVariableTable* for the constructed index

*alarmListName* = Nortel\_fault

*alarmActiveIndex* = (derived in step 2)

*alarmActiveVariableIndex* (1-n) - depends on alarm type found in step 3

**Note:** The *alarmActiveVariableTable* and *nmlLogVariableTable* contain the same indexed alarm information and are accessed in similar ways. The main difference between the two is that *alarmActiveVariableTable* uses the *alarmActiveIndex* as one of its key components, whereas the *nmlLogVariableTable* uses the sequence number.

### Incremental Resync of missing logs

An OSS can monitor sequence numbers from alarm events to detect missing notifications. If a missing notification is found (as described in “Detection of Missing Logs”), then it can be queried from the *nmlLogVariableTable* using the sequence number.

- 1 OSS detects missing sequence number
- 2 Missing alarm events can be recovered from the *nmlLogVariableTable* using the sequence number. Depending on the alarm event type, different numbers of varbinds will be present in the table for the entry.

The following table shows an example of the varbinds that would be used to recover a missing RAISE event with a sequence number of “1390”. RAISE events include the following alarm types:

*nnExtAlarmWarning* (.1.3.6.1.4.1.562.29.6.1.0.301)

*nnExtAlarmMinor* (.1.3.6.1.4.1.562.29.6.1.0.302)

*nnExtAlarmMajor* (.1.3.6.1.4.1.562.29.6.1.0.303)

*nnExtAlarmCritical* (.1.3.6.1.4.1.562.29.6.1.0.304)

Table , “nmlLogVariableTable varbinds for recovery of lost CLEAR notification,” on page 1808 shows an example of the varbinds that would be used to recover a missing CLEAR event with a sequence number of “1390”. CLEAR events are specified by the following OID:

*nnExtAlarmClear* (.1.3.6.1.4.1.562.29.6.1.0.301)

The alarm type can be determined by examining the value of the *snmpTrapOID* of the missed alarm. For both alarm types, this value is assigned index 2 of the *nmlLogVariable* table and can be queried with the OIDs shown in the following table. The alarm type will determine the mapping for the remaining fields in the notification message.

**nImLogVariableTable** varbinds for recovery of lost RAISE notification

| <b>nImLogVariableTable<br/>Index Variable</b> | <b>OID<br/>( nImLogName =<br/>"Nortel_fault" (encoded)<br/>Sequence# = 1390<br/>Index = 1 - 12 )</b> | <b>Notification Varbind Represented</b> |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------|
| nImLogVariableIndex 1                         | nImLogVariableTimeTicksVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.1                    | sysUpTime                               |
| nImLogVariableIndex 2                         | nImLogVariableOidVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.2                          | snmpTrapOID                             |
| nImLogVariableIndex 3                         | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.3                  | alarmActiveResourceId                   |
| nImLogVariableIndex 4                         | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.4                  | alarmActiveDescription                  |
| nImLogVariableIndex 5                         | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.5                  | alarmActiveDateAndTime                  |
| nImLogVariableIndex 6                         | nImLogVariableInteger32Val.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.6                    | ituAlarmEventType                       |
| nImLogVariableIndex 7                         | nImLogVariableInteger32Val.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.7                    | ituAlarmProbableCause                   |
| nImLogVariableIndex 8                         | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.8                  | ituAlarmAdditionalText                  |
| nImLogVariableIndex 9                         | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.9                  | nnItuAlarmActiveDocumentationPointer    |
| nImLogVariableIndex 10                        | nImLogVariableOctetStringVal.12.78.111.114.116.101.108.95.102.97.117.108.116.1390.10                 | nnItuAlarmActiveResourceDescription     |

**nImLogVariableTable** varbinds for recovery of lost RAISE notification

| <b>nImLogVariableTable<br/>Index Variable</b> | <b>OID<br/>( nImLogName =<br/>"Nortel_fault" (encoded)<br/>Sequence# = 1390<br/>Index = 1 - 12 )</b>  | <b>Notification Varbind Represented</b>                                              |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| nImLogVariableIndex 11                        | nImLogVariableInteger32Val<br>.12.78.111.114.116.101.108<br>.95.102.97.117.108.116.139<br><b>0.11</b> | nnItuAlarmActiveManualClear<br>( <b>not</b> present in CLEAR events, see next table) |
| nImLogVariableIndex 12                        | nImLogVariableInteger32Val<br>.12.78.111.114.116.101.108<br>.95.102.97.117.108.116.139<br><b>0.12</b> | nnItuAlarmActiveSequenceNumber                                                       |

**nImLogVariableTable** varbinds for recovery of lost CLEAR notification

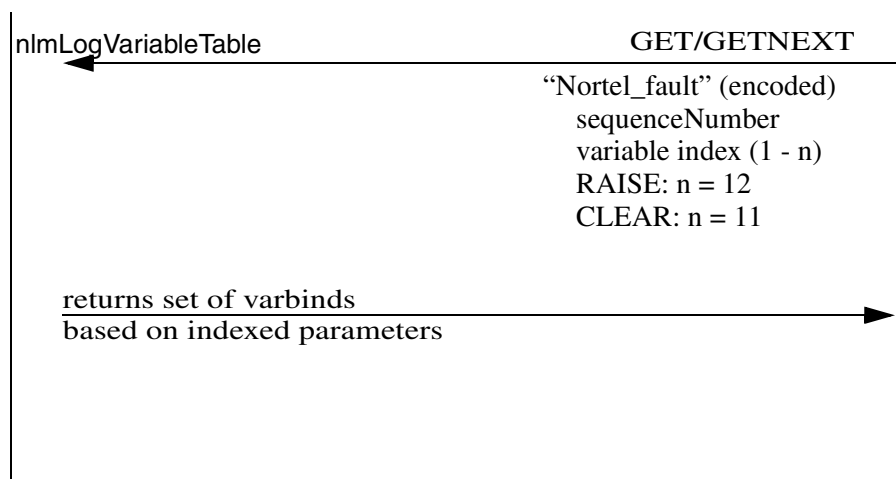
| <b>nImLogVariableTable<br/>Index Variable</b> | <b>OID<br/>( nImLogName =<br/>"Nortel_fault" (encoded)<br/>Sequence# = 1390<br/>Index = 1 - 11 )</b> | <b>Notification Varbind Represented</b> |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------|
| nImLogVariableIndex 1                         | nImLogVariableTimeTicksVal<br>.12.78.111.114.116.101.108.95.102.97.117.108.116.1390. <b>1</b>        | sysUpTime                               |
| nImLogVariableIndex 2                         | nImLogVariableOidVal. <b>12.78.111.114.116.101.108.95.102.97.117.108.116.1390.2</b>                  | snmpTrapOID                             |
| nImLogVariableIndex 3                         | nImLogVariableOctetStringVal. <b>12.78.111.114.116.101.108.95.102.97.117.108.116.1390.3</b>          | alarmActiveResourceId                   |
| nImLogVariableIndex 4                         | nImLogVariableOctetStringVal. <b>12.78.111.114.116.101.108.95.102.97.117.108.116.1390.4</b>          | alarmActiveDescription                  |
| nImLogVariableIndex 5                         | nImLogVariableOctetStringVal. <b>12.78.111.114.116.101.108.95.102.97.117.108.116.1390.5</b>          | alarmActiveDateAndTime                  |
| nImLogVariableIndex 6                         | nImLogVariableInteger32Val<br>.12.78.111.114.116.101.108<br>.95.102.97.117.108.116.139<br><b>0.6</b> | ituAlarmEventType                       |

| <b>nImLogVariableTable<br/>Index Variable</b> | <b>OID<br/>( nImLogName =<br/>"Nortel_fault" (encoded)<br/>Sequence# = 1390<br/>Index = 1 - 11 )</b>  | <b>Notification Varbind Represented</b> |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------|
| nImLogVariableIndex 7                         | nImLogVariableInteger32Val<br>.12.78.111.114.116.101.108<br>.95.102.97.117.108.116.139<br><b>0.7</b>  | ituAlarmProbableCause                   |
| nImLogVariableIndex 8                         | nImLogVariableOctetStringVal<br>.12.78.111.114.116.101.108.95.102.97.117.108.116.1390. <b>8</b>       | ituAlarmAdditionalText                  |
| nImLogVariableIndex 9                         | nImLogVariableOctetStringVal<br>.12.78.111.114.116.101.108.95.102.97.117.108.116.1390. <b>9</b>       | nnItuAlarmActiveDocumentationPointer    |
| nImLogVariableIndex 10                        | nImLogVariableOctetStringVal<br>.12.78.111.114.116.101.108.95.102.97.117.108.116.1390. <b>10</b>      | nnItuAlarmActiveResourceDescription     |
| nImLogVariableIndex 11                        | nImLogVariableInteger32Val<br>.12.78.111.114.116.101.108<br>.95.102.97.117.108.116.139<br><b>0.11</b> | nnItuAlarmActiveSequenceNumber          |

### Recovery of missing alarm by sequence number

**IEMS**

**OSS**



## Northbound Performance Interface

### IEMS Performance Interface Specification

The Northbound performance interface is new to IEMS in SN07 and provides the customer a single reporting interface for the managed network. This has been achieved through the definition of a “Common Performance Record format” (CPR-F). The common format maps operational statistics from across network elements to a common set of metrics to provide a network-level view of performance.

The Common Performance Record format specification is defined using a standardized XML interface. It provides a full definition of the normalized containment hierarchy describing performance statistics for reporting network components. PM collection jobs configured in IEMS can report device metrics in either XML or CSV formats.

The following is a list of devices that support collection of performance data in the SN07 release, PP8600, STORM, MS2000, Session Server, CICM, CICM Mgr, MAS and MCS Mgr.

#### XML

If XML is selected as the output format, then the data is collected and saved as an ACSII file in the format defined by the CPR-F XML Schema Document. The format specification below provides a full description of the normalized representation of PM data for supported network elements.

#### Conversion to CSV

When CSV output is configured in the collection job, data is initially transformed to the XML format described above. An additional step then converts the XML file to its corresponding CSV representation. There is no loss of information during this process. Net content represented by each output is identical.

The next section defines the CPR-F in terms of its XML structure followed by a discussion of its *conversion* to CSV format.

Also, collected CSV and XML performance files can be transferred from IEMS to an OSS system by configuring a transfer job for the performance files. The transfer can be done using FTP or SFTP.

For more information on configuring, retrieving, and transferring performance measurements through IEMS, see NN10327-711 - IEMS Performance Management Guide.

## The Common Performance Record Format

### Overview

The Common Performance record is an XML document specified using an XML Schema Document (XSD).

There are two major aspects to encoding performance measurements – identifying the source of the measurements within the network and recording the measurement data itself.

The CPR-F uses an XML containment structure to indicate the source point in the network of the performance measurements. A typical performance measurement may have originated in an NE and then been passed up to an element management system (EMS). The EMS in turn may have passed the measurements along to an Operations Support System (OSS).

For this particular case, the common record would contain an XML element representing the management system (the OSS) which ultimately received the set of performance measurements. Within this OSS element would be an element representing the EMS which forwarded the measurements to the OSS.

And within this EMS element, there would be an XML element representing the NE (network element) from which the PMs were obtained. The NE element may itself contain another XML element representing the sub-component in the NE which generated the measurement.

The measurement data itself would also be encoded in one or more XML elements. These data elements would be contained within the sub-component element above.

### XML Elements

The common performance record format uses thirteen major elements to encode performance information:

The *PMFile* element is the top-level element and contains all other elements.

The *System* element, *Entity* element and *SubEntity* element are used to relate the measurements to some origination point in the network and to capture their path through the management systems.

The *SingleValues* & *SingleValue* elements, the *GroupOfValues* & *GroupValue* elements and the *Table*, *Labels*, *Label*, *RowOfValues* & *RowValue* elements may all be used to capture the performance measurement information itself.

### Encoding Source Identification for Performance Measurements

A performance measurement (PM) originates in some device in the network which records the measured value. This measurement may be combined with

other measurements within the device and forwarded to a management system. The management system may combine the PMs from many devices into a single grouping and may forward this grouping of PMs to some superior management system. Again this superior management system may combine groupings of measurements from many domains in the network and forward the combined package of measurements to yet another management system.

This path that PMs take as they move from the network device level to the management level is encoded in the CPR. Three elements are used to indicate this path:

*System* element

*Entity* element

*SubEntity* element.

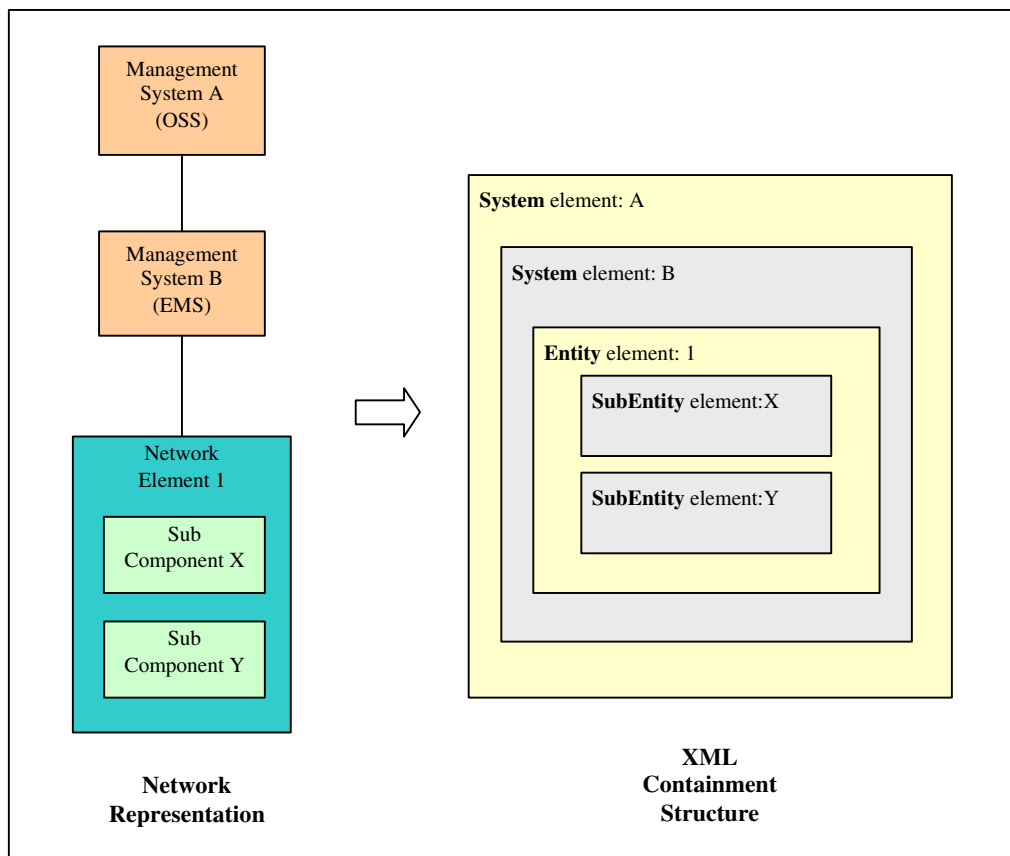
The intent of the Entity element is to represent the NE itself. What constitutes an NE and what device granularity determines an NE is an implementation choice for any particular product or technology. The System, Entity and SubEntity form a hierarchy. In this hierarchy, the Entity element may appear only once.

A Network Element may contain many sub-components and these sub-components may themselves contain sub-components and so on to some arbitrary level of decomposition. The SubEntity element represents a sub-component within the NE. A SubEntity element may contain other SubEntity elements to reflect the component structure within the NE. What constitutes a sub-component within an NE is, again, an implementation choice for any particular product or technology.

A set of performance measurements may traverse one or more management systems as it travels to some final destination system. Each of these intermediate management systems may be represented by a System element. A System element may contain another System element encoding the sequence of management systems which handle the performance measurement data.

The CPR may be emitted by a management system or by a network element. When an NE emits the record, the top-most XML element within the PMFile element will be an Entity element representing the NE which is sending the measurements. When a management system emits the CPR, the top-most XML element within the PMFile element will be a System element representing the management system.



**OSS/EMS/NE hierarchy encoded in XML elements****Encoding the Performance Measurement Data****Measurement Descriptors**

In general, a performance measurement is some number which is bound to a measurement identifier such as: numberOfPackets = 23145. As well as these two items, a performance measurement may contain contextual information indicating the circumstances under which the measurement was taken or giving some further information as to the meaning of the measurement or its interpretation. The following information items are used in the common performance record format to describe measurement information:

**Measurement Identifier:** This is the name or label which uniquely identifies the measurement.

**Measurement Value:** This is (generally) the numerical value of the measurement (such as an integer or decimal number). Or it could be a string or some enumerated value

Measurement Kind: There are two kinds of performance measurement: 'snapshot' and 'period-based'.

A 'snapShot' measurement is one in which the measurement quantity (for example, some counter in a network device) is sampled at an instant in time and is being reported to the management system. There is no time significance attached to this sampled value. To derive information from a snapshot value, it may need to be compared to some previous snapshot of the counter or gauge and conclusions drawn about the change, if any, between the two values.

In contrast, a period-based measurement represents the value of some measurement quantity in the network device over a specified period of time. The measurement value relates only to activity which occurred within the measurement period.

Capture Time: This is the time at which the measurement value was captured. For a period-based measurement, this is the time at which measurement accrual stopped. For a snapshot measurement, it represents the time at which the measurement was sampled.

Interval Duration: This is the length of the time interval governing the performance measurement. For a period-based measurement, this interval is the duration between the time the measurement was started and the time the measurement was stopped. For a snapshot measurement, the interval indicates the duration between the time the current value was sampled and the time of the previous sample.

Last Record: If true this indicates that the performance measurement is the last value for the reporting time interval (indicated in IntervalDuration).

Reliability: This is an indicator of the quality or reliability of the measurement. It can take values such 'valid', 'invalid' and so on.

Unit: This names the unit in which the measurement is expressed (for example, packets, bytes and so on).

Value Type: This indicates the type of data contained in the Measurement Value. It can take on values such as 'integer', 'decimal', 'string' and so on).

Register Type: A register is the generic name given to the hardware or software capability in an NE which actually records the performance measurement. For numeric values the RegisterType property indicates whether the register behaves as a counter or a gauge or some other numeric register. (A counter is a register which accumulates a count of some defined event such as

the arrival of a packet. A gauge is a register which holds a state of usage sample – for example, the number of items in a queue).

Maximum Value: This property indicates the highest value the register can hold.

Reset Time: This is the register reset time. For numeric values this is the date/time when the register was last reset to zero.

Monitored Time: This indicates the actual duration of the period over which the measurements were taken. This property is used for cases where the actual measurement period is less than the period indicated in the Interval Duration value.

Intervals Covered: As an efficiency mechanism, it may be decided not to forward measurements when they have a value of zero at the end of the measurement period (for example, no events of interest occurred in the measurement period). This practice is called zero-suppression. In the case where a zero suppression representation is used, this attribute specifies the number of consecutive intervals over which a zero value was obtained for the measurement.

### **Table and Group Identifiers**

Performance measurements may be stored within the common format as tables of values or as groups of values. The properties below are used to identify these tables and groups.

Table Identifier: This is the name or label for a particular table of measurements. This property is only used in the Table element.

KeyOfRow: This is a property specific to a column label used in representing tabular measurements. When it has a value of 'true' it indicates that this particular column of the table contains the key of the row of data values. The key is the identity of the object to which the row measurements pertain. This would generally refer to a sub-component in the network element.

Group Identifier: This is the name or label for a particular group of measurements. This property is only used in the GroupOfValues element.

### **Supplementary Identifiers**

In many cases the identity of a network element, NE sub-component or performance measurement can be expressed in a single identifier. In other cases the identity will be contained in a number of individual identifiers. The approach taken in the common performance record format is to use supplementary identifiers to hold any additional identification information required in an element.

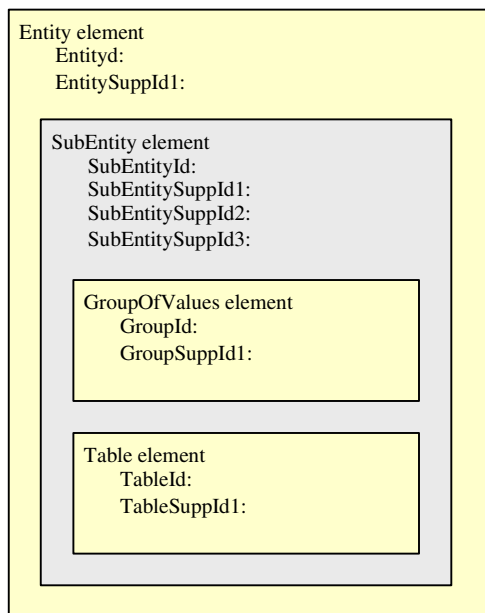
In the case of an *Entity* element (which is used to hold measurements for a particular NE), there are two identifiers: an EntityId (Entity Identifier) and an EntitySuppId (Entity Supplementary Identifier).

Likewise, the *SubEntity* element (which holds measurements for a sub-component of the NE) has a SubEntityId and three supplementary identifiers – SubEntitySuppId1, SubEntitySuppId2 and SubEntitySuppId3. Note that in the case of the *SubEntity* supplementary identifiers, it is not stipulated in which order or in which combination they are to be used. This is left as an implementation decision for any particular product/technology.

The performance measurement itself has a supplementary identifier – MeasureSuppId1. Both the *Table* element and *GroupOfValues* element also have a supplementary identifier – respectively TableSuppId1 and GroupSuppId1.

Some of these identifiers are mandatory and some are optional. See section “[Optionality](#)” on page 1821 for more information.

#### Example of Identifiers and Supplementary Identifiers



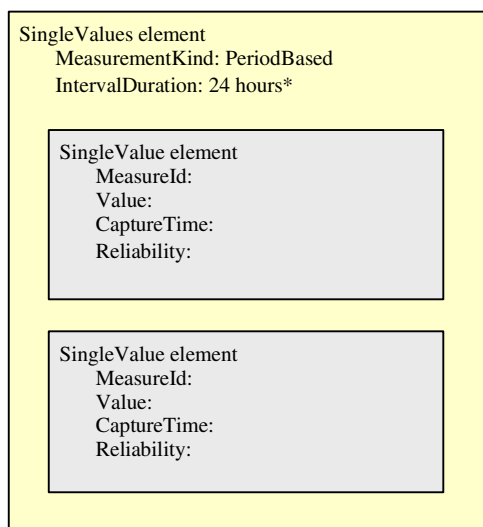
#### Measurement Elements

There are three ways to encode performance measurements in the common format – using a *SingleValues* approach, a *GroupOfValues* approach or a *Table* approach.

## Single Values Approach

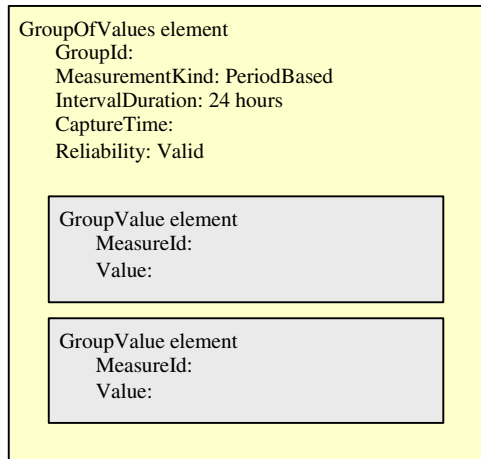
With this approach each performance measurement is considered as a standalone value with no explicit relationship to any other measurement value which may accompany it. Each measurement is encoded in a *SingleValue* element. One or more *SingleValue* elements are contained in a *SingleValues* element which specifies the kind of measurements contained within it (period-based or snapshot) and the interval duration for those measurements (for example, whether they are measurements for a 5-minute, 15-minute or 24-hour interval).

### A SingleValues element containing two values



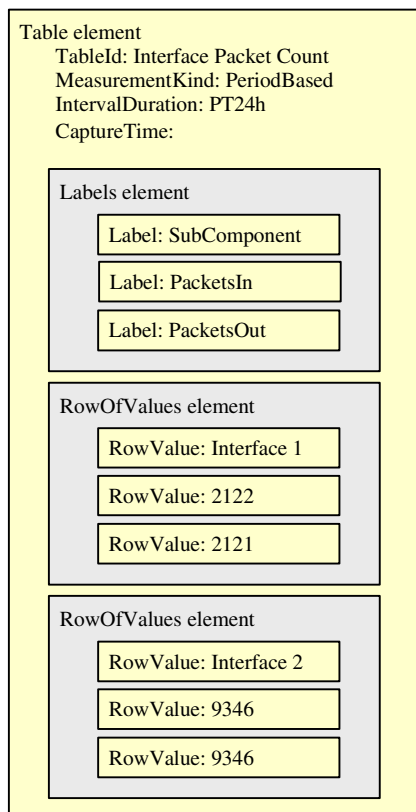
## Group Values Approach

Like the *SingleValues* element, the *GroupOfValues* element contains one or more individual measurements. However, there is an explicit relationship between the measurements in the element. They are part of a group of measurements with a collective identity. The *GroupId* value contains the identity of the group. As with the *SingleValues* element, the *GroupOfValues* element specifies the kind of measurements it contains and their interval duration. In addition, many of the individual measurement properties such as *CaptureTime* and *Reliability* are common to the group and these are encoded once in the *GroupOfValues* element itself rather than being encoded for each measurement in the individual *GroupValue* element.

**A GroupOfValues element containing two measurements****Table Approach**

The table approach encodes performance measurements in a tabular format. A Table element will contain a Labels element to hold the column headings for the table. The Table element will also contain one or more RowOfValues elements. Each RowOfValues element contains a row of individual data items with a one-to-one correspondence to the labels in the Labels element. One or more of the data items in a row may contain key information indicating the source of the measurements (that is, the data item will identify the sub-component from which the measurements were taken). This facet is indicated using the KeyOfRow property in the Label element.

A table may be explicitly identified using a TableId property or it may be an anonymous table with no name.

**A Table element containing two rows of values****Interface Packet Count Table**

| <u>SubComponent</u> | <u>PacketsIn</u> | <u>PacketsOut</u> |
|---------------------|------------------|-------------------|
| Interface 1         | ----             | ----              |

**Top Level Properties**

The performance measurements encoded in the common format constitute an XML string. This set of values will have high level properties in common. These are captured in the PMFile element. The term 'file' as used below is intended to designate the XML string containing the performance measurements.

**MeasurementCategory:** This property describes the type of measurements contained within the PM file (its value is always "PM" indicating the file contains performance measurements).

**PMReportType:** This describes the type of performance measurement report contained in the file (for example, this property could be used in the case where it is desired to distinguish between different types of PM reports).

**FileCreationTime:** This specifies the date/time when the PM file was created.

**FileSchema:** The FileSchema contains information which describes the format of a source non-CPR format PM file or the mapping file used to translate the source file into the common format.

FileSequenceNumber: The position of this file in some sequence of related PM files.

EarliestStartTime: This is set to the start time of the earliest measurement contained in the file.

LatestCaptureTime: This is set to the capture time of the latest measurement in the file.

#### PM File element contents

|                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PMFile element<br>MeasurementCategory:<br>ReportType:<br>FileCreationTime:<br>FileSequenceNumber:<br>EarliestStartTime:<br>LatestCaptureTime:<br>ValueTypeDefault:<br>MaxValueDefault<br>RegisterTypeDefault: |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Default Values

ValueType, MaxValue and RegisterType are three properties which may be specified for a measurement (See Measurement Descriptors on page 11). It is possible to set defaults for these values in the file using the ValueTypeDefault, MaxValueDefault and RegisterTypeDefault properties in the top-level *PMFile* element. The scope of these default values is the entire PM file.

It is also possible to specify one or more of ValueType, MaxValue and RegisterType for each *SingleValue* element, each *GroupValue* element or each *Label* element (contained in a *Table* element). This local specification overrides the default value in *PMFile* for the particular element which contains the local specification.

If the property is not locally specified in the *SingleValue*, *GroupValue* or *Label* element, then the default value specified in the *PMFile* element is used.

If a default property is not specified in the *PMFile* element, then the following implicit default values are assumed. These implicit values function as if they were explicitly specified in *PMFile*.

RegisterTypeDefault: "counter"

ValueTypeDefault: "integer"

MaxValueDefault: 4,294,967,295 (that is,  $2^{32} - 1$ )



**Optionality**

It is possible to qualify a performance measurement with very many properties as shown above. Most of these properties are optional and are used in specific technologies or are needed to accommodate specific product performance management practices.

The following is the minimum set of properties required to identify a performance measurement. These are the required properties in a PM file:

**PMFile Element:** MeasurementCategory

**System Element:** SystemId

**Entity:** EntityId

**SubEntity:** SubEntityId

**SingleValues Element:** MeasurementKind

**SingleValue Element:** MeasureId; Value; CaptureTime

**GroupOfValues Element:** GroupId; CaptureTime; MeasurementKind

**GroupValue Element:** MeasureId; Value

**Table Element:** CaptureTime; MeasurementKind

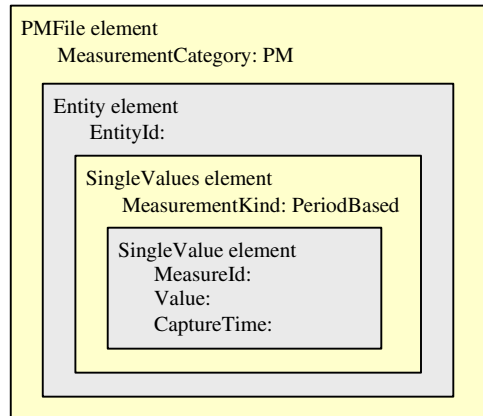
**Labels Element:** N/A

**Label Element:** N/A

**RowOfValues Element:** N/A

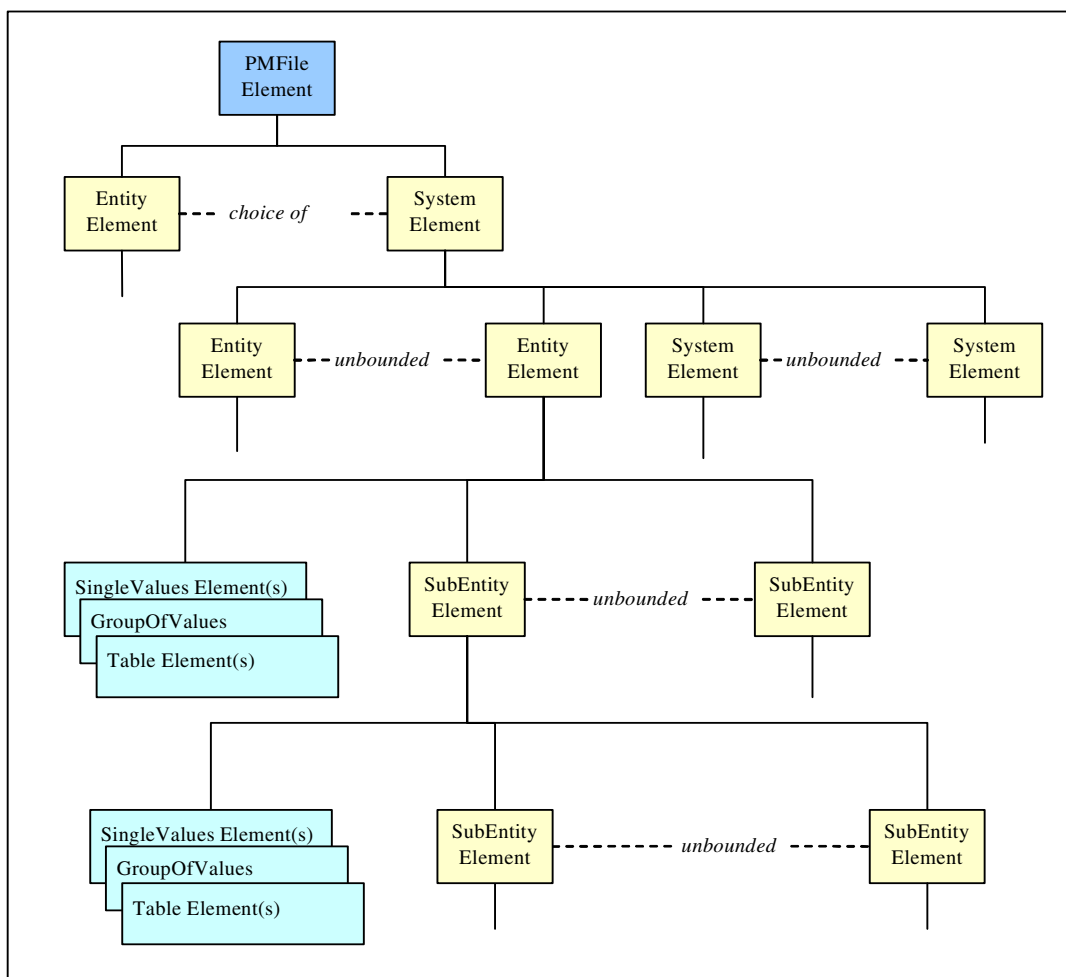
**RowValue Element:** Value

So a minimal CPR file would look like this:

**Minimal Common Record Performance Record file**

The figure below shows the hierarchical relationship of the major XML elements in the common performance record.

### Hierarchy of the major XML elements



### Attribute and Element Encoding

In the common performance record format some information is encoded as element data while other information is encoded using attributes. The approach followed is that attributes are used to encode metadata while elements are used for instance values.

Metadata is data which describes or qualifies some piece of information in terms of its class. So, in the common performance record, the *MeasurementKind* property differentiates between period-based measurements and snapshot measurements. This property is coded as an attribute.

Data which identifies or describes a specific instance of information rather than a class of information is encoded using an element. So the *CaptureTime*

property describes the time instant when a specific measurement was taken and so is not metadata. It is encoded as an element.

It also needs to be mentioned that the common performance record format adopts the approach of encoding the measurement name or label using an XML element. For instance:

**Example 1:** `<MeasureId> numberOfPackets </MeasureId>`

This is in contrast to the approach of directly coding the measurement name as an element tag:

**Example 2:** `<numberOfPackets> </numberOfPackets>`

The requirement for the common performance record format is to have standard fields for measurement information which could be used across all of Nortel (see the Performance Strategy requirements on page 5). This has been achieved using the current approach as shown in Example 1 above.

In order to use a direct coding of the measurement name as the element tag (Example 2 above) would require alignment across Nortel on the identification and semantics of all performance measurements which could possibly be encoded in the common performance record format. This alignment task has not been undertaken yet. It is envisaged that upon completion of such a convergence, the common performance record would be able to evolve to use measurement identifiers as tag names.

An additional concern is sometimes raised concerning the use of tables in the common performance record format. From a theoretical viewpoint, these tables are considered to constitute a lower quality of XML encoding than other means of encoding the data. However the common performance record format has opted to allow a tabular representation of data for pragmatic reasons. Tabular format measurement data has been the norm in most products for many years. Many operations systems expect their performance data to arrive in this customary format. In addition, industry standards for performance measurements such as 3GPP (Third Generation Partnership Project) mandate the use of tables for transporting performance data.

### **Layout of Elements and Attributes in the Common Format**

The two figures below indicate which properties are expressed as elements and which are expressed via attributes. The figures represent one of many combinations of element types which are possible in the common performance record format. (Attributes are shown as *blue italicized* text. Elements are represented as boxes).

**Layout of elements & attributes in the Common Performance Record****PMFile***MeasurementCategory= ;ReportType= ;*

|                            |
|----------------------------|
| <b>FileCreationTime</b>    |
| <b>FileSchema</b>          |
| <b>FileSequenceNumber</b>  |
| <b>EarliestStartTime</b>   |
| <b>LatestCaptureTime</b>   |
| <b>ValueTypeDefault</b>    |
| <b>MaxValueDefault</b>     |
| <b>RegisterTypeDefault</b> |

**System***Type= ; Vendor= ;*

|                      |
|----------------------|
| <b>SystemId</b>      |
| <b>SystemSuppId1</b> |
| <b>AuditSource</b>   |

**Entity***Type= ; Version= ; Vendor= ;*

|                      |
|----------------------|
| <b>EntityId</b>      |
| <b>EntitySuppId1</b> |
| <b>EntityAddress</b> |

**SubEntity***Type= ;*

|                         |
|-------------------------|
| <b>SubEntityId</b>      |
| <b>SubEntitySuppId1</b> |
| <b>SubEntitySuppId2</b> |
| <b>SubEntitySuppId3</b> |

**SingleValues****GroupOfValues****Table**

## Layout of elements &amp; attributes in the CPR-F (cont'd)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------|--|-------|-----------|
| <b>SubEntity</b><br><i>Type= ;</i> <table border="1"> <tr><td>SubEntityId</td></tr> <tr><td>SubEntitySuppId1</td></tr> <tr><td>SubEntitySuppId2</td></tr> <tr><td>SubEntitySuppId3</td></tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     | SubEntityId                                                                                 | SubEntitySuppId1                                                                                                                                                                                                                                                                                                                                                                      | SubEntitySuppId2 | SubEntitySuppId3 |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| SubEntityId                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| SubEntitySuppId1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| SubEntitySuppId2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| SubEntitySuppId3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>SingleValues</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"> <tr><td>LastRecord</td></tr> </table> <table border="1"> <tr> <td colspan="2"> <b>SingleValue</b><br/> <i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> <tr><td>CaptureTime</td></tr> <tr><td>MeasureSuppId1</td></tr> </table> <table border="1"> <tr><td>Reliability</td></tr> <tr><td>ResetTime</td></tr> <tr><td>IntervalsCovered</td></tr> <tr><td>MonitoredTime</td></tr> </table> </td> </tr> </table>                                                                                                |                                                                     | LastRecord                                                                                  | <b>SingleValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> <tr><td>CaptureTime</td></tr> <tr><td>MeasureSuppId1</td></tr> </table> <table border="1"> <tr><td>Reliability</td></tr> <tr><td>ResetTime</td></tr> <tr><td>IntervalsCovered</td></tr> <tr><td>MonitoredTime</td></tr> </table> |                  | MeasureId        | Value                                                                                                                                               | CaptureTime                                                                                                                                                                                                                                           | MeasureSuppId1   | Reliability                                                         | ResetTime                                                                                                                                                                         | IntervalsCovered | MonitoredTime                                                                               |  |       |           |
| LastRecord                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>SingleValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> <tr><td>CaptureTime</td></tr> <tr><td>MeasureSuppId1</td></tr> </table> <table border="1"> <tr><td>Reliability</td></tr> <tr><td>ResetTime</td></tr> <tr><td>IntervalsCovered</td></tr> <tr><td>MonitoredTime</td></tr> </table>                                                                                                                                                                                                                                                                                              |                                                                     | MeasureId                                                                                   | Value                                                                                                                                                                                                                                                                                                                                                                                 | CaptureTime      | MeasureSuppId1   | Reliability                                                                                                                                         | ResetTime                                                                                                                                                                                                                                             | IntervalsCovered | MonitoredTime                                                       |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| MeasureId                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| CaptureTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| MeasureSuppId1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Reliability                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| ResetTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| IntervalsCovered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| MonitoredTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>GroupOfValues</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"> <tr><td>GroupId</td></tr> <tr><td>GroupSuppId1</td></tr> <tr><td>CaptureTime</td></tr> <tr><td>LastRecord</td></tr> <tr><td>Reliability</td></tr> </table> <table border="1"> <tr> <td colspan="2"> <b>GroupValue</b><br/> <i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> </table> <table border="1"> <tr><td>MeasureSuppId1</td></tr> <tr><td>ResetTime</td></tr> </table> </td> </tr> </table>                                                                                                          |                                                                     | GroupId                                                                                     | GroupSuppId1                                                                                                                                                                                                                                                                                                                                                                          | CaptureTime      | LastRecord       | Reliability                                                                                                                                         | <b>GroupValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> </table> <table border="1"> <tr><td>MeasureSuppId1</td></tr> <tr><td>ResetTime</td></tr> </table> |                  | MeasureId                                                           | Value                                                                                                                                                                             | MeasureSuppId1   | ResetTime                                                                                   |  |       |           |
| GroupId                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| GroupSuppId1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| CaptureTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| LastRecord                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Reliability                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>GroupValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> <table border="1"> <tr><td>MeasureId</td></tr> <tr><td>Value</td></tr> </table> <table border="1"> <tr><td>MeasureSuppId1</td></tr> <tr><td>ResetTime</td></tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     | MeasureId                                                                                   | Value                                                                                                                                                                                                                                                                                                                                                                                 | MeasureSuppId1   | ResetTime        |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| MeasureId                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| MeasureSuppId1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| ResetTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>Table</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"> <tr><td>TableId</td></tr> <tr><td>CaptureTime</td></tr> <tr><td>LastRecord</td></tr> <tr><td>Reliability</td></tr> </table> <table border="1"> <tr> <td colspan="2"> <b>Labels</b><br/> <table border="1"> <tr> <td>Label</td> <td><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td> </tr> </table> </td> </tr> </table> <table border="1"> <tr> <td colspan="2"> <b>RowOfValues</b><br/> <table border="1"> <tr> <td colspan="2"> <b>RowValue</b><br/> <table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table> </td> </tr> </table> </td> </tr> </table> |                                                                     | TableId                                                                                     | CaptureTime                                                                                                                                                                                                                                                                                                                                                                           | LastRecord       | Reliability      | <b>Labels</b><br><table border="1"> <tr> <td>Label</td> <td><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td> </tr> </table> |                                                                                                                                                                                                                                                       | Label            | <i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> | <b>RowOfValues</b><br><table border="1"> <tr> <td colspan="2"> <b>RowValue</b><br/> <table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table> </td> </tr> </table> |                  | <b>RowValue</b><br><table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table> |  | Value | ResetTime |
| TableId                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| CaptureTime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| LastRecord                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Reliability                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>Labels</b><br><table border="1"> <tr> <td>Label</td> <td><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     | Label                                                                                       | <i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i>                                                                                                                                                                                                                                                                                                                   |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Label                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>RowOfValues</b><br><table border="1"> <tr> <td colspan="2"> <b>RowValue</b><br/> <table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table> </td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                     | <b>RowValue</b><br><table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table> |                                                                                                                                                                                                                                                                                                                                                                                       | Value            | ResetTime        |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| <b>RowValue</b><br><table border="1"> <tr> <td>Value</td> <td>ResetTime</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     | Value                                                                                       | ResetTime                                                                                                                                                                                                                                                                                                                                                                             |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |
| Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ResetTime                                                           |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  |                                                                                                                                                     |                                                                                                                                                                                                                                                       |                  |                                                                     |                                                                                                                                                                                   |                  |                                                                                             |  |       |           |

## Common Performance Record Comma Separated Values (CSV) format

The following is an abbreviated generic description of the CPR CSV format. The CPR format is designed to be parsable into or from CPR XML format without loss of information.

The following elements are treated as ‘blocks’: PMFile, System, Entity, SubEntity, Table, GroupOfValues, SingleValues.

The start and end of these elements are marked or indicated in CSV with unique ‘Begin’ and ‘End’ markers. The format of an element block is as follows:

`{element_name}=Begin`

... CSV heading row for attributes & child text element nodes children of <element> ...

... CSV value row for attributes & child text element nodes of <element> ...

... recursive handling of all complex sub-elements (element children that are not text nodes) ...

`{element_name}=End`

For each element, a specific property (attribute or text element) has been selected as the identifier for that element. The identifier will always appear as the *first* of the comma separated values in the CSV representation of that element.

Values that contain commas are enclosed in double quotes in CSV format.

### Element blocks and identifiers

| Element     | Block? | Identifier          |
|-------------|--------|---------------------|
| PMFile      | Y      | MeasurementCategory |
| System      | Y      | SystemId            |
| Entity      | Y      | EntityId            |
| SubEntity   | Y      | SubEntityId         |
| Table       | Y      | TableId             |
| Labels      | N      | Label               |
| RowOfValues | N      | RowValue/Value      |

| Element       | Block? | Identifier      |
|---------------|--------|-----------------|
| GroupOfValues | Y      | GroupId         |
| GroupValue    | N      | MeasureId       |
| SingleValues  | Y      | MeasurementKind |
| SingleValue   | N      | MeasureId       |

As not all identifiers are in fact mandatory, when the identifier is not found in the XML being translated the value of `_Unnamed_` is used in the CSV output where the value of the identifier would normally appear.

For reference, “[Layout of elements & attributes in the Common Performance Record](#)” and “[Layout of elements & attributes in the CPR-F \(cont'd\)](#)” (which had been presented earlier) are shown below. The two figures indicate which properties are considered identifiers for each element, and therefore will always appear as the first comma separated value within a row. (Mandatory identifiers are shown in **red**. Optional identifiers are shown in **blue**. Attributes are shown as *italicized* text. Elements are represented as boxes.)



**Layout of Elements & Attributes in the CPR-F****PMFile***MeasurementCategory= ;ReportType= ;*

|                     |
|---------------------|
| FileCreationTime    |
| FileSchema          |
| FileSequenceNumber  |
| EarliestStartTime   |
| LatestCaptureTime   |
| ValueTypeDefault    |
| MaxValueDefault     |
| RegisterTypeDefault |

**System***Type= ; Vendor= ;*

|               |
|---------------|
| SystemId      |
| SystemSuppId1 |
| AuditSource   |

**Entity***Type= ; Version= ; Vendor= ;*

|               |
|---------------|
| EntityId      |
| EntitySuppId1 |
| EntityAddress |

**SubEntity***Type= ;*

|                  |
|------------------|
| SubEntityId      |
| SubEntitySuppId1 |
| SubEntitySuppId2 |
| SubEntitySuppId3 |

**SingleValues****GroupOfValues****Table**

## Layout of elements &amp; attributes in the CPR-F (cont'd)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------|-------------------------|-------------------------|--------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|-------------------------|-----------------------|----------------------|--|--------------|------------------|
| <b>SubEntity</b><br><i>Type= ;</i> <table border="1"><tr><td><b>SubEntityId</b></td></tr><tr><td><b>SubEntitySuppId1</b></td></tr><tr><td><b>SubEntitySuppId2</b></td></tr><tr><td><b>SubEntitySuppId3</b></td></tr></table>                                                                                                                                                                                                                                                                                                                                                                               | <b>SubEntityId</b>      | <b>SubEntitySuppId1</b>                                                       | <b>SubEntitySuppId2</b> | <b>SubEntitySuppId3</b> |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SubEntityId</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SubEntitySuppId1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SubEntitySuppId2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SubEntitySuppId3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SingleValues</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"><tr><td><b>LastRecord</b></td></tr></table> <table border="1"><tr><td colspan="2"><b>SingleValue</b><br/><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td></tr><tr><td><b>MeasureId</b></td><td><b>Reliability</b></td></tr><tr><td><b>Value</b></td><td><b>ResetTime</b></td></tr><tr><td><b>CaptureTime</b></td><td><b>IntervalsCovered</b></td></tr><tr><td><b>MeasureSuppId1</b></td><td><b>MonitoredTime</b></td></tr></table>                                                                      | <b>LastRecord</b>       | <b>SingleValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> |                         | <b>MeasureId</b>        | <b>Reliability</b> | <b>Value</b>                                                                 | <b>ResetTime</b>                                                                    | <b>CaptureTime</b> | <b>IntervalsCovered</b> | <b>MeasureSuppId1</b> | <b>MonitoredTime</b> |  |              |                  |
| <b>LastRecord</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>SingleValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>MeasureId</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Reliability</b>      |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>ResetTime</b>        |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>CaptureTime</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>IntervalsCovered</b> |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>MeasureSuppId1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>MonitoredTime</b>    |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>GroupOfValues</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"><tr><td><b>GroupId</b></td></tr><tr><td><b>GroupSuppId1</b></td></tr><tr><td><b>CaptureTime</b></td></tr><tr><td><b>LastRecord</b></td></tr><tr><td><b>Reliability</b></td></tr></table> <table border="1"><tr><td colspan="2"><b>GroupValue</b><br/><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td></tr><tr><td><b>MeasureId</b></td><td><b>MeasureSuppId1</b></td></tr><tr><td><b>Value</b></td><td><b>ResetTime</b></td></tr></table>                                                              | <b>GroupId</b>          | <b>GroupSuppId1</b>                                                           | <b>CaptureTime</b>      | <b>LastRecord</b>       | <b>Reliability</b> | <b>GroupValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> |                                                                                     | <b>MeasureId</b>   | <b>MeasureSuppId1</b>   | <b>Value</b>          | <b>ResetTime</b>     |  |              |                  |
| <b>GroupId</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>GroupSuppId1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>CaptureTime</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>LastRecord</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Reliability</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>GroupValue</b><br><i>Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>MeasureId</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>MeasureSuppId1</b>   |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>ResetTime</b>        |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Table</b><br><i>MeasurementKind= ; IntervalDuration= ;</i> <table border="1"><tr><td><b>TableId</b></td></tr><tr><td><b>CaptureTime</b></td></tr><tr><td><b>LastRecord</b></td></tr><tr><td><b>Reliability</b></td></tr></table> <table border="1"><tr><td colspan="2"><b>Labels</b></td></tr><tr><td colspan="2"><b>Label</b><br/><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i></td></tr></table> <table border="1"><tr><td colspan="2"><b>RowOfValues</b></td></tr><tr><td colspan="2"><b>RowValue</b></td></tr><tr><td><b>Value</b></td><td><b>ResetTime</b></td></tr></table> | <b>TableId</b>          | <b>CaptureTime</b>                                                            | <b>LastRecord</b>       | <b>Reliability</b>      | <b>Labels</b>      |                                                                              | <b>Label</b><br><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i> |                    | <b>RowOfValues</b>      |                       | <b>RowValue</b>      |  | <b>Value</b> | <b>ResetTime</b> |
| <b>TableId</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>CaptureTime</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>LastRecord</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Reliability</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Labels</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Label</b><br><i>KeyOfRow= ; Unit= ; ValueType= ; MaxValue= ; RegisterType= ;</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>RowOfValues</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>RowValue</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |
| <b>Value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>ResetTime</b>        |                                                                               |                         |                         |                    |                                                                              |                                                                                     |                    |                         |                       |                      |  |              |                  |

**CSV Table example**

```

PMFile=Begin
PM,commonFormat.xsd,2004-06-23T13:01:14EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.165.168.120,CICM

Table=Begin
.iso.org.dod.internet.mgmt.mib-
  2.rmmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,5
,2004-06-23T13:00:00EST
usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,usrHi
storyControlOwner
900,5,1,CICM-120A
Table=End

Table=Begin
.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerfR
efMIB.nnPerfMetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot,5,200
4-06-23T13:00:02EST
nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetricGroup,n
nPerfMetricName,nnPerfMetricRefIndex
0,2,1,CICM,ActiveConnections,5
0,2,1,CICM,PercentageCpuUsed,4
0,2,1,CICM,PercentageMemoryUsed,3
0,2,1,CICM,NumberOfLogs,2
0,2,1,CICM,ActiveSessions,1
Table=End
Entity=End
System=End
PMFile=End

```

---



---

Table attributes & text elements values

---



---



---



---

Labels attributes & text elements values

---



---



---



---

RowOfValues attributes & text elements

---



---

**CSV SingleValues example**

```

PMFile=Begin
PM,commonFormat.xsd,2004-06-23T17:30:21EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.174.74.179,Session Server

SingleValues=Begin
Snapshot,5
sysDescr,2004-06-23T17:26:20EST,.iso.org.dod.internet.mgmt.mib-2.system,Linux sp2k-1
2.4.22-samxts #1 Thu May 13 01:48:09 EDT 2004 i686,Valid
snmpOutPkts,2004-06-23T17:26:20EST,.iso.org.dod.internet.mgmt.mib-2.snmp,8639,Valid
snmpInBadVersions,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInBadCommunityNames,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,1,Valid
snmpInTotalReqVars,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,9689,Valid
snmpOutTraps,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInBadCommunityUses,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInPkts,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,8652,Valid
snmpInTotalSetVars,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInASNParseErrs,2004-06-23T17:26:21EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
hrSystemDate,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,0,Valid
hrSystemUptime,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,1315598,Valid
hrSystemProcesses,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,170,Valid
snmpSilentDrops,2004-06-23T17:26:22EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
SingleValues=End

Entity=End
System=End
PMFile=End

```

## Note on CSV Examples

All CSV examples are with header information suppressed by default. This is the default behavior for all CSV performance reports in the SN07 release.

To have the header information included in the CSV performance reports, the user must change the “suppress-headers” option from “true” to “false”. The “suppress-headers” option is located in the `cprxml2csv.properties` file in the `/opt/nortel/iems/current/resources` directory.

CSV with header information example:

```
PMFile=Begin
MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime
PM,commonFormat.xsd,2004-06-23T12:45:04EST
System=Begin
SystemId
NortelNetworks/IEMS
Entity=Begin
EntityId,Type
47.165.168.120,CICM
Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
.iso.org.dod.internet.mgmt.mib-
2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,5,2004-06-
23T12:40:00EST
Label,Label,Label,Label
usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,usrHistoryContr
olOwner
Value,Value,Value,Value
900,5,1,CICM-120A
Table=End

Table=Begin
TableId,MeasurementKind,IntervalDuration,CaptureTime
.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerfRefMIB.nnPerf
MetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot,5,2004-06-23T12:40:01EST
Label,Label,Label,Label,Label,Label
nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetricGroup,nnPerf
MetricName,nnPerfMetricRefIndex
```

```
Value,Value,Value,Value,Value,Value
0,2,1,CICM,ActiveConnections,5
0,2,1,CICM,PercentageCpuUsed,4
0,2,1,CICM,PercentageMemoryUsed,3
0,2,1,CICM,NumberOfLogs,2
2662732,2,1,CICM,ActiveSessions,1
Table=End
Entity=End
System=End
PMFile=End
```

**Note:** Collected performance files (in CSV and XML format) can be forwarded from the IEMS server to an OSS system by configuring an IEMS transfer job. Transfer jobs can be configured to forward these files using FTP or the secure SFTP protocols.

## Inventory/Topology Interface

### Overview

SN07 provides the ability to perform an ACSII dump of provisioned network inventory/topology information for use by 3rd party systems. The snapshot is initiated from the IEMS user interface and outputs full configuration details of the component hierarchy to the IEMS server as a text file. By default, the data is placed in the file `/opt/nortel/iems/current/logs/inventoryData.txt`. This information can then be retrieved and processed by third parties. For a full description of the format and content of these topology listings see the section titled “Dumping Inventory Details” in:

NN10330-511 - Integrated EMS Configuration Management

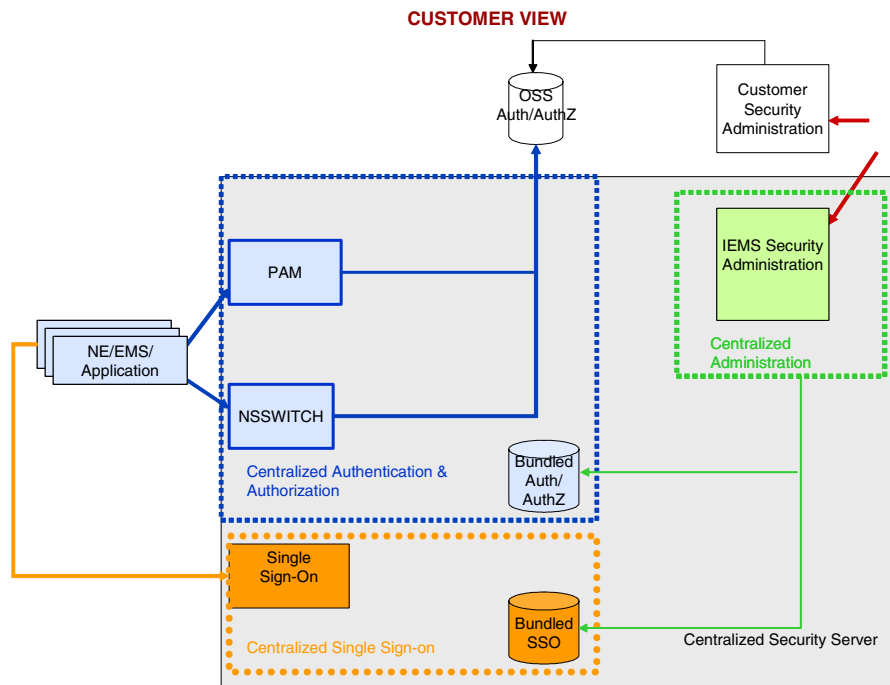
## Network Security

### Centralized Security Administration (Network Security )

#### Overview

The Integrated EMS provides a comprehensive security architecture based on PAM (Pluggable Authentication Module) and NSSwitch (Name Services Switch). The following figure shows the Nortel Networks VoIP Security Architecture.

## Centralized Security Architecture



### Features

This architecture provides the following features:

- Support for central administration of user accounts
- Support for central authentication: authentication of centrally administered user accounts is performed by the central security server(s)
- Support for central authorization: authorization information needed to support user access control is securely managed and provided by the central security server(s)
- Support for Single Sign-on (SSO)- This capability enables the user to access multiple network elements, applications, and features from a single login session. Session information for a user is shared between IEMS and network elements supporting SSO.
- Customer Plug-ability - provides the ability for third parties to plug-in its own Authentication/Authorization solutions.

The following table lists the SN07 devices and applications supporting these features:

## Authentication and Authorization

### Central Security Administration -Supported Devices

| Network Element/EMS Platforms                                                                                                                                                                                                                                                                                                                      | Device Authentication Method | Device Reference Documentation                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------|
| USP                                                                                                                                                                                                                                                                                                                                                | HTTPS                        | NN10159-611 - USP Administration and Security                     |
| PP 8600                                                                                                                                                                                                                                                                                                                                            | RADIUS                       | 314724-B - Configuring and Managing Security                      |
| SSPFS<br><br>Includes:<br>CS2000 Management Tools<br><br>( GWC Mgr, SAM21 Mgr, UAS Mgr, LMM, TMM, OSSGate, LTM, Trunk Provisioning, Line Provisioning, V5.2, Data Audit, Nodes Provisioning, Carrier EndPoint Provisioning, ADSL Flowthrough Provisioning, Batch Lines Provisioning )<br><br>APS<br><br>NPM<br><br>MG9000 Manager, MG9000 Mid-Tier | PAM                          | NN10281-600 - ATM/IP Administration and Security                  |
| IEMS                                                                                                                                                                                                                                                                                                                                               | HTTPS                        | NN10336-611 - IEMS Administration and Security                    |
| CICM Manager                                                                                                                                                                                                                                                                                                                                       | HTTPS                        | NN10027-111 - CICM Series 2.5 Product and Technology Fundamentals |

Network Elements and Applications can be configured to use Centralized Security Administration. To enable a device to use Centralized Security Administration, the device must be configured to use the IEMS central security server to authenticate users and access user profile information.

The IEMS Central Security Server uses PAM (Pluggable Authentication Module) to process the authentication requests and NSSwitch (Name Services Switch) to return user privilege and user profile information to Network Elements and Applications.

#### PAM Services

PAM provides authentication services for clients in the managed network. Customers have the option to use the PAM services that come pre-bundled

with the security server or to provide their own. See document: 0000007-24-1464 - *IEMS Installation Manual* for details on configuring PAM.

When a request is forwarded to the IEMS PAM SPI (PAM Service Provider), then authentication is performed against data provisioned and administered by the Security Administration application on the IEMS client.

Conversely, when a PAM services are provided by a customer, incoming authentication requests are forwarded to the customer SPI for resolution against their remote database.

### **NSSwitch Services**

NSSwitch provides services to obtain group and profile information for users. Centralized access to network resources depends on the definition of a common set of user groups to map security access for each user. The Nortel Networks solution provides a number of predefined user groups to address the full range of OAM&P functions required across a managed network. For a full discussion of these user groups and their categorization, see *NN10281-600 - ATM/IP Administration and Security*.

Customers can configure NSSwitch to use the service pre-bundled with IEMS or, as with PAM services, provide their own service remotely. When the pre-bundled service is used, group and user profile information is administered from command-line Unix interface on the IEMS server. See *NN10336-611 - IEMS Administration and Security*.

If NSSwitch services are configured on a third party system, it is important to note that this security solution supports *only* the NSSwitch group and password databases. Although other database types may be defined in NSSwitch, they are not used by the central security feature.

See the References section for additional information on PAM and NSSwitch.

### **Single Sign-on (SSO)**

The Single Sign-on feature allows users transparent access to multiple network elements and applications through a single login.

Once a user has been successfully authenticated for the first time (by user login), an SSO token is created by the IEMS security server that will be used to authenticate the same user on subsequent login attempts.

Network Elements and Applications use a Single Sign-On (SSO) interface on the Central Security Server to request SSO tokens whenever authentication is required.

For full details on the interface specification, see *NN10336-611 - IEMS Administration and Security*.



## Configuring Security Administration

### Managing Accounts

It is recommended practice that all user accounts be managed centrally with the following exceptions:

- accounts required to provide emergency access to a device.
- super user accounts (for example ‘root’ users)

There are two steps involved in adding a centrally managed user:

- 1 Add a user account on the Succession IEMS Security Server.
- 2 On the IEMS (security) server, add a user account and using Unix Administration tools.

**Note:** Detailed procedures for these steps can be found in *NN10336-611 - IEMS Administration and Security*.

### Configuring Centralized Security Administration on NEs and EMS Platforms

An OSS must configure NEs and EMS Platforms to use centralized security administration. To enable centralized security administration on a device, the OSS must follow the procedures outlined for the device. For security configuration information for a specific device, look for its listing in the “Supported Devices” section of this document.

**Note:** Detailed procedures for these steps can be found in *NN10336-611 - IEMS Administration and Security*.

# IEMS Suported Devices

The sections that follow contain a directory to provide customers a quick reference to device-specific information on faults, performance, interfaces, and other user documentation. The intended purpose is to allow customers to correlate IEMS Northbound interface events and behaviors with their originating source.

Each device in the listings below provide sample logs from all four Northbound fault streams: SCC2, NTSTD, Syslog, and SNMP. With the exception of the SNMP fault feed, these samples are shown as they appear from the Northbound interfaces.

## Understanding SNMP Fault samples

Since SNMP has no inherent display format, each event is presented in a format that displays the short name of the MIB variables populated by the event:

*<short MIB variable Name> => <value>*

for example:

**nnExtAlarmActiveResourceDescription =>**  
IEMS=ncOrtp2127.us.nortel.com-MS2000;

The following table provides a mapping of the displayed “short” variable name to its full form as well as its associated OID.

**OID Short Name Mapping in SNMP Log Samples**

|            |                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------|
| Short name | <b>sysUpTime</b>                                                                                 |
| Long name  | <b>system.sysUpTime.0</b>                                                                        |
| OID        | .1.3.6.1.2.1.1.3                                                                                 |
| Short name | <b>snmpTrapOID.0</b>                                                                             |
| Long name  | <b>.iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0</b>    |
| OID        | .1.3.6.1.6.3.1.1.4.1                                                                             |
| Short name | <b>alarmActiveResourceId</b>                                                                     |
| Long name  | <b>alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveResourceId</b> |
| OID        | .1.3.6.1.2.1.111.1.2.2.1.10                                                                      |
| Short name | <b>alarmActiveDateAndTime</b>                                                                    |

|            |                                                                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long name  | <b>alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveDateAndTime</b>                                                            |
| OID        | .1.3.6.1.2.1.111.1.2.2.1.2                                                                                                                                   |
| Short name | <b>alarmActiveDescription</b>                                                                                                                                |
| Long name  | <b>alarmMIB.alarmObjects.alarmActive.alarmActiveTable.alarmActiveEntry.alarmActiveDescription</b>                                                            |
| OID        | .1.3.6.1.2.1.111.1.2.2.1.11                                                                                                                                  |
| Short name | <b>nnExtAlarmActiveEventType</b>                                                                                                                             |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveEventType</b>            |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.1                                                                                                                                |
| Short name | <b>nnExtAlarmActiveProbableCause</b>                                                                                                                         |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveProbableCause</b>        |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.2                                                                                                                                |
| Short name | <b>nnExtAlarmActiveAdditionalText</b>                                                                                                                        |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveAdditionalText</b>       |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.3                                                                                                                                |
| Short name | <b>nnExtAlarmActiveDocumentationPointer</b>                                                                                                                  |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveDocumentationPointer</b> |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.4                                                                                                                                |
| Short name | <b>nnExtAlarmActiveResourceDescription</b>                                                                                                                   |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveResourceDescription</b>  |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.5                                                                                                                                |
| Short name | <b>nnExtAlarmActiveManualClear</b>                                                                                                                           |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveManualClear</b>          |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.6                                                                                                                                |

|            |                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short name | <b>nnExtAlarmActiveSequenceNumber</b>                                                                                                                                                        |
| Long name  | <b>enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmActiveTable.nnExtAlarmActiveEntry.nnExtAlarmActiveSequenceNumber</b>                                       |
| OID        | .1.3.6.1.4.1.562.29.6.1.1.1.7                                                                                                                                                                |
| Short name | <b>nnExtAlarmMessageResource</b>                                                                                                                                                             |
| Long name  | <b>.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageResource</b>            |
| OID        | .1.3.6.1.4.1.562.29.6.1.3.1.1                                                                                                                                                                |
| Short name | <b>nnExtAlarmMessageResourceDescription</b>                                                                                                                                                  |
| Long name  | <b>iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageResourceDescription</b>  |
| OID        | .1.3.6.1.4.1.562.29.6.1.3.1.2                                                                                                                                                                |
| Short name | <b>nnExtAlarmMessageDateAndTime</b>                                                                                                                                                          |
| Long name  | <b>iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageDateAndTime</b>          |
| OID        | .1.3.6.1.4.1.562.29.6.1.3.1.3                                                                                                                                                                |
| Short name | <b>nnExtAlarmMessageDocumentationPointer</b>                                                                                                                                                 |
| Long name  | <b>iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageDocumentationPointer</b> |
| OID        | .1.3.6.1.4.1.562.29.6.1.3.1.4                                                                                                                                                                |
| Short name | <b>nnExtAlarmMessageInfo</b>                                                                                                                                                                 |
| Long name  | <b>iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nnExtAlarmMIB.nnExtAlarmObjects.nnExtAlarmMessageTable.nnExtAlarmMessageEntry.nnExtAlarmMessageInfo</b>                 |
| OID        | .1.3.6.1.4.1.562.29.6.1.3.1.5                                                                                                                                                                |

## Call Agent Core

This section contains IEMS Northbound log samples and device documentation references for the Call Agent Core.

## Call Agent Core Fault Interface

### Fault documentation for Call Agent Core :

- NN10275-909 - Succession fault Management logs Reference
- NN10083-911 - Communication Server 2000 Fault Management

### DMS Standard (North America)

- 297-8021-840 - North American DMS100 Log Report Reference Manual Volumes 1 to 8

### International Succession

- 297-9051-8401 - DMS100 Log Report Reference Manual Volumes 1 to 7

### Fault Mapping for Call Agent Core

The following criteria can be used for looking up information on specific faults for Call Agent Core.

#### Fault Correlation for Call Agent Core

| NB format -><br>Device/EM | SCC2                    | NTSTD                   | SNMP                    | Syslog                  | Document Reference                                      |
|---------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------------------------------------|
| <b>Call Agent Core</b>    | log name and log number | log name and log number | log name and log number | log name and log number | see section “Fault documentation for Call Agent Core :” |

### Northbound Fault Formats for Call Agent Core

#### SCC2

The following is an example of a Call Agent Core log in SCC2 format:

```
56 LINE138 3778 INFO TRMT
      SLOA 21 1 02 01      DN 2145202111
      TREATMENT SET = BUSY      CALLED NO =      5202111
      CALLID= 01BE 036D
```

#### NTSTD

The following is an example of a Call Agent Core log in NTSTD format:

```

RTPU07BR      LINE138 Jan23 16:56:30 3778 INFO TRMT
                SLOA 21 1 02 01      DN 2145202111
                TREATMENT SET = BUSY   CALLED NO =                5202111
                CALLID= 01BE 036D

```

## SNMP

The following is an example of a Call Agent Core log in SNMP format:

```

system.sysUpTime.0 => 19:51:46
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmMessageDateAndTime => 2004-1-23,11:56:30.0,
nnExtAlarmMessageDocumentationPointer => LINE138
nnExtAlarmMessageInfo => 56 LINE138 3778 INFO TRMT                SLOA 21 1 02 01
DN 2145202111
                TREATMENT SET = BUSY   CALLED NO =                5202111
                CALLID= 01BE 036D

```

## Syslog

The following is an example of a Call Agent Core log in Syslog format:

```

Feb 23 11:57:27 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=3835~~ LINE138 NONE INFO
TRMT^M      SLOA 21 1 02 01      DN 2145202111 ^M      TREATMENT SET = BUSY   CALLED
NO =                5202111 ^M      CALLID= 01BE 036D

```

## Performance

### OM and PM Documentation references for Call Agent Core

- NN10149-711 - Communications Server 2000 Performance Management

#### DMS Standard (North America)

- 297-8021-814P1 - North American DMS-100 Operational Measurements Reference Manual Volumes 1 to 6

#### International Succession

- 297-9051-8141 - DMS-100 Family Operational Measurements Reference Manual Volumes 1 to 6

## Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

Performance measurements for Call Agent Core are available from the CS2K Core Manager. See NN10149-711 - Communications Server 2000 Performance Management for more information.

### XML

The following is an example of Performance data for Call Agent Core in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

### CSV

The following is an example of Performance data for Call Agent Core in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

## GUI/CLUI Documentation for Call Agent Core

The Call Agent Core provides both command-line and MAP-based interfaces accessed through the CS2000 Core Manager.

### GUI/CLUI Launching and User procedures

- NN10018-111 - CS2000 Core Manager Basics  
see section “Accessing the Core”

### Related documents

- NN10197-111 - Communication Server 2000 Basics
- NN10193-511 - Communication Server 2000 Configuration Management
- NN10127-811 - Communication Server 2000 Accounting Management
- NN10171-611 - Communication Server 2000 Security and Administration
- 297-5051-921 - SuperNode Data Manager DDMS ASCII CI Gateway User Guide
- 297-5161-022P1 - Advanced Intelligent Network Service Enablers SIG Volumes 1 to 3
- 297-8021-350P1 - North American DMS-100 Translations Guide Volumes 1 to 25

- 297-8021-351P1 - DMS-100 Data Schema Reference Manual (volumes 1 to 12)
- 297-8021-801 - DMS-100 Feature Guide
- 297-8021-808P1 - DMS-100 SERVORD Reference Manual
- 297-8021-808P2 - DMS-100 SERVORD Reference Manual
- 297-8021-814P1 - DMS-100 Operational Measurements Reference Manual (volumes 1 to 6)
- 297-8021-840P1 - DMS-100 Logs Reference Manual (volumes 1 to 6)
- 297-8021-855P1 - DMS-100 Office Parameters Reference Manual (volumes 1 to 3)
- 297-8991-810 - XA-Core Reference Manual

## Call Agent Platform

This section contains IEMS Northbound log samples and device documentation references for the Call Agent Platform.

### Call Agent Platform Fault Interface

#### Fault documentation for Call Agent Platform :

- NN10087-911 - Call Agent Fault Management

#### Fault Mapping for Call Agent Platform

The following criteria can be used for looking up information on specific faults for Call Agent Platform.

#### Fault Correlation for Call Agent Platform

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                            |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------------------------------|
| Call Agent<br>Platform    | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10087-911<br>Call Agent<br>Fault<br>Management |

### Northbound Fault Formats for Call Agent Platform

#### SCC2

The following is an example of a Call Agent Platform log in SCC2 format:



```
* 41 CCA 355 6064 FLT Jam Inactive Unit
Unit Number : 0, ACTIVE
Description : Inactive JAMMED
```

## NTSTD

The following is an example of a Call Agent Platform log in NTSTD format:

```
COMPACT06BT * CCA355 JAN21 18:41:14 1864 FLT Jam Inactive Unit
Unit Number : 0, ACTIVE
Description : Inactive JAMMED
```

## SNMP

The following is an example of a Call Agent Platform log in SNMP format:

```
system.sysUpTime.0 => 1 day, 4:49:05
snmpTrapOID.0 => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=Unavailable;Unit Number : 0, ACTIVE
Description : Inactive JAMMED
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CCA 355
nnExtAlarmActiveResourceDescription => IEMS=47.142.128.16-CS2K-Mgr;
nnExtAlarmActiveManualClear => 3
nnExtAlarmActiveSequenceNumber => 9104
```

## Syslog

The following is an example of a Call Agent Platform log in Syslog format:

```
Jan 21 19:41:06 wnc0s0qh IEMS: _V2_~I=~H=wnc0s0qh~A=IEMS~S=2860~~ CCA355 MINOR FLT
Jam Inactive Unit^M Unit Number : 0, ACTIVE ^M Description : Inactive JAMMED
```

## Performance

### OM and PM Documentation references for Call Agent Platform

- NN10153-711 - Call Agent Performance Management

### Northbound OM/PM Formats

Performance measurements for Call Agent Platform are available only from the Call Agent Manager interface. See NN10153-711 - Call Agent Performance Management for more information.

#### XML

The following is an example of Performance data for Call Agent Platform in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

#### CSV

The following is an example of Performance data for Call Agent Platform in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

## GUI/CLUI Documentation for Call Agent Platform

### GUI Launching and User procedures

- NN10175-611 - Call Agent Administration and Security

### Related documents

- NN10023-111 - Call Agent Basics
- NN10109-511 - Call Agent Configuration Management

## Centrex IP Call Manager (CICM)

This section contains IEMS Northbound log samples and device documentation references for the CICM.

## CICM Fault Interface

### Fault documentation for CICM :

- NN10334-911 - IEMS Fault Management

### Fault Mapping for CICM

The following criteria can be used for looking up information on specific faults for CICM.

#### Fault Correlation for CICM

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                     |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------|
| CICM                      | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10334-911<br>- IEMS Fault<br>Management |

## Northbound Fault Formats for CICM

### SCC2

The following is an example of a CICM log in SCC2 format:

\* 02 CICM359 0001 FLT CICM Fault

Location: 47.165.168.120

Notification Id: 7

State: Raised

Category: equipment

Cause: equipmentMalfunction(15)

Time: Jun 17 09:02:08 2004

Component Id: CICM=CICM-120A;NodeType=Cicm;Component=Card;Card=7

Specific Problem: Card 7 has an alarm.

Description: Card Alarm

?

\*\*02 CICM500 0002 FLT CICM Fault

Location: 47.165.168.120

Notification Id: 5

State: Raised

Category: equipment

Cause: unspecifiedReason(118)

Time: Jun 17 09:02:08 2004

Component Id: CICM=CICM-120A;NodeType=Cicm;Component=Chassis

Specific Problem: Chassis card state change report for slot 7 in state

1

Description: Chassis Card State Change

?

**\*\*02 CICM339 0003 FLT CICM Fault**

Location: 47.165.168.120

Notification Id: 6

State: Raised

Category: equipment

Cause: IANError(25)

Time: Jun 17 09:02:13 2004

Component Id: CICM=CICM-120A;NodeType=Cicm

Specific Problem: Have not received a message from Node B for 1.5\*ALARM

\_POLL\_PERIOD Seconds. CPU\_CARD\_DOMAIN\_A

Description: No Message Received From B

### NTSTD

The following is an example of a CICM log in NTSTD format:

```
test * CICM359 JUN17 09:02:08 0004 FLT CICM Fault
      Location: 47.165.168.120
      Notification Id: 7
      State: Raised
      Category: equipment
      Cause: equipmentMalfunction(15)
      Time: Jun 17 09:02:08 2004
      Component Id: CICM=CICM-120A;NodeType=Cicm;Component=Card;Card=7
      Specific Problem: Card 7 has an alarm.
      Description: Card Alarm
```

```
test  ** C1CM500 JUN17 09:02:08 0005 FLT  C1CM Fault
      Location: 47.165.168.120
      Notification Id: 5
      State: Raised
      Category: equipment
      Cause: unspecifiedReason(118)
      Time: Jun 17 09:02:08 2004
      Component Id: C1CM=C1CM-120A;NodeType=C1cm;Component=Chassis
      Specific Problem: Chassis card state change report for slot 7 in state
      1
      Description: Chassis Card State Change
```

```
test  ** C1CM339 JUN17 09:02:13 0006 FLT  C1CM Fault
      Location: 47.165.168.120
      Notification Id: 6
      State: Raised
      Category: equipment
      Cause: lANError(25)
      Time: Jun 17 09:02:13 2004
      Component Id: C1CM=C1CM-120A;NodeType=C1cm
      Specific Problem: Have not received a message from Node B for 1.5*ALARM
      _POLL_PERIOD Seconds. CPU_CARD_DOMAIN_A
      Description: No Message Received From B
```

## SNMP

The following is an example of a C1CM log in SNMP format:

```
sysUpTime. => 19:40:36
snmpTrapOID. => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.57.44.49.48.58.50.57.58.48.46.51.44.11927
alarmActiveDateAndTime => 2004-6-29,10:29:0.3
alarmActiveDescription => DeviceSpecificInfo=lANError(25);Location: 47.165.168.120
Notification Id: 6
State: Raised
Category: equipment
Cause: lANError(25)
Time: Jun 17 09:02:13 2004
```

Component Id: CICM=CICM-120A;NodeType=Cicm

Specific Problem: Have not received a message from Node B for 1.5\*ALARM\_POLL\_PERIOD Seconds. CPU\_CARD\_DOMAIN\_A

Description: No Message Received From B

nnExtAlarmActiveEventType => 4

nnExtAlarmActiveProbableCause => 118

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer => CICM339

nnExtAlarmActiveResourceDescription => IEMS=47.165.168.120-CICM\_Card\_A;CICM=CICM-120A;NodeType=Cicm

nnExtAlarmActiveSequenceNumber => 1

sysUpTime. => 19:40:37

snmpTrapOID. => nnExtAlarmClear

alarmActiveResourceId =>

.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48.48.52.45.54.45.50.57.44.49.48.58.50.57.58.48.46.52.44.11925

alarmActiveDateAndTime => 2004-6-29,10:29:0.4

alarmActiveDescription => DeviceSpecificInfo=equipmentMalfunction(15);Location: 47.165.168.120

Notification Id: 7

State: Raised

Category: equipment

Cause: equipmentMalfunction(15)

Time: Jun 17 09:02:08 2004

Component Id: CICM=CICM-120A;NodeType=Cicm;Component=Card;Card=7

Specific Problem: Card 7 has an alarm.

Description: Card Alarm

nnExtAlarmActiveEventType => 4

nnExtAlarmActiveProbableCause => 118

nnExtAlarmActiveAdditionalText =>

nnExtAlarmActiveDocumentationPointer => CICM359

nnExtAlarmActiveResourceDescription => IEMS=47.165.168.120-CICM\_Card\_A;CICM=CICM-120A;NodeType=Cicm;Component=Card;Card=7

nnExtAlarmActiveSequenceNumber => 2

sysUpTime. => 19:40:37

snmpTrapOID. => nnExtAlarmClear

```
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.57.44.49.48.58.50.57.58.48.46.53.44.11926

alarmActiveDateAndTime => 2004-6-29,10:29:0.5

alarmActiveDescription => DeviceSpecificInfo=unspecifiedReason(118);Location:
47.165.168.120

Notification Id: 5

State: Raised

Category: equipment

Cause: unspecifiedReason(118)

Time: Jun 17 09:02:08 2004

Component Id: C1CM=C1CM-120A;NodeType=C1cm;Component=Chassis

Specific Problem: Chassis card state change report for slot 7 in state 1

Description: Chassis Card State Change


nnExtAlarmActiveEventType => 4
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => C1CM500
nnExtAlarmActiveResourceDescription => IEMS=47.165.168.120-C1CM_Card_A;C1CM=C1CM-
120A;NodeType=C1cm;Component=Chassis
nnExtAlarmActiveSequenceNumber => 3


sysUpTime. => 19:40:48

snmpTrapOID. => nnExtAlarmMinor

alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.18.50.48
.48.52.45.54.45.49.55.44.57.58.50.58.56.46.48.44.11934

alarmActiveDateAndTime => 2004-6-17,9:2:8.0

alarmActiveDescription => DeviceSpecificInfo=equipmentMalfunction(15);Location:
47.165.168.120

Notification Id: 7

State: Raised

Category: equipment

Cause: equipmentMalfunction(15)

Time: Jun 17 09:02:08 2004

Component Id: C1CM=C1CM-120A;NodeType=C1cm;Component=Card;Card=7

Specific Problem: Card 7 has an alarm.

Description: Card Alarm


nnExtAlarmActiveEventType => 4
```

```

nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => C1CM359
nnExtAlarmActiveResourceDescription => IEMS=47.165.168.120-C1CM_Card_A;C1CM=C1CM-
120A;NodeType=C1cm;Component=Card;Card=7
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 4

```

## Syslog

The following is an example of a C1CM log in Syslog format:

```

Jun 29 10:40:34 2004      ComponentId: 47.165.168.74-C1CM-Mgr_Card_B      Specific
Problem: Connection Lost      Description: IEMS Unable to communicate with managed device

Jun 29 10:50:40 2004      ComponentId: 47.165.168.120-C1CM_Card_A      Description: IEMS
regained communication with the managed device

```

## Performance

### OM and PM Documentation references for C1CM

- N10327-711 - IEMS Performance Management

### Northbound OM/PM Formats

Performance measurements for C1CM are available only from the C1CM Manager interface. See N10327-711 - IEMS Performance Management for more information.

## XML

The following is an example of Performance data for C1CM in XML format:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T12:30:00EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="C1CM">
<EntityId>47.165.168.120</EntityId>
_ <Table MeasurementKind="Snapshot" IntervalDuration="5">
<TableId>.iso.org.dod.internet.mgmt.mib-
2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry</TableId>
<CaptureTime>2004-06-23T12:25:01EST</CaptureTime>
_ <Labels>
<Label>usrHistoryControlInterval</Label>

```



```
<Label>usrHistoryControlIndex</Label>
<Label>usrHistoryControlStatus</Label>
<Label>usrHistoryControlOwner</Label>
</Labels>
_ <RowOfValues>
_ <RowValue>
<Value>900</Value>
</RowValue>
_ <RowValue>
<Value>5</Value>
</RowValue>
_ <RowValue>
<Value>1</Value>
</RowValue>
_ <RowValue>
<Value>CICM-120A</Value>
</RowValue>
</RowOfValues>
</Table>
</Entity>
</System>
</PMFile>
```

## CSV

PMFile=Begin

PM,commonFormat.xsd,2004-06-23T13:01:14EST

System=Begin

NortelNetworks/IEMS

Entity=Begin

47.165.168.120,CICM

Table=Begin

.iso.org.dod.internet.mgmt.mib-  
2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,  
5,2004-06-23T13:00:00EST

usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,u  
srHistoryControlOwner

900,5,1,CICM-120A

Table=End

Table=Begin

.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerf  
RefMIB.nnPerfMetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot  
,5,2004-06-23T13:00:02EST

nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetri  
cGroup,nnPerfMetricName,nnPerfMetricRefIndex

0,2,1,CICM,ActiveConnections,5

0,2,1,CICM,PercentageCpuUsed,4

0,2,1,CICM,PercentageMemoryUsed,3

0,2,1,CICM,NumberOfLogs,2

0,2,1,CICM,ActiveSessions,1

Table=End

Entity=End

System=End

PMFile=End

## GUI/CLUI Documentation for CICM

### GUI Launching and User procedures

## Related documents

### Passport 8600

This section contains IEMS Northbound log samples and device documentation references for the Passport 8600.

### Passport 8600 Fault Interface

#### Fault documentation for Passport 8600 :

- 241-6001-502 Preside MDM Device Alarms Reference Guide
- 241-6003-110 - Preside Passport 8600 Device Integration Cartridge User Guide

#### Fault Mapping for Passport 8600

The following criteria can be used for looking up information on specific faults for Passport 8600.

##### Fault Correlation for Passport 8600

| NB format -><br>Device/EM | SCC2               | NTSTD              | SNMP               | Syslog             | Document Reference                                                           |
|---------------------------|--------------------|--------------------|--------------------|--------------------|------------------------------------------------------------------------------|
| <b>Passport 8600</b>      | logname and number | logname and number | logname and number | logname and number | 241-6003-110 - Preside Passport 8600 Device Integration Cartridge User Guide |

### Northbound Fault Formats for Passport 8600

#### SCC2

The following is an example of a Passport 8600 log in SCC2 format:

```
**03 PP 398 5831 TBL PP Fault
Location: 47.142.130.66
State: Raise
Specific Problem: Generic Link Status
Description: Link Down: ifIndex = 175 ( AdminStatus = down OpeationStatu
s = down )
```

#### NTSTD

The following is an example of a Passport 8600 log in NTSTD format:

```

znc0s0jh  **    PP398 Feb04 22:58:46 3203 TBL  PP Fault
Location: 47.142.130.66
State: Raise
Specific Problem: Generic Link Status
Description: Link Down: ifIndex = 175 ( AdminStatus = down OperationStatu
s = down )

```

## SNMP

The following is an example of a Passport 8600 log in SNMP format:

```

sysUpTime.0 => 2:55:28
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.50.45.52.44.53.58.53.56.58.52.54.46.54.44.90024
alarmActiveDateAndTime => 2004-2-4,5:58:46.6
alarmActiveDescription => DeviceSpecificInfo=;Link Down: ifIndex = 175 ( AdminStatus
= down OperationStatus = down )
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PP 398
nnExtAlarmActiveResourceDescription => IEMS=47.142.130.66-PP8600;3
nnExtAlarmActiveSequenceNumber => 2709

```

## Syslog

The following is an example of a Passport 8600 log in Syslog format:

```

Feb  4 11:31:57 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=1459~~ PP398 MAJOR TBL
PP Fault^M      Location: 47.142.130.66^M      State: Raise ^M      Specific
Problem: Generic Link Status^M      Description: Link Down: ifIndex = 133 ( AdminStatus
= up OperationStatus ^M      = down )

```

## Performance

### OM and PM Documentation references for Passport 8600

*Not available at time of publication*

## Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

### XML

The following is an example of Performance for Passport 8600 in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T17:35:01EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="PP8600">
<EntityId>47.142.130.66</EntityId>
_ <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpInvalidMsgs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.snmpV2.snmpModules.snmpMPDMIB.snmpMPDMI
BObjects.snmpMPDStats</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpOutPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>311026</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
```

```
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:01EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>15</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:02EST</CaptureTime>
<MeasureId>snmpInPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>320467</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>1412075</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>2</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:30:03EST</CaptureTime>
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
```

```
- <SingleValue>
<CaptureTime>2004-06-23T17:30:04EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
```

## CSV

The following is an example of Performance for Passport 8600 in CSV format:

```
PMFile=Begin
PM,commonFormat.xsd,2004-06-23T17:25:00EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.142.130.66,PP8600

Table=Begin
.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcStat.rcStatTable.rcStat
Entry,Snapshot,5,2004-06-23T17:20:15EST
rcStatFrameTooShorts,rcStatStgForwardTransitions,rcStatRouteInDiscards,rcStatBridgeI
nDiscards
0,0,0,0
0,0,0,0
253,0,0,0
0,0,0,0
74,0,0,0
0,0,0,0
0,0,0,0
560,0,0,0
591,0,0,0
```

544,0,0,0

0,0,0,0

0,0,0,0

0,0,0,0

566,0,0,0

0,0,0,0

0,0,0,0

208,0,0,0

698,0,0,0

586,0,0,0

0,0,0,0

547,0,0,0

537,0,0,0

582,0,0,0

553,0,0,0

28,0,0,0

582,0,0,0

173,0,0,0

574,0,0,0

544,0,0,0

544,0,0,0

0,0,0,0

0,0,0,0

563,0,0,0

558,0,0,0

589,0,0,0

513,0,0,0

575,0,0,0

350,0,0,0

0,0,0,0

45,0,0,0

0,0,0,0

552,0,0,0

0,0,0,904

0,0,0,577

8,0,0,0

0,0,0,0

0,0,0,0



0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,1678  
669,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,30614  
1,0,0,15253  
0,0,0,0  
0,0,0,0  
0,0,0,0  
13,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
17,0,0,0  
0,0,0,0  
49,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,1911  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0  
0,0,0,0

```
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
556,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
0,0,0,0
283,0,0,0
Table=End
```

```
Table=Begin
```

```
.iso.org.dod.internet.mgmt.mib-2.ospf.ospfIfTable.ospfIfEntry,Snapshot,5,2004-06-23T17:20:14EST
```

```
ospfIfEvents
```

```
9
```

```
1
```

```
3
```

```
1
```

```
5
```

```
1
```

```
1
```

```
Table=End
```

```
Table=Begin
```

```
.iso.org.dod.internet.mgmt.mib-2.ospf.ospfNbrTable.ospfNbrEntry,Snapshot,5,2004-06-23T17:20:14EST
```

```
ospfNbrEvents,ospfNbrIpAddress
```

```
5,47.142.130.67
```

```
Table=End
```

```
SingleValues=Begin
Snapshot,5
snmpInvalidMsgs,2004-06-
23T17:20:13EST,.iso.org.dod.internet.snmpV2.snmpModules.snmpMPDMIB.snmpMPDMIBObjects
.snmpMPDStats,0,Valid
snmpOutPkts,2004-06-23T17:20:13EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,310853,Valid
snmpOutTraps,2004-06-23T17:20:13EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
snmpInTotalSetVars,2004-06-23T17:20:13EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,15,Valid
snmpInPkts,2004-06-23T17:20:13EST,.iso.org.dod.internet.mgmt.mib-2.snmp,320294,Valid
snmpInTotalReqVars,2004-06-23T17:20:13EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,1411445,Valid
snmpInASNParseErrs,2004-06-23T17:20:14EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,2,Valid
snmpInBadVersions,2004-06-23T17:20:14EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInBadCommunityUses,2004-06-23T17:20:14EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
rcSysBufferUtilPeakTime,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,0
,Valid
rcSysSwitchFabricUtil,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,0
,Valid
rcSysNVRamUsed,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,0
,Valid
rcSysBufferUtilPeak,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,0
,Valid
rcSysCpuUtil,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,9
,Valid
rcSysBufferUtil,2004-06-
23T17:20:14EST,.iso.org.dod.internet.private.enterprises.rapidCity.rcMgmt.rcSystem,0
,Valid
SingleValues=End

Entity=End

System=End

PMFile=End
```

## **GUI/CLUI Documentation for Passport 8600**

### **GUI Launching and User procedures**

- 316341-B Rev 00 - Installing and Using Device Manager
- 314723-B - Configuring Network Management

### **Related documentation**

- 314724-B - Configuring and Managing Security
- 314997-B - Read Me for Security
- 316341-A - Installing and Using Device Manager
- 313189-C - Getting Started
- 315545-B - Managing Platform Operations and Using Diagnostics Tools
- 314723-B - Configuring Network Management
- 314721-B - Configuring BGP Services
- 316433-B - Configuring QoS and IP Filtering
- 314720-C - Configuring IP Routing Operations
- 314725-B - Configuring Layer 2 Operations: "VLANs," Spanning "Tree," Multilink Trunking
- 314719-B - Configuring IP Multicast Routing Protocols
- 316343-A - Configuring IGMP for User Authentication (IGAP)
- 314722-A - Configuring IPX Routing Operations
- 314995-A - Configuring the Web Switching Module with Device Manager
- 316350-A - Using the SSL acceleration module with the Web switching module for the 8600 Series switch
- 315015-B - System Messaging Platform Reference Guide
- 315023-B - Using the Packet Capture Tool

## **Gateway Controller (GWC)**

This section contains IEMS Northbound log samples and device documentation references for the GWC.

### **GWC Fault Interface**

#### **Fault documentation for GWC :**

- NN10090-911 - GWC Fault Management

## Fault Mapping for GWC

The following criteria can be used for looking up information on specific faults for GWC.

### Fault Correlation for GWC

| NB format -><br>Device/EM | SCC2               | NTSTD              | SNMP               | Syslog             | Document Reference                  |
|---------------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------------|
| GWC                       | logname and number | logname and number | logname and number | logname and number | NN10090-911<br>GWC Fault Management |

## Northbound Fault Formats for GWC

### SCC2

The following is an example of a GWC log in SCC2 format:

```
**14 GWC 307 7250 TBL GWC Fault
Location: GWC-2-UNIT-0
NotificationID: 4
State: Raise
Category: Communications
Cause: Communications subsystem failure
Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODE
MTC
Specific Problem: EM not responding, provisioned data loaded from local
Flash
Description: Element Manager communication failure.
```

### NTSTD

The following is an example of a GWC log in NTSTD format:

```
COMPACT06BT ** GWC307 Jan23 20:14:38 7250 TBL GWC Fault
Location: GWC-2-UNIT-0
NotificationID: 4
State: Raise
Category: Communications
Cause: Communications subsystem failure
```

```

Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODE
MTC
Specific Problem: EM not responding, provisioned data loaded from local
Flash
Description: Element Manager communication failure.

```

## SNMP

The following is an example of a GWC log in SNMP format:

```

system.sysUpTime.0 => 23:10:15
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42848
alarmActiveDateAndTime => 2004-1-23,3:14:38.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: GWC-2-UNIT-0 NotificationID:
4
State: Raise
Category: Communications
Cause: Communications subsystem failure
Time: Jan 23 15:15:59 2004
Component Id: GWC=GWC-2-UNIT-0;Version=PGC92BA;Unit=unit_0;Software=NODEMTC
Specific Problem: EM not responding, provisioned data loaded from local Flash
Description: Element Manager communication failure.
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => GWC 307
nnExtAlarmActiveResourceDescription => IEMS=znc0s0j6;GWC=GWC-2-UNIT-
0;Version=PGC92BA;Unit=unit_0;Software=NODE
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 9028

```

## Syslog

The following is an example of a GWC log in Syslog format:

```

Feb 23 15:15:56 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7307~~ GWC307 MAJOR TBL
GWC Fault^M          Location: GWC-2-UNIT-0^M          NotificationID: 4^M          State:

```

---

|                                                      |                                                            |                                                                                                                   |
|------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Raise^M<br>failure^M                                 | Category: Communications^M<br>Time: Jan 23 15:15:59 2004^M | Cause: Communications subsystem<br>Component Id: GWC=GWC-2-UNIT-<br>0;Version=PGC92BA;Unit=unit_0;Software=NODE^M |
| not responding, provisioned data loaded from local^M | MTC^M                                                      | Specific Problem: EM                                                                                              |
| Element Manager communication failure.^M             | Flash^M                                                    | Description:                                                                                                      |

## Performance

### OM and PM Documentation references for GWC

- NN10156-711 - GWC Performance Management

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for GWC in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

#### CSV

The following is an example of performance data for GWC in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

## GUI/CLUI Documentation for GWC

### GUI Launching and User procedures

- NN10026-111 - GWC Basics
- NN10112-511 - GWC Configuration Management
- NN10178-611 - GWC Security and Administration

### Related documents

## Media Application Server (MAS)

### MAS Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for MAS.

#### Fault documentation for MAS :

- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

#### Fault Mapping for MAS

The following criteria can be used for looking up information on specific faults for MAS.

##### Fault Correlation for MAS

| NB format -><br>Device/EM | SCC2                                      | NTSTD                                     | SNMP                                      | Syslog                                    | Document<br>Reference                                                                            |
|---------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------|
| MAS                       | Event Id<br><br>Logname and<br>Log number | Event Id<br><br>Logname and<br>Log number | Event Id<br><br>Logname and<br>Log number | Event Id<br><br>Logname and<br>Log number | NN10303-111<br>MCP 2.0 MAS<br>Meetme<br>Basics<br><br>NN10297-111<br>MCP 2.0 MAS<br>Adhoc Basics |

### Northbound Fault Formats for MAS

#### SCC2

The following is an example of a MAS log in SCC2 format:

```
*C00 MAS 330 2515 FLT Fault
Location: 47.104.11.120
Notification Id: 1001
State: Raised
Category: processingError
Cause: applicationSubsystemFailure
Time: Mar 23 10:46:51 2004
Component Id: MediaServer_CStore
Specific Problem: MAS;330
Description: Component Shutdown
```



## NTSTD

The following is an example of a MAS log in NTSTD format:

```
RTPU07CAPT *** MAS330 MAR23 17:00:18 2310 FLT Fault
```

```
Location: 47.104.11.120
```

```
Notification Id: 1001
```

```
State: Raised
```

```
Category: processingError
```

```
Cause: applicationSubsystemFailure
```

```
Time: Mar 23 10:46:51 2004
```

```
Component Id: MediaServer_CStore
```

```
Specific Problem: MAS;330
```

```
Description: Component Shutdown
```

## SNMP

The following is an example of a MAS log in SNMP format:

```
sysUpTime.0 => 1:52:16
```

```
snmpTrapOID.0 => nnExtAlarmCritical
```

```
alarmActiveResourceId =>
```

```
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48  
.48.52.45.51.45.50.51.44.48.58.48.58.49.56.46.54.44.
```

```
2572
```

```
alarmActiveDateAndTime => 2004-3-23,0:0:18.6
```

```
alarmActiveDescription => Location: 47.104.11.120
```

```
Notification Id: 1001
```

```
State: Raised
```

```
Category: processingError
```

```
Cause: applicationSubsystemFailure
```

```
Time: Mar 23 10:46:51 2004
```

```
Component Id: MediaServer_CStore
```

```
Specific Problem: MAS;330
```

```
Description: Component Shutdown
```

```
nnExtAlarmActiveEventType => 3
```

```
nnExtAlarmActiveProbableCause => 2
```

```
nnExtAlarmActiveAdditionalText =>
```

```
nnExtAlarmActiveDocumentationPointer => MAS 330
```

```
nnExtAlarmActiveResourceDescription => IEMS=47.104.11.120-MAS;MediaServer_CStore
```

```
nnExtAlarmActiveManualClear => 1
```

```
nnExtAlarmActiveSequenceNumber => 1
```

## Syslog

The following is an example of a MAS log in Syslog format:

```
Mar 23 12:00:19 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3629~~ MAS330 CRIT FLT
Fault^M      Location: 47.104.11.120^M      Notification Id: 1001^M      State:
Raised^M      Category: processingError^M Cause: applicationSubsystemFailure^M
Time: Mar 23 10:46:51 2004^M      Component Id: MediaServer_CStore^M      Specific
Problem: MAS;330^M      Description: Component Shutdown
```

## Performance

### OM and PM Documentation references for MAS

- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for MAS in XML format:

*Not available at time of publication*

#### CSV

The following is an example of Performance data for MAS in CSV format:

PMFile=Begin

MeasurementCategory,noNamespaceSchemaLocation,FileCreationTime

PM,commonFormat.xsd,2004-07-02T05:55:54EST

System=Begin

SystemId

NortelNetworks/IEMS

Entity=Begin

EntityId,Type

47.104.11.120,MAS

SingleValues=Begin

MeasurementKind,IntervalDuration

Snapshot,5

MeasureId,CaptureTime,MeasureSuppId1,Value,Reliability

CreateConf,2004-07-02T05:13:44EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:44EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:45EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:45EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:46EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:46EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:47EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:47EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:48EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:48EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:49EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:49EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:50EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:50EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:51EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:51EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:52EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:52EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:53EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:53EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:54EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:54EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:55EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:55EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:56EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:56EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:57EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:57EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:58EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:58EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:13:59EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:13:59EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:00EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:00EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:01EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:01EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:02EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:02EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:03EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:03EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:04EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:04EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:05EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:05EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:06EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:06EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:07EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:07EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:08EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:08EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:09EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:09EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:10EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:10EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:11EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:11EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:12EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:12EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:13EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:13EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:14EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:14:14EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:15EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:15EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:16EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:16EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:17EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:17EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:18EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:18EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:19EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:19EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:20EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:20EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:21EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:21EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:22EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:22EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:23EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:23EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:24EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:24EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:25EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:25EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:26EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:26EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:27EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:27EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:28EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:28EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:29EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:29EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:14:30EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:30EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:31EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:31EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:32EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:32EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:33EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:33EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:34EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:34EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:35EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:35EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:36EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:36EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:37EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:37EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:38EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:38EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:39EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:39EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:40EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:40EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:41EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:41EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:42EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:42EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:43EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:43EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:44EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:44EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:45EST,ConfMP,40,Valid

CreateConf,2004-07-02T05:14:45EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:46EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:46EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:47EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:47EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:48EST,ConfMP,40,Valid  
CreateConf,2004-07-02T05:14:48EST,ConfMP,40,Valid  
SingleValues=End  
Entity=End  
System=End  
PMFile=End

## **GUI/CLUI Documentation for MAS**

### **GUI Launching and User procedures**

- NN10303-111 - MCP 2.0 MAS Meetme Basics

### **Related Documents**

None

## **Multimedia Communication Server (MCS)**

### **MCS Fault Interface**

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for MCS.

### **Fault documentation for MCS :**

- NN10030-111 - Multimedia Communication Server 5200 Management Module Basics
- NN10303-111 - MCP 2.0 MAS Meetme Basics
- NN10297-111 - MCP 2.0 MAS Adhoc Basics

### **Fault Mapping for MCS**

The following criteria can be used for looking up information on specific faults for MCS.

**Fault Correlation for MCS**

| <b>NB format -&gt;<br/>Device/EM</b> | <b>SCC2</b>            | <b>NTSTD</b>           | <b>SNMP</b>            | <b>Syslog</b>          | <b>Document Reference</b>                                                                                  |
|--------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------------------------------------------------------------------------------------------|
| <b>MCS</b>                           | logname and log number | logname and log number | logname and log number | logname and log number | NN10247-111<br>Multimedia<br>Communication<br>Server 5200<br>System<br>Management<br>Console User<br>Guide |

**Northbound Fault Formats for MCS****SCC2**

The following is an example of a MCS log in SCC2 format:

```

**55 LAM 102 0447 FLT  Fault
    Location: 47.104.23.117
    Notification Id: 1199
    State: Raised
    Category: communications
    Cause: communicationsSubsystemFailure
    Time: Mar 23 11:55:13 2004
    Component Id: Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.
    Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost
    Specific Problem: LAM;102
    Description: severity=MAJOR;probableCause=communications subsystem failure;
    addedText=Communication Error : Primary stream cannot connect to CAM;

```

**NTSTD**

The following is an example of a MCS log in NTSTD format:

```

RTPU07CAPT  **  LAM102 MAR23 16:55:13 0242 FLT  Fault
    Location: 47.104.23.117
    Notification Id: 1199
    State: Raised
    Category: communications
    Cause: communicationsSubsystemFailure
    Time: Mar 23 11:55:13 2004
    Component Id: Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.
    Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost

```



Specific Problem: LAM;102

Description: severity=MAJOR;probableCause=communications subsystem failure;  
addedText=Communication Error : Primary stream cannot connect to CAM;

## SNMP

The following is an example of a MCS log in SNMP format:

```
sysUpTime.0 => 2:19:58
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.21.50.48
.48.52.45.51.45.50.51.44.49.49.58.53.53.58.49.51.46.
48.44.2616
alarmActiveDateAndTime => 2004-3-23,11:55:13.0
alarmActiveDescription => Location: 47.104.23.117
Notification Id: 1199
State: Raised
Category: communications
Cause: communicationsSubsystemFailure
Time: Mar 23 11:55:13 2004
Component Id:
Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.Appsvr.Services.appsvr.Bil
lingTransferAgent.BtaPrimaryConnectToAmLost
Specific Problem: LAM;102
Description: severity=MAJOR;probableCause=communications subsystem
failure;addedText=Communication Error : Primary stream cannot connect to CAM;

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 6
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => LAM 102
nnExtAlarmActiveResourceDescription => IEMS=47.104.23.117-
CSE;Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.Appsvr.Services.appsvr
.BillingTransferAge
nt.BtaPrimaryConnectToAmLost
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 533
```

## Syslog

The following is an example of a MCS log in Syslog format:

```
Mar 23 12:17:08 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=1558~~ LAM102 MAJOR FLT
Fault^M Location: 47.104.23.117^M Notification Id: 1199^M State:
Raised^M Category: communications^M Cause: communicationsSubsystemFailure^M
Time: Mar 23 11:55:13 2004^M Component Id:
```

```
Site=MgmtSite;Server=AppSvr;System.Sites.MgmtSite.Servers.^M
Appsvr.Services.appsvr.BillingTransferAgent.BtaPrimaryConnectToAmLost^M
Specific Problem: LAM;102^M      Description:
severity=MAJOR;probableCause=communications subsystem failu^M
re;addedText=Communication Error : Primary stream cannot connect to CAM;
```

## Performance

### OM and PM Documentation references for MCS

- NN10030-111 - Multimedia Communication Server 5200 Management Module Basics
- NN10247-111 - Multimedia Communication Server 5200 System

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for MCS in XML format:

*Not available at time of publication*

#### CSV

The following is an example of Performance data for MCS in CSV format:

*Not available at time of publication*

## GUI/CLUI Documentation for MCS

### GUI Launching and User procedures

- NN10247-111 - Multimedia Communication Server 5200 System Management Console User Guide

### Related Documents

None

## Media Gateway 9000 (MG9000)

This section contains IEMS Northbound log samples and device documentation references for the MG9000.

### MG 9000 Fault Interface

#### Fault documentation for MG 9000 :

- NN10074-911 MG9000 Fault Management

- NN10325-900 ATM/IP Fault Management

## Fault Mapping for MG 9000

The following criteria can be used for looking up information on specific faults for MG 9000.

### Fault Correlation for MG 9000

| NB format -><br>Device/EM | SCC2               | NTSTD              | SNMP               | Syslog             | Document Reference                  |
|---------------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------------|
| MG 9000                   | logname and number | logname and number | logname and number | logname and number | NN10325-900 ATM/IP Fault Management |

## Northbound Fault Formats for MG 9000

### SCC2

The following is an example of a MG 9000 log in SCC2 format:

```
* 37 SWLN302 4259 TBL MG9K NorLineFault
Location: Port.frame0.shelf1.slot5.WL32.port21
Notification Id: 330712652810
State: UnAcknowledged
Category: processingError
Cause: Underlying Resource Unavailable
      NorLineFault - Line Protection Fault
Component Id: Port.frame0.shelf1.slot5.WL32.port21
specificProblem: NorLineFault - Line Protection Fault
Description: Line Protection HighVoltageError      : 0,1,5,21 [suspect b
ad LineCard]
```

### NTSTD

The following is an example of a MG 9000 log in NTSTD format:

```
RTPU07BU * SWLN302 Jan23 17:37:31 4259 TBL MG9K NorLineFault
Location: Port.frame0.shelf1.slot5.WL32.port21
Notification Id: 330712652810
State: UnAcknowledged
```

```

Category: processingError
Cause: Underlying Resource Unavailable
      NorLineFault - Line Protection Fault
Component Id: Port.frame0.shelf1.slot5.WL32.port21
specificProblem: NorLineFault - Line Protection Fault
Description: Line Protection HighVoltageError      : 0,1,5,21 [suspect b
ad LineCard]

```

## SNMP

The following is an example of a MG 9000 log in SNMP format:

```

system.sysUpTime.0 => 17:59:11
snmpTrapOID.0 => nnExtAlarmClearalarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.49.45.50.51.44.49.48.58.52.58.50.46.54.44.41817
alarmActiveDateAndTime => 2004-1-23,10:4:2.6,
alarmActiveDescription => Underlying Resource Unavailable
      NorLineFault - Line Protection Fault

nnExtAlarmActiveEventType => 3
nnExtAlarmActiveProbableCause => 56
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SWLN302
nnExtAlarmActiveResourceDescription => IEMS=CC07;Port.frame0.shelf1.slot5.WL32.port21
nnExtAlarmActiveSequenceNumber => 7240

```

## Syslog

The following is an example of a MG 9000 log in Syslog format:

```

Feb 23 12:40:26 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4323~~ SWLN302 NONE TBL
MG9K NorLineFault^M      Location: Port.frame0.shelf1.slot5.WL32.port21^M
Notification Id: 330712652810^M      State: Cleared^M      Category:
processingError^M      Cause: Underlying Resource Unavailable^M
NorLineFault - Line Protection Fault^M      Component Id:
Port.frame0.shelf1.slot5.WL32.port21^M      specificProblem: NorLineFault - Line
Protection Fault^M      Description: Line Protection HighVoltageError      : 0,1,5,21
[suspect b^M      ad LineCard]

```

## Performance

### OM and PM Documentation references for MG 9000

- NN10140-711 MG9000 Performance Management

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for MG 9000 in XML format:

*Note: The IEMS northbound performance interface does not support this device..*

#### CSV

The following is an example of Performance data for MG 9000 in CSV format:

*Note: The IEMS northbound performance interface does not support this device..*

## GUI/CLUI Documentation for MG 9000

### GUI Launching and User procedures

- NN10096-511 MG9000 Configuration Management

### Related documents

- NN10276-500 ATM/IP Configuration Management

## MultiService Switch 7400, 15000, 20000

This section contains IEMS Northbound log samples and device documentation references for the MSS 7400, 15000, 20000.

Information for this device is covered in MDM documentation. *Please refer to Section “ Multi-Service Data Manager (MDM)” on page 1958.* for more details.

## MSS 7400, 15000, 20000 Fault Interface

### Fault documentation for MSS 7400, 15000, 20000 :

*Please refer to Section “ Fault documentation for MDM:” on page 1958.*

## **Fault Mapping for MSS 7400, 15000, 20000**

*Please refer to Section “ Fault Mapping for MDM” on page 1958.*

## **Northbound Fault Formats for MSS 7400, 15000, 20000**

### **SCC2**

The following is an example of a MSS 7400, 15000, 20000 log in SCC2 format:

```
19 PPEM302 8013 TBL
    time: 2004 01 27 14 19 53
    event: message
    compId: EM PP04 LP 8
    severity: indeterminate
    faultcode: 70560000
    alarmType: other
    commentData: 1-7-200
    0000
    1;DBG_WARNING:R:21-L:18 stats timeout.
```

### **NTSTD**

The following is an example of a MSS 7400, 15000, 20000 log in NTSTD format:

```
RTPU07BU      PPEM302 Jan27 19:19:53 7467 TBL
    time: 2004 01 27 14 19 53
    event: message
    compId: EM PP04 LP 8
    severity: indeterminate
    faultcode: 70560000
    alarmType: other
    commentData: 1-7-200
    0000
    1;DBG_WARNING:R:21-L:18 stats timeout.
```

## SNMP

The following is an example of a MSS 7400, 15000, 20000 log in SNMP format:

```
system.sysUpTime.0 => 3 days, 1:02:10
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=47.142.116.75-MDM-Mgr_PP04;EM PP04 LP 8
nnExtAlarmMessageDateAndTime => 2004-1-21,6:41:14.0,
nnExtAlarmMessageDocumentationPointer => PPEM302
nnExtAlarmMessageInfo => 19 PPEM302 8013 TBL time: 2004 01 27 14 19 53
event: message
compId: EM PP04 LP 8
severity: indeterminate
faultcode: 70560000
alarmType: other
commentData: 1-7-200
0000
1;DBG_WARNING:R:21-L:18 stats timeout.
```

## Syslog

The following is an example of a MSS 7400, 15000, 20000 log in Syslog format:

```
Feb 27 13:19:58 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=2202~~ PPEM302 NONE TBL ^M
time: 2004 01 27 14 19 53^M event: message^M compId: EM PP04 LP 8^M
severity: indeterminate^M faultcode: 70560000^M alarmType: other^M
commentData: 1-7-200^M 0000 ^M 1;DBG_WARNING:R:21-L:18 stats timeout.
```

## Performance

### OM and PM Documentation references for MSS 7400, 15000, 20000

*Please refer to Section “ OM and PM Documentation references for MDM” on page 1961.*

### Northbound OM/PM Formats

Performance measurements for MSS 7400, 15000, 20000 are available only from the MDM directly. *Please refer to Section “ Northbound OM/PM Formats” on page 1961.*

## XML

The following is an example of Performance data for MSS 7400, 15000, 20000 in XML format:

***Note:** The IEMS northbound performance interface does not support this device..*

## CSV

The following is an example of Performance data for MSS 7400, 15000, 20000 in CSV format:

***Note:** The IEMS northbound performance interface does not support this device..*

## GUI/CLUI Documentation for MSS 7400, 15000, 20000

### GUI Launching and User procedures

*Please refer to “[GUI/CLUI Documentation for MDM](#)” on page 1962.*

- NN10600-030 - Nortel Networks Multiservice Switch 7400/15000/20000 Overview
- 241-5701-045 - Passport "7400," "15000," 20000 Management System User Interface Guide
- NN10600-050 - Nortel Networks Multiservice Switch 7400/15000/20000 Commands Reference
- NN10600-053 - Nortel Networks Multiservice Switch 7400/15000/20000 Commands Job Aid

### Related documents

*Please refer to “[Related documents](#)” on page 1962.*

- NN10600-001 - Nortel Networks Multiservice Switch 7400/15000/20000 Using the Documentation
- NN10600-002 - Nortel Networks Multiservice Switch 7400/15000/20000 Using Task-based Documentation Job Aid
- NN10600-005 - Nortel Networks Multiservice Switch 7400/15000/20000 Terminology
- NN10600-030 - Nortel Networks Multiservice Switch 7400/15000/20000 Overview
- NN10600-270 - Nortel Networks Multiservice Switch 7400/15000/20000 Software Installation



- NN10600-271 - Nortel Networks Multiservice Switch 7400/15000/20000 Network Management Connectivity
- NN10600-272 - Nortel Networks Multiservice Switch 7400/15000/20000 Upgrading Software
- NN10600-300 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: SNMP
- 241-5701-400 - Passport "7400," "15000," 20000 Networking Overview
- NN10600-405 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Server
- NN10600-410 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Call Redirection Server
- NN10600-415 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Hunt Group Server
- NN10600-420 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trunking
- NN10600-425 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Dynamic Packet Routing System
- NN10600-435 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Path-Oriented Routing System
- NN10600-440 - Nortel Networks Multiservice Switch 7400 Operations: Frame Relay Managed Cut-through Switching
- NN10600-445 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Multiprotocol Label Switching
- NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
- NN10600-510 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Trace System
- NN10600-520 - Nortel Networks Multiservice Switch 7400/15000/20000 Fault and Performance Management: Troubleshooting
- NN10600-581 - Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Technology Fundamentals
- NN10600-582 - Nortel Networks Multiservice Switch 7400/15000/20000 IP VPN Configuration Management
- NN10600-550 - Nortel Networks Multiservice Switch 7400/15000/20000 Common Configuration Procedures
- NN10600-561 - Nortel Networks Multiservice Switch 7400/15000/20000 Data Management

- NN10600-551 - Nortel Networks Multiservice Switch 7400/15000/20000 FP Configuration Reference
- NN10600-560 - Nortel Networks Multiservice Switch 7400/15000/20000 Accounting
- NN10600-700 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Technology Fundamentals
- NN10600-702 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Routing and Signaling Fundamentals
- NN10600-705 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Traffic Management Fundamentals
- NN10600-706 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Traffic Shaping and Policing Fundamentals
- NN10600-707 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Queuing and Scheduling Fundamentals
- NN10600-708 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM CAC and Bandwidth Fundamentals
- NN10600-710 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Configuration Management
- NN10600-715 - Nortel Networks Multiservice Switch 7400/15000/20000 ATM Fault and Performance Management
- NN10600-720 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: AAL1 Circuit Emulation
- NN10600-730 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Inverse Multiplexing for ATMe
- NN10600-780 - Nortel Networks Media Gateway 7480/15000 Technology Fundamentals
- NN10600-781 - Nortel Networks Media Gateway 7480/15000 Non-switched Service Configuration Management
- NN10600-782 - Nortel Networks Media Gateway 7480/15000 Switched Service Configuration Management
- NN10600-800 - Nortel Networks Multiservice Switch 7400/15000/20000 IP Technology Fundamentals
- NN10600-801 - Nortel Networks Multiservice Switch 7400/15000/20000 IP Configuration Management
- NN10600-580 - Nortel Networks Multiservice Switch 7400/15000/20000 Operations: Ethernet Service
- NN10600-120 - Nortel Networks Multiservice Switch 15000/20000 Hardware Description

- NN10600-130 - Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade
- NN10600-170 - Nortel Networks Multiservice Switch 7400 Hardware Description
- NN10600-130 - Nortel Networks Multiservice Switch 15000/20000 Hardware Installation, Maintenance, and Upgrade
- NN10600-172 - Nortel Networks Multiservice Switch 7400 FP Cabling Reference
- NN10600-745 - Nortel Networks Multiservice Switch 7400 Operations: MPANL
- NN10600-750 - Nortel Networks Multiservice Switch 7400 Operations: Voice Transport
- NN10600-755 - Nortel Networks Multiservice Switch 7400 Operations: Voice Networking
- NN10600-765 - Nortel Networks Multiservice Switch 7400 Operations: Remote Server Agent
- NN10600-605 - Passport MDM Network Security: Operations
- NN10600-606 - Passport MDM Network Security: User Access Configuration
- NN10600-607 - Passport MDM Network Security: Secure Communications Configuration
- 241-6001-309 - Preside MDM Management Data Provider User Guide
- 241-6001-806 - Preside MDM MDP Data Formats Reference Guide
- NN10600-060 - Nortel Networks Multiservice Switch 7400/15000/20000 Components Reference

## **MS2000 Series Node**

This section contains IEMS Northbound log samples and device documentation references for the MS2000 Series Node.

### **MS2000 Series Node Fault Interface**

#### **Fault documentation for MS2000 Series Node :**

- NN10328-911 MS2000 Fault Management

## Fault Mapping for MS2000 Series Node

The following criteria can be used for looking up information on specific faults for MS2000 Series Node.

### Fault Correlation for MS2000 Series Node

| NB format -><br>Device/EM     | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                     |
|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------|
| <b>MS2000<br/>Series Node</b> | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10328-911<br>MS2000 Fault<br>Management |

## Northbound Fault Formats for MS2000 Series Node

### SCC2

The following is an example of a MS2000 Series Node log in SCC2 format:

34 AMS 501 0035 INFO MS2000 FAULT

Location: 47.142.134.127

State: Cleared

Time: 1086806097963

\*\*34 AMS 501 0036 FLT MS2000 FAULT

Location: 47.142.134.127

State: Raised

Category: processingError

Cause: 71

Time: 1086806097964

Component Id: System#0

Trap Name: 6

Description: Network element admin state change alarm. Gateway is locked

### NTSTD

The following is an example of a MS2000 Series Node log in NTSTD format:

Nortel-JH \*\* AMS501 JUN10 09:21:12 5707 FLT MS2000 FAULT

Location: 47.142.134.127

State: Raised  
Category: processingError  
Cause: 71  
Time: 1086873672171  
Component Id: System#0  
Trap Name: 6  
Description: Network element admin state change alarm. Gateway is shuttingDown

Nortel-JH AMS501 JUN10 09:21:12 5708 INFO MS2000 FAULT

Location: 47.142.134.127  
State: Cleared  
Time: 1086873672172

Nortel-JH \*\* AMS501 JUN10 09:21:12 5709 FLT MS2000 FAULT

Location: 47.142.134.127  
State: Raised  
Category: processingError  
Cause: 71  
Time: 1086873672174  
Component Id: System#0  
Trap Name: 6  
Description: Network element admin state change alarm. Gateway is locked

Nortel-JH AMS501 JUN10 09:21:25 5710 INFO MS2000 FAULT

Location: 47.142.134.127  
State: Cleared  
Time: 1086873685240

## SNMP

The following is an example of a MS2000 Series Node log in SNMP format:

sysUpTime. => 1 day, 19:19:22  
snmpTrapOID. => nnExtAlarmMessage  
nnExtAlarmMessageResource => .0.0

```
nnExtAlarmMessageResourceDescription => IEMS=Unknown Device;  
nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:5.0  
nnExtAlarmMessageDocumentationPointer => IEMS601  
nnExtAlarmMessageInfo => 04 IEMS601 3350 INFO
```

Location: 10.5.0.17

Event: .1.3.6.1.6.3.1.1.5.3

Varbind0: .1.3.6.1.2.1.2.2.1.1.0: 132

Varbind1: .1.3.6.1.2.1.2.2.1.7.0: 1

Varbind2: .1.3.6.1.2.1.2.2.1.8.0: 2

```
sysUpTime. => 1 day, 19:19:25  
snmpTrapOID. => nnExtAlarmMessage  
nnExtAlarmMessageResource => .0.0  
nnExtAlarmMessageResourceDescription => IEMS=Unknown Device;  
nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:7.9  
nnExtAlarmMessageDocumentationPointer => IEMS601  
nnExtAlarmMessageInfo => 04 IEMS601 3351 INFO
```

Location: 10.5.0.17

Event: .1.3.6.1.6.3.1.1.5.4

Varbind0: .1.3.6.1.2.1.2.2.1.1.0: 132

Varbind1: .1.3.6.1.2.1.2.2.1.7.0: 1

Varbind2: .1.3.6.1.2.1.2.2.1.8.0: 1

## Syslog

The following is an example of a MS2000 Series Node log in Syslog format:

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9643~~ AMS501 MAJOR FLT
MS2000 FAULT      Location: 47.142.134.127      State: Raised      Category:
processingError   Cause: 71      Time: 1086805901311      Component Id: System#0
Trap Name: 6      Description: Network element admin state change alarm. Gateway is
shuttingDown
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9644~~ AMS501 NONE INFO
MS2000 FAULT      Location: 47.142.134.127      State: Cleared      Time:
1086805901313
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9645~~ AMS501 MAJOR FLT
MS2000 FAULT      Location: 47.142.134.127      State: Raised      Category:
processingError   Cause: 71      Time: 1086805901314      Component Id: System#0
Trap Name: 6      Description: Network element admin state change alarm. Gateway is
locked
```

```
Jun  9 14:31:41 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=9646~~ IEMS601 NONE
```

Resetting board

## Performance

### OM and PM Documentation references for MS2000 Series Node

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

#### XML

The following is an example of Performance data for MS2000 Series Node in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T17:40:01EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="MS2000">
<EntityId>47.142.92.107</EntityId>
_ <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
```

```
- <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>sysDescr</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
<Value>Product: IPMedia 3000;SW Version: 4.30.380.12</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpOutPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>4858</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadCommunityNames</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>9089</Value>
<Reliability>Valid</Reliability>
</SingleValue>
- <SingleValue>
```



```
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>15</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>4844</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>4</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
```

```
<MeasureId>tcpOutSegs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
<Value>3531</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>tcpInSegs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.tcp</MeasureSuppId1>
<Value>4359</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>udpOutDatagrams</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
<Value>438175</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>udpInDatagrams</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.udp</MeasureSuppId1>
<Value>107768</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
```

### CSV

The following is an example of Performance data for MS2000 Series Node in CSV format:

PMFile=Begin

PM,commonFormat.xsd,2004-06-23T17:25:50EST

System=Begin

NortelNetworks/IEMS

Entity=Begin

47.142.92.104,MS2000

SingleValues=Begin

Snapshot,5

snmpOutPkts,2004-06-23T17:24:09EST,.iso.org.dod.internet.mgmt.mib-2.snmp,368,Valid

snmpInBadVersions,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInBadCommunityNames,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInTotalReqVars,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,959,Valid

snmpOutTraps,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,13,Valid

snmpInBadCommunityUses,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInPkts,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,356,Valid

snmpInTotalSetVars,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,12,Valid

snmpInASNParseErrs,2004-06-23T17:24:10EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

tcpOutSegs,2004-06-23T17:24:11EST,.iso.org.dod.internet.mgmt.mib-2.tcp,195,Valid

tcpInSegs,2004-06-23T17:24:11EST,.iso.org.dod.internet.mgmt.mib-2.tcp,13675,Valid

udpOutDatagrams,2004-06-23T17:24:11EST,.iso.org.dod.internet.mgmt.mib-2.udp,27702,Valid

udpInDatagrams,2004-06-23T17:24:11EST,.iso.org.dod.internet.mgmt.mib-2.udp,14797,Valid

snmpSilentDrops,2004-06-23T17:24:11EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

acPerfCpMessageSendErrors,2004-06-23T17:24:11EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpNumDupsForCompletedTransactions,2004-06-23T17:24:11EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpMessageMaxRetransmissionsExceeded,2004-06-23T17:24:11EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpMessageReceiveErrors,2004-06-23T17:24:12EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpMessageRetransmissions,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,18,Valid

acPerfCpNumDupsForOutstandingTransactions,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpMessagesFromUntrustedSources,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfCpProtocolSyntaxErrors,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfCp,0,Valid

acPerfRtpRcvrLostPackets,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfRtp,0,Valid

acPerfRtpFailedDueToLackOfResources,2004-06-23T17:24:13EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfRtp,0,Valid

acPerfIvrPlayCollectRequests,2004-06-  
23T17:24:14EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfIvrPlayRequests,2004-06-  
23T17:24:15EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,88,Valid

acPerfBctRequests,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfBct,0,Valid

acPerfIvrPlayCollectFailedDueToLackOfResources,2004-06-  
23T17:24:15EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfIvrPlaySegmentFailedDueToProvMismatch,2004-06-  
23T17:24:15EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,9,Valid

acPerfIvrContDigitCollectRequests,2004-06-  
23T17:24:15EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfIvrPlayFailedDueToLackOfResources,2004-06-  
23T17:24:15EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfIvrPlayCollectFailedDueToProvMismatch,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfIvrContDigitCollectFailedDueToLackOfResources,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfIvr,0,Valid

acPerfBctFailedDueToLackOfResources,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfBct,0,Valid

acPerfConfRequests,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfConf,11,Valid

acPerfConfPlays,2004-06-  
23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerf  
ormances.acPerfMediaServices.acPerfConf,36,Valid

acPerfConfAddFailedDueToLackOfResources,2004-06-23T17:24:16EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaServices.acPerfConf,0,Valid

acPerfConfFailedDueToLackOfResources,2004-06-23T17:24:17EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaServices.acPerfConf,0,Valid

acPerfTtFailedDueToLackOfResources,2004-06-23T17:24:17EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaServices.acPerfTt,0,Valid

acPerfTtRequests,2004-06-23T17:24:17EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaServices.acPerfTt,0,Valid

acPerfSystemPacketEndpointsInUse,2004-06-23T17:24:17EST,.iso.org.dod.internet.private.enterprises.audioCodes.acPerformances.acPerfMediaGateway.acPerfSystem,0,Valid

SingleValues=End

Entity=End

System=End

PMFile=End

## **GUI/CLUI Documentation for MS2000 Series Node**

### **GUI Launching and User procedures**

- NN10323-111 MS2000 Basics

### **Related documents**

- NN10340-511 MS2000 Configuration
- NN10337-611 MS2000 Security

## **Session Server Manager**

This section contains IEMS Northbound log samples and device documentation references for the Session Server Manager.

## Session Server Manager Fault Interface

This section will provide references to customer documentation for Fault, Performance, Topology, GUI/CLUI, and Security for Session Server Manager.

### Fault documentation for Session Server Manager:

- NN10322-911 - Session Server Manager Fault Management

### Fault Mapping for Session Server Manager

The following criteria can be used for looking up information on specific faults for Session Server Manager.

#### Fault Correlation for Session Server Manager

| NB format -><br>Device/EM     | SCC2               | NTSTD              | SNMP               | Syslog             | Document Reference                                     |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------------------------------------------|
| <b>Session Server Manager</b> | logname and number | logname and number | logname and number | logname and number | NN10322-911<br>Session Server Manager Fault Management |

## Northbound Fault Formats for Session Server Manager

### SCC2

The following is an example of a Session Server Manager log in SCC2 format:

```
**57 SIPM302 2080 FLT SIPM Fault
Location: 47.142.123.43
Notification Id: 111
State: Raised
Category: communications
Cause: applicationSubsystemFailure
Time: Apr 12 21:57:55 2004
Component Id: NCGL=RTPF-SIP0;Unit=0;
Specific Problem: SIP Gateway Application State Not Synced With Mate
Description: SIP Gateway Application Mtc Out Of Sync
```

### NTSTD

The following is an example of a Session Server Manager log in NTSTD format:

```
znc0s0jh ** SIPM302 APR12 21:57:55 2080 FLT SIPM Fault
Location: 47.142.123.43
Notification Id: 111
State: Raised
Category: communications
Cause: applicationSubsystemFailure
```

Time: Apr 12 21:57:55 2004  
Component Id: NCGL=RTPF-SIP0;Unit=0;  
Specific Problem: SIP Gateway Application State Not Synced With Mate  
Description: SIP Gateway Application Mtc Out Of Sync

## SNMP

The following is an example of a Session Server Manager log in SNMP format:

```
sysUpTime.0 => 2:34:22
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.
20.50.48.48.52.45.52.45.49.50.44.57.58.53.55.58.53.53.46.48.44.3070
alarmActiveDateAndTime => 2004-4-12,9:57:55.0
alarmActiveDescription => Location: 47.142.123.43
Notification Id: 111
State: Raised
Category: communications
Cause: applicationSubsystemFailure
Time: Apr 12 21:57:55 2004
Component Id: NCGL=RTPF-SIP0;Unit=0;
Specific Problem: SIP Gateway Application State Not Synced With Mate
Description: SIP Gateway Application Mtc Out Of Sync

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 2
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SIPM302
nnExtAlarmActiveResourceDescription => IEMS=47.142.123.48-SP2000-Unit-0;NCGL=RTPF-
SIP0;Unit=0;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 35
```

## Syslog

The following is an example of a Session Server Manager log in Syslog format:

```
Apr 12 22:13:03 znc0s0jh IEMS: V2_~I=~H=znc0s0jh~A=IEMS~S=6213~~ SIPM302 MAJOR FLT
SIPM Fault^M      Location:47.142.123.43^M      Notification Id: 111^M      State:
Raised^M      Category: communications^M      Cause: applicationSubsystemFailure^M
Time: Apr 12 21:57:55 2004^M      Component Id: NCGL=RTPF-SIP0;Unit=0;^M      Specific
Problem: SIP Gateway Application State Not Synced With Mate^M      Description: SIP
Gateway Application Mtc Out Of Sync
```



## Performance

### OM and PM Documentation references for Session Server Manager

- NN10342-711 Session Server Manager Performance Management

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance for Session Server Manager in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T17:40:13EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="Session Server">
<EntityId>47.174.74.179</EntityId>
_ <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:00EST</CaptureTime>
<MeasureId>sysDescr</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
<Value>Linux sp2k-1 2.4.22-samxts #1 Thu May 13 01:48:09 EDT 2004 i686</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:00EST</CaptureTime>
<MeasureId>snmpOutPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>8679</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:00EST</CaptureTime>
```

```
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadCommunityNames</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>1</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>9899</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:01EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInPkts</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>8692</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:02EST</CaptureTime>
<MeasureId>hrSystemDate</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>hrSystemUptime</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
<Value>1316119</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>hrSystemProcesses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
```

```
<Value>170</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T17:35:03EST</CaptureTime>
<MeasureId>snmpSilentDrops</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
```

## CSV

The following is an example of Performance for Session Server Manager in CSV format:

PMFile=Begin

PM,commonFormat.xsd,2004-06-23T20:35:30EST

System=Begin

NortelNetworks/IEMS

Entity=Begin

47.174.74.179,Session Server

SingleValues=Begin

Snapshot,5

sysDescr,2004-06-23T20:30:01EST,.iso.org.dod.internet.mgmt.mib-2.system,Linux sp2k-1 2.4.22-samxts #1 Thu May 13 01:48:09 EDT 2004 i686,Valid

snmpOutPkts,2004-06-23T20:30:01EST,.iso.org.dod.internet.mgmt.mib-2.snmp,9342,Valid

snmpInBadVersions,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInBadCommunityNames,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,1,Valid

snmpInTotalReqVars,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,13190,Valid

snmpOutTraps,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInBadCommunityUses,2004-06-23T20:30:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInPkts,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-2.snmp,9355,Valid

snmpInTotalSetVars,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

snmpInASNParseErrs,2004-06-23T20:30:03EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid

hrSystemDate,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-2.host.hrSystem,0,Valid

hrSystemUptime,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-2.host.hrSystem,1326620,Valid

hrSystemProcesses,2004-06-23T20:30:04EST,.iso.org.dod.internet.mgmt.mib-2.host.hrSystem,170,Valid

SingleValues=End

Entity=End

System=End

PMFile=End

## GUI/CLUI Documentation for Session Server Manager

### GUI Launching and User procedures

- NN10333-111 Session Server Manager Basics

### Related documents

- NN10338-511 - Session Server Manager configuration
- NN10346-611 - Session Server Manager Security and Administration

## SAM21 Shelf Controller

This section contains IEMS Northbound log samples and device documentation references for the SAM21 Shelf Controller.

### SAM21 Shelf Controller Fault Interface

#### Fault documentation for SAM21 Shelf Controller :

- NN10089-911 - SAM21 Shelf Controller Fault Management

#### Fault Mapping for SAM21 Shelf Controller

The following criteria can be used for looking up information on specific faults for SAM21 Shelf Controller.

##### Fault Correlation for SAM21 Shelf Controller

| NB format -><br>Device/EM         | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                                           |
|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------------------------------------|
| <b>SAM21 Shelf<br/>Controller</b> | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10089-911<br>SAM21 Shelf<br>Controller<br>Fault<br>Management |

### Northbound Fault Formats for SAM21 Shelf Controller

#### SCC2

The following is an example of a SAM21 Shelf Controller log in SCC2 format:

```
**37 SCU 350 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

## NTSTD

The following is an example of a SAM21 Shelf Controller log in NTSTD format:

```
COMPACT06BT  **  SCU350 Jan15 00:37:17 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

## SNMP

The following is an example of a SAM21 Shelf Controller log in SNMP format:

```
sysUpTime.0 => 9:14:20
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:57:48 EST 2004
Reason:    Temperature in Sled 3 is high
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SCU 350
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0kz.us.nortel.com-SAM21-Mgr;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1
```

## Syslog

The following is an example of a SAM21 Shelf Controller log in Syslog format:

```
Feb 12 18:30:19 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7929~~ SCU350 MAJOR FLT
Alarm Raised^M Location: SAM21 1:CSAM01-01:sled 3^M Time: Mon Jan 12
12:49:06 EST 2004^M Reason: Temperature in Sled 3 is high
```

## Performance

### OM and PM Documentation references for SAM21 Shelf Controller

- There are no OMs or PMs associated with this device

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for SAM21 Shelf Controller in XML format:

*Note: The IEMS northbound performance interface does not support this device.*

#### CSV

The following is an example of performance data for SAM21 Shelf Controller in CSV format:

*Note: The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for SAM21 Shelf Controller

### GUI Launching and User procedures

- NN10025-111 - SAM21 Shelf Controller Basics
- NN10089-911 - SAM21 Shelf Controller Fault Management
- NN10111-511 - SAM21 Shelf Controller Configuration Management
- NN10177-611 - SAM21 Shelf Controller Administration and Security
- NN10155-711 - SAM21 Shelf Controller Performance Management

### Related documents

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

## Storage Manager (STORM)

This section contains IEMS Northbound log samples and device documentation references for the STORM.



## STORM Fault Interface

### Fault documentation for STORM :

- NN10024-111 - STORM Basics
- NN10088-911 - STORM Fault Management

### Fault Mapping for STORM

The following criteria can be used for looking up information on specific faults for STORM.

#### Fault Correlation for STORM

| NB format -><br>Device/EM | SCC2                                 | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                    |
|---------------------------|--------------------------------------|-----------------------|-----------------------|-----------------------|------------------------------------------|
| STORM                     | logname and<br>number<br>eg: STM 800 | logname and<br>number | logname and<br>number | logname and<br>number | NN10088-911<br>STORM Fault<br>Management |

## Northbound Fault Formats for STORM

### SCC2

The following is an example of a STORM log in SCC2 format:

#### *Sample Clear:*

```
19 STM 801 0595 INFO
  Location: 47.166.56.10
  Notification Id: 13
  State: Cleared
  Time: Jan 24 19:19:49 2004
```

#### *Sample Raise:*

```
**19 STM 801 0596 FLT  STM Fault
  Location: 47.166.56.10
  Notification Id: 14
  State: Raised
  Category: qualityOfService
  Cause: thresholdCrossed
  Time: Jan 24 19:19:49 2004
  Component Id: STORMIA=langley1
  Specific Problem:
```

Description: Status: Alarm raised. Used memory percentage is 18.24. Major alarm threshold value is 6.00.

## NTSTD

The following is an example of a STORM log in NTSTD format:

### *Sample Clear:*

```
RTPU07BR      STM801 Jan25 00:19:49 0041 INFO
Location: 47.166.56.10
Notification Id: 13
State: Cleared
Time: Jan 24 19:19:49 2004
```

### *Sample Raise:*

```
RTPU07BR  **  STM801 Jan25 00:19:49 0042 FLT  STM Fault
Location: 47.166.56.10
Notification Id: 14
State: Raised
Category: qualityOfService
Cause: thresholdCrossed
Time: Jan 24 19:19:49 2004
Component Id: STORMIA=langley1
Specific Problem:
Description: Status: Alarm raised. Used memory percentage is 18.24. Major alarm threshold value is 6.00.
```

## SNMP

The following is an example of a STORM log in SNMP format:

### *Sample Clear:*

```
system.sysUpTime.0 => 8:01:55
snmpTrapOID.0 => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.52.44.55.58.49.57.58.52.57.46.48.44.312
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Status: Alarm cleared. A new alarm with
higher severity will be raised.
nnExtAlarmActiveEventType => 2
nnExtAlarmActiveProbableCause => 118
```

```

nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => STM 801
nnExtAlarmActiveResourceDescription => IEMS=zmdhh0jk.europe.nortel.com-
STORM;STORMIA=langley1
nnExtAlarmActiveSequenceNumber => 24

```

### *Sample Raise:*

```

system.sysUpTime.0 => 7:01:55
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.52.44.55.58.49.57.58.52.57.46.48.44.329
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => Status: Alarm raised. Used memory percentage is 18.24. Major
alarm threshold value is 6.00.
nnExtAlarmActiveEventType => 2
nnExtAlarmActiveProbableCause => 51
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => STM 801
nnExtAlarmActiveResourceDescription => IEMS=zmdhh0jk.europe.nortel.com-
STORM;STORMIA=langley1
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 25

```

## Syslog

The following is an example of a STORM log in Syslog format:

### *Sample Clear:*

```

Feb 24 19:19:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0618~~ STM801 NONE INFO
^M      Location: 47.166.56.10^M      Notification Id: 13^M      State: Cleared^M
Time: Jan 24 19:19:49 2004

```

### *Sample Raise:*

```

Feb 24 19:19:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0619~~ STM801 MAJOR FLT
STM Fault^M      Location: 47.166.56.10^M      Notification Id: 14^M      State:
Raised^M      Category: qualityOfService^M      Cause: thresholdCrossed^M      Time:
Jan 24 19:19:49 2004^M      Component Id: STORMIA=langley1^M      Specific Problem:
^M      Description: Status: Alarm raised. Used memory percentage is 18.24. Majo^M
r alarm threshold value is 6.00.

```

## Performance

### OM and PM Documentation references for STORM

The SNMP based attributes that can be collected from the STORM device are documented in:

- NN10054-711 - STORM Performance Management Customer Document

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided.

#### XML

The following is an example of Performance data for STORM in XML format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T21:30:00EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="STORM">
<EntityId>47.166.56.10</EntityId>
_ <SingleValues MeasurementKind="Snapshot" IntervalDuration="5">
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:01EST</CaptureTime>
<MeasureId>sysDescr</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.system</MeasureSuppId1>
<Value>Linux langley40 2.4.19-xfs #1 SMP Fri Nov 7 11:18:05 EST 2003 i686</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:02EST</CaptureTime>
<MeasureId>snmpOutPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>2790</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
```

```
<CaptureTime>2004-06-23T21:25:03EST</CaptureTime>
<MeasureId>snmpInBadVersions</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:03EST</CaptureTime>
<MeasureId>snmpInBadCommunityNames</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>1</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:04EST</CaptureTime>
<MeasureId>snmpInTotalReqVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>8880</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:04EST</CaptureTime>
<MeasureId>snmpOutTraps</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>69</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:04EST</CaptureTime>
<MeasureId>snmpInBadCommunityUses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:05EST</CaptureTime>
```

```
<MeasureId>snmpInPkts</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>2739</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:05EST</CaptureTime>
<MeasureId>snmpInTotalSetVars</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:06EST</CaptureTime>
<MeasureId>snmpInASNParseErrs</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:07EST</CaptureTime>
<MeasureId>snmpSilentDrops</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.snmp</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:08EST</CaptureTime>
<MeasureId>hrSystemDate</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
<Value>0</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:09EST</CaptureTime>
<MeasureId>hrSystemUptime</MeasureId>
```

```
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
<Value>6603666</Value>
<Reliability>Valid</Reliability>
</SingleValue>
_ <SingleValue>
<CaptureTime>2004-06-23T21:25:09EST</CaptureTime>
<MeasureId>hrSystemProcesses</MeasureId>
<MeasureSuppId1>.iso.org.dod.internet.mgmt.mib-2.host.hrSystem</MeasureSuppId1>
<Value>73</Value>
<Reliability>Valid</Reliability>
</SingleValue>
</SingleValues>
</Entity>
</System>
</PMFile>
```

## CSV

The following is an example of Performance data for STORM in CSV format:

```
PMFile=Begin
PM,commonFormat.xsd,2004-06-23T21:30:00EST

System=Begin
NortelNetworks/IEMS

Entity=Begin
47.166.56.10,STORM

SingleValues=Begin
Snapshot,5
sysDescr,2004-06-23T21:25:01EST,.iso.org.dod.internet.mgmt.mib-2.system,Linux
langley40 2.4.19-xfs #1 SMP Fri Nov 7 11:18:05 EST 2003 i686,Valid
snmpOutPkts,2004-06-23T21:25:02EST,.iso.org.dod.internet.mgmt.mib-2.snmp,2790,Valid
snmpInBadVersions,2004-06-23T21:25:03EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInBadCommunityNames,2004-06-23T21:25:03EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,1,Valid
```

```
snmpInTotalReqVars,2004-06-23T21:25:04EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,8880,Valid
snmpOutTraps,2004-06-23T21:25:04EST,.iso.org.dod.internet.mgmt.mib-2.snmp,69,Valid
snmpInBadCommunityUses,2004-06-23T21:25:04EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInPkts,2004-06-23T21:25:05EST,.iso.org.dod.internet.mgmt.mib-2.snmp,2739,Valid
snmpInTotalSetVars,2004-06-23T21:25:05EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpInASNParseErrs,2004-06-23T21:25:06EST,.iso.org.dod.internet.mgmt.mib-
2.snmp,0,Valid
snmpSilentDrops,2004-06-23T21:25:07EST,.iso.org.dod.internet.mgmt.mib-2.snmp,0,Valid
hrSystemDate,2004-06-23T21:25:08EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,0,Valid
hrSystemUptime,2004-06-23T21:25:09EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,6603666,Valid
hrSystemProcesses,2004-06-23T21:25:09EST,.iso.org.dod.internet.mgmt.mib-
2.host.hrSystem,73,Valid
SingleValues=End
Entity=End
System=End
PMFile=End
```

## GUI/CLUI Documentation for STORM

### GUI Launching and User procedures

- NN10024-111 (STORM Basics)

### Related documents

- NN10066-461 (Understanding STORM)
- NN10110-511 (STORM Configuration)
- NN10054-711 (STORM Performance)
- NN10176-611 (STORM Administration and Security)

## Universal Audio Server (UAS)

This section contains IEMS Northbound log samples and device documentation references for the UAS.



## UAS Fault Interface

### Fault documentation for UAS :

- NN10073-911 UAS Fault Management

### Fault Mapping for UAS

The following criteria can be used for looking up information on specific faults for UAS.

#### Fault Correlation for UAS

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                  |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------------|
| UAS                       | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10073-911<br>UAS Fault<br>Management |

## Northbound Fault Formats for UAS

### SCC2

The following is an example of a UAS log in SCC2 format:

```
*C59 UAS 301 0723 TBL UAS Fault
Location: UAS12_Test
NotificationID: 2109441
State: Raise
Category: Processing Error
Cause: Software error
Time: Jan 22 15:41:28 2004
Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1
Specific Problem: 12289
Description: CallEngine test alarm critical number 1
```

### NTSTD

The following is an example of a UAS log in NTSTD format:

```
COMPACT506BT *** UAS301 Jan22 20:59:00 1149 TBL UAS Fault
Location: UAS12_Test
```

```

NotificationID: 2109441
State: Raise
Category: Processing Error
Cause: Software error
Time: Jan 22 15:41:28 2004
Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1
Specific Problem: 12289
Description: CallEngine test alarm critical number 1

```

## SNMP

The following is an example of a UAS log in SNMP format:

```

sysUpTime.0 => 3:21:08
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.11
6.19.50.48.48.52.45.49.45.50.50.44.51.58.53.57.58.48.46.52.44.28556
alarmActiveDateAndTime => 2004-1-22,3:59:0.4,
alarmActiveDescription => DeviceSpecificInfo=Unavailable;Location: UAS12_Test
NotificationID: 2109441
State: Raise
Category: Processing Error
Cause: Software error
Time: Jan 22 15:41:28 2004
Component Id: UAS;UASUnit=MATTA-2;Software=Call_Engine_1
Specific Problem: 12289
Description: CallEngine test alarm critical number 1

```

## Syslog

The following is an example of a UAS log in Syslog format:

```

Jan 22 15:59:00 znc0s0jh IEMS: _V2_~I=~H=znc0s0jh~A=IEMS~S=3086~~ UAS301 CRIT TBL UAS
Fault^M      Location: UAS12_Test^M      NotificationID: 2109441^M      State:
Raise^M      Category: Processing Error^M      Cause: Software error^M      Time:
Jan 22 15:41:28 2004^M      Component Id: UAS;UASUnit=MATTA-
2;Software=Call_Engine_1^M      Specific Problem: 12289^M      Description:
CallEngine test alarm critical number 1

```

## Performance

### OM and PM Documentation references for UAS

- NTP NN10139-001 UAS Performance

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided  
each of the Northbound formats provided

#### XML

The following is an example of performance data for UAS in XML format:

*Note: The IEMS northbound performance interface does not support this device.*

#### CSV

The following is an example of performance data for UAS in CSV format:

*Note: The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for UAS

### GUI Launching and User procedures

- NTP NN10047-461 UAS Basics

### Related documents

- NTP NN10095-511 UAS Configuration
- NTP NN10161-611 UAS Security
- NTP NN10047-461 UAS Upgrades

## Universal Signaling Point (USP)

This section contains IEMS Northbound log samples and device documentation references for the USP.

## USP Fault Interface

### Fault documentation for USP :

- NN10071911 - USP Fault Management
- NN10072911 - USP-Compact Fault Management

### Fault Mapping for USP

The following criteria can be used for looking up information on specific faults for USP.

#### Fault Correlation for USP

| NB format -> Device/EM | SCC2                                                                                          | NTSTD                                                                                         | SNMP                                                                                          | Syslog                                                                                        | Document Reference                     |
|------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------|
| <b>USP</b>             | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | Specific Problem: Log Group=<text> & Log Number=<number><br><br>Note: Log GroupID is not used | NN10071911<br><br>USP Fault Management |

## Northbound Fault Formats for USP

### SCC2

The following is an example of a USP log in SCC2 format:

```
**10 USP 398 0022 FLT  USP Fault
Location: 47.135.60.201
Notification Id: 526
State: Raised
Category: processingError
Cause: applicationSubsystemFailure(2)
Time: Jan 20 07:10:29 2004
Component Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
Specific Problem: Log GroupID=13;Log Group=System Node Maintenance;Log Number=3
Description: Transition to DISABLED Operational State.
```

## NTSTD

The following is an example of a USP log in NTSTD format:

```
COMPACT06BT  ** USP398 Jan20 12:10:29 0022 FLT  USP Fault
    Location: 47.135.60.201
    Notification Id: 526
    State: Raised
    Category: processingError
    Cause: applicationSubsystemFailure(2)
    Time: Jan 20 07:10:29 2004
    Component Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
    Specific Problem: Log GroupID=13;Log Group=System Node Maintenance;Log Number=3
    Description: Transition to DISABLED Operational State.
```

## SNMP

The following is an example of a USP log in SNMP format:

```
sysUpTime.0 => 2:58:15
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.48.44.55.58.49.48.58.50.57.46.48.44.36582
alarmActiveDateAndTime => 2004-1-20,7:10:29.0,
alarmActiveDescription =>
DeviceSpecificInfo=applicationSubsystemFailure(2);Transition to DISABLED Operational
State.
nnExtAlarmActiveEventType => 3
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => USP 398
nnExtAlarmActiveResourceDescription => IEMS=usp_germany-1321-Unit-
0;USP=autoimage;Shelf=0;Slot=15;ContextID=0x0
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 21
```

## Syslog

The following is an example of a USP log in Syslog format:

```
Feb 22 01:50:39 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0088~~ USP398 MAJOR FLT
USP Fault^M      Location: 47.135.60.201^M      Notification Id: 526^M      State:
Raised^M      Category: processingError^M      Cause:
applicationSubsystemFailure(2)^M      Time: Jan 20 07:10:29 2004^M      Component
Id: USP=autoimage;Shelf=0;Slot=15;ContextID=0x0^M      Specific Problem: Log
GroupID=13;Log Group=System Node Maintenance;Log N^M      umber=3^M      Description:
Transition to DISABLED Operational State.
```

## Performance

### OM and PM Documentation references for USP

- NN10137711 - USP Performance Management
- NN10138711 - USP-Compact Performance Management
- USP Logs & OMs - USP Logs and OMs

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for USP in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

#### CSV

The following is an example of performance data for USP in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for USP

### GUI Launching and User procedures

- NN10093511 - USP Configuration Management
- NN10094511 - USP-Compact Operation Configuration
- NN10159611 - USP Administration and Security
- NN10160611 - USP-Compact Administration and Security

### Related documents

- NN10008111 - USP Basics
- NN10045461 - Upgrading the USP

- NN10009111 - USP-Compact Product and Technology Fundamentals

## **XACore**

This section contains IEMS Northbound log samples and device documentation references for the XACore.

### **XACore Fault Interface**

#### **Fault documentation for XACore :**

- 297-8991-510 - XA-Core Maintenance Manual
- 297-8991-511 - XA-Core Maintenance Guide
- NN10275-909 - Succession fault Management logs Reference
- NN10083-911 - Communication Server 2000 Fault Management

#### **DMS Standard (North America)**

- 297-8021-840P1 - North American DMS100 Log Report Reference Manual Volume 1 of 8
- 297-8021-840P2 - North American DMS100 Log Report Reference Manual Volume 2 of 8
- 297-8021-840P3 - North American DMS100 Log Report Reference Manual Volume 3 of 8
- 297-8021-840P4 - North American DMS100 Log Report Reference Manual Volume 4 of 8
- 297-8021-840P5 - North American DMS100 Log Report Reference Manual Volume 5 of 8
- 297-8021-840P6 - North American DMS100 Log Report Reference Manual Volume 6 of 8
- 297-8021-840P7 - North American DMS100 Log Report Reference Manual Volume 7 of 8
- 297-8021-840P8 - North American DMS100 Log Report Reference Manual Volume 8 of 8

#### **International Succession**

- 297-9051-8401 - DMS100 Log Report Reference Manual Volume 1 of 7
- 297-9051-8402 - DMS100 Log Report Reference Manual Volume 2 of 7

- 297-9051-8403 - DMS100 Log Report Reference Manual Volume 3 of 7
- 297-9051-8404 - DMS100 Log Report Reference Manual Volume 4 of 7
- 297-9051-8405 - DMS100 Log Report Reference Manual Volume 5 of 7
- 297-9051-8406 - DMS100 Log Report Reference Manual Volume 6 of 7
- 297-9051-8407 - DMS100 Log Report Reference Manual Volume 7 of 7

## Fault Mapping for XACore

The following criteria can be used for looking up information on specific faults for XACore.

### Fault Correlation for XACore

| NB format -><br>Device/EM | SCC2                    | NTSTD                   | SNMP                    | Syslog                  | Document Reference                        |
|---------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------------------------|
| <b>XACore</b>             | log name and log number | log name and log number | log name and log number | log name and log number | 297-8991-510 - XA-Core Maintenance Manual |

## Northbound Fault Formats for XACore

### SCC2

The following is an example of a XACore log in SCC2 format:

```
* 47 XAC 305 0114 FLT RTIF (Reset Terminal Interface)
DESCRIPTION: State has changed from INSV to SYSB by FAULT action
PORT: Type State Site FL Row Bay Shf/Slt/Pk/Pt EqPEC/Serial
RTIF SYSB HOST 01 A00 DPCC:00 00 15R U 1 NTLX08AA/ NNTM17205KR8
REASON: Device Fault: RTIF IPC Protocol Error.
FAULT RECORD ID: 880166C7
```

### NTSTD

The following is an example of a XACore log in NTSTD format:

```
COMPACT06BT * XAC305 Feb15 00:47:43 0114 FLT RTIF (Reset Terminal Interface)
DESCRIPTION: State has changed from INSV to SYSB by FAULT action
PORT: Type State Site FL Row Bay Shf/Slt/Pk/Pt EqPEC/Serial
RTIF SYSB HOST 01 A00 DPCC:00 00 15R U 1 NTLX08AA/ NNTM17205KR8
REASON: Device Fault: RTIF IPC Protocol Error.
```



---

FAULT RECORD ID: 880166C7

## SNMP

The following is an example of a XACore log in SNMP format:

```
sysUpTime. => 0:28:39
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.52.44.51.58.53.51.58.52.49.46.48.44.5248
alarmActiveDateAndTime => 2004-6-24,3:53:41.0
alarmActiveDescription => DeviceSpecificInfo=localTransmissionError;time: 2004 06 24
15 53 41
event: set
compId: EM MANTEO LP 3 SONET 2
severity: minor
faultcode: 70115203
alarmType: communications
commentData: Far end has raised a Line Remote Failure Indication alarm (rxRfiAlarm).
Check the operational attributes of the far-end.

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PPEM300
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m3.us.nortel.com-MDM-Mgr;EM MANTEO
LP 3 SONET 2
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 1375

sysUpTime. => 0:28:47
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.52.44.51.58.53.51.58.52.56.46.48.44.5249
alarmActiveDateAndTime => 2004-6-24,3:53:48.0
alarmActiveDescription => time: 2004 06 24 15 53 48
event: set
compId: EM MANTEO LP 3 SONET 2
severity: minor
```

```
faultcode: 70115210
alarmType: communications
commentData: Far end line: Entering unavailable state (10 consecutive SESs).
Check the provisioning or the hardware on the local and far end.

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 12
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => PPEM300
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m3.us.nortel.com-MDM-Mgr;EM MANTEO
LP 3 SONET 2
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 1376
```

## Syslog

The following is an example of a XACore log in Syslog format:

```
Feb 14 19:47:43 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=9773~~ XAC305 MINOR FLT
RTIF (Reset Terminal Interface)^M node CM ^M DESCRIPTION: State
has changed from INSV to SYSB by FAULT action^M PORT: Type State Site FL Row
Bay Shf/Slt/Pk/Pt EqPEC/Serial^M RTIF SYSB HOST 01 A00 DPCC:00 00
15R U 1 NTLX08AA/ NNTM17205KR8^M REASON: Device Fault: RTIF IPC Protocol
Error. ^M FAULT RECORD ID: 880166C7
```

## Performance

### OM and PM Documentation references for XACore

- 297-8991-810 - XA-Core Reference Manual
- NN10149-711 - Communications Server 2000 Performance Management

### DMS Standard (North America)

- 297-8021-814P1 - North American DMS-100 Operational Measurements Reference Manual Volume 1 of 6
- 297-8021-814P2 - North American DMS-100 Operational Measurements Reference Manual Volume 2 of 6
- 297-8021-814P3 - North American DMS-100 Operational Measurements Reference Manual Volume 3 of 6
- 297-8021-814P4 - North American DMS-100 Operational Measurements Reference Manual Volume 4 of 6

- 297-8021-814P5 - North American DMS-100 Operational Measurements Reference Manual Volume 5 of 6
- 297-8021-814P6 - North American DMS-100 Operational Measurements Reference Manual Volume 6 of 6

### **International Succession**

- 297-9051-8141 - DMS-100 Family Operational Measurements Reference Manual Volume 1 of 6
- 297-9051-8142 - DMS-100 Family Operational Measurements Reference Manual Volume 2 of 6
- 297-9051-8143 - DMS-100 Family Operational Measurements Reference Manual Volume 3 of 6
- 297-9051-8144 - DMS-100 Family Operational Measurements Reference Manual Volume 4 of 6
- 297-9051-8145 - DMS-100 Family Operational Measurements Reference Manual Volume 5 of 6
- 297-9051-8146 - DMS-100 Family Operational Measurements Reference Manual Volume 6 of 6

### **Northbound OM/PM Formats**

This section provides example output of Performance Measurement data in each of the Northbound formats provided

Performance measurements for XACore are available from the CS2K Core Manager. See NN10149-711 - Communications Server 2000 Performance Management for more information.

#### **XML**

The following is an example of Performance data for XACore in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

#### **CSV**

The following is an example of Performance data for XACore in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

### **GUI/CLUI Documentation for XACore**

The XACore provides both command-line and MAP-based interfaces accessed through the CS2000 Core Manager.

## **GUI/CLUI Launching and User procedures**

- NN10018-111 - CS2000 Core Manager Basics  
see section “Accessing the Core”

## **Related documents**

- NN10197-111 - Communication Server 2000 Basics
- NN10193-511 - Communication Server 2000 Configuration Management
- NN10127-811 - Communication Server 2000 Accounting Management
- NN10171-611 - Communication Server 2000 Security and Administration
- 297-5051-921 - SuperNode Data Manager DDMS ASCII CI Gateway User Guide
- 297-5161-022P1 - Advanced Intelligent Network Service Enablers SIG Volume 1 of 3
- 297-5161-022P2 - Advanced Intelligent Network Service Enablers SIG Volume 2 of 3
- 297-5161-022P3 - Advanced Intelligent Network Service Enablers SIG Volume 3 of 3
- 297-8021-350P1 - North American DMS-100 Translations Guide Volume 1 of 25
- 297-8021-350P2 - North American DMS-100 Translations Guide Volume 2 of 25
- 297-8021-350P3 - North American DMS-100 Translations Guide Volume 3 of 25
- 297-8021-350P4 - North American DMS-100 Translations Guide Volume 4 of 25
- 297-8021-350P5 - North American DMS-100 Translations Guide Volume 5 of 25
- 297-8021-350P6 - North American DMS-100 Translations Guide Volume 6 of 25
- 297-8021-350P7 - North American DMS-100 Translations Guide Volume 7 of 25
- 297-8021-350P8 - North American DMS-100 Translations Guide Volume 8 of 25
- 297-8021-350P9 - North American DMS-100 Translations Guide Volume 9 of 25
- 297-8021-350P10 - North American DMS-100 Translations Guide Volume 10 of 25

- 297-8021-350P11 - North American DMS-100 Translations Guide  
Volume 11 of 25
- 297-8021-350P12 - North American DMS-100 Translations Guide  
Volume 12 of 25
- 297-8021-350P13 - North American DMS-100 Translations Guide  
Volume 13 of 25
- 297-8021-350P14 - North American DMS-100 Translations Guide  
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- 297-8021-350P15 - North American DMS-100 Translations Guide  
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- 297-8021-350P16 - North American DMS-100 Translations Guide  
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- 297-8021-350P19 - North American DMS-100 Translations Guide  
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- 297-8021-350P20 - North American DMS-100 Translations Guide  
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- 297-8021-350P21 - North American DMS-100 Translations Guide  
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- 297-8021-350P22 - North American DMS-100 Translations Guide  
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- 297-8021-350P23 - North American DMS-100 Translations Guide  
Volume 23 of 25
- 297-8021-350P24 - North American DMS-100 Translations Guide  
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- 297-8021-350P25 - North American DMS-100 Translations Guide  
Volume 25 of 25
- 297-8021-351P1 - DMS-100 Data Schema Reference Manual
- 297-8021-351P2 - DMS-100 Data Schema Reference Manual
- 297-8021-351P3 - DMS-100 Data Schema Reference Manual
- 297-8021-351P4 - DMS-100 Data Schema Reference Manual
- 297-8021-351P5 - DMS-100 Data Schema Reference Manual
- 297-8021-351P6 - DMS-100 Data Schema Reference Manual
- 297-8021-351P7 - DMS-100 Data Schema Reference Manual

- 297-8021-351P8 - DMS-100 Data Schema Reference Manual
- 297-8021-351P9 - DMS-100 Data Schema Reference Manual
- 297-8021-351P10 - DMS-100 Data Schema Reference Manual
- 297-8021-351P11 - DMS-100 Data Schema Reference Manual
- 297-8021-351P12 - DMS-100 Data Schema Reference Manual
- 297-8021-801 - DMS-100 Feature Guide
- 297-8021-808P1 - DMS-100 SERVORD Reference Manual
- 297-8021-808P2 - DMS-100 SERVORD Reference Manual
- 297-8021-814P1 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P2 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P3 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P4 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P5 - DMS-100 Operational Measurements Reference Manual
- 297-8021-814P6 - DMS-100 Operational Measurements Reference Manual
- 297-8021-840P1 - DMS-100 Logs Reference Manual
- 297-8021-840P2 - DMS-100 Logs Reference Manual
- 297-8021-840P3 - DMS-100 Logs Reference Manual
- 297-8021-840P4 - DMS-100 Logs Reference Manual
- 297-8021-840P5 - DMS-100 Logs Reference Manual
- 297-8021-840P6 - DMS-100 Logs Reference Manual
- 297-8021-840P7 - DMS-100 Logs Reference Manual
- 297-8021-840P8 - DMS-100 Logs Reference Manual
- 297-8021-855P1 - DMS-100 Office Parameters Reference Manual
- 297-8021-855P2 - DMS-100 Office Parameters Reference Manual
- 297-8021-855P3 - DMS-100 Office Parameters Reference Manual
- 297-8991-810 - XA-Core Reference Manual



# Platforms

## SDM Platform

This section contains IEMS Northbound log samples and device documentation references for the SDM Platform.

### SDM Platform Fault Interface

#### Fault documentation for SDM Platform :

- NN10081-911 SDM Fault Management

#### Fault Mapping for SDM Platform

The following criteria can be used for looking up information on specific faults for SDM Platform.

##### Fault Correlation for SDM Platform

| NB format -><br>Device/EM  | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                  |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------------|
| SDM<br>(Platform) -<br>AIX | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10081-911<br>SDM Fault<br>Management |

### Northbound Fault Formats for SDM Platform

#### SCC2

The following is an example of a SDM Platform log in SCC2 format:

```
* 52 SDM 317 0162 TBL
    node SDM          SDM Base Maintenance
DCE problem detected
Reason: SEC Master Server 47.142.94.49 is down.
```

#### NTSTD

The following is an example of a SDM Platform log in NTSTD format:

```
COMPACT06BT * SDM 317 Feb15 00:52:49 0162 TBL
    node SDM          SDM Base Maintenance
```



DCE problem detected

Reason: SEC Master Server 47.142.94.49 is down.

## SNMP

The following is an example of a SDM Platform log in SNMP format:

```
sysUpTime.0 => 9:27:56
snmpTrapOID.0 => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-14,7:52:49.1
alarmActiveDescription => DeviceSpecificInfo=Unavailable; node SDM      SDM Base
Maintenance
DCE problem detected
Reason: SEC Master Server 47.142.94.49 is down.

nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SDM 317
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m0.us.nortel.com-SDM;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 35
```

## Syslog

The following is an example of a SDM Platform log in Syslog format:

```
Feb 14 19:52:49 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=9821~~ SDM317 MINOR TBL
^M      node SDM      SDM Base Maintenance^M      DCE problem detected^M      Reason:
SEC Master Server 47.142.94.49 is down.
```

## Performance

### OM and PM Documentation references for SDM Platform

- NN10147-711 SDM Performance Management

## Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

### XML

The following is an example of performance data for SDM Platform in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

### CSV

The following is an example of performance data for SDM Platform in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for SDM Platform

SDM Platform has a command line user interface that can be accessed via a secure shell.

### GUI/CLUI Launching and User procedures

- NN10017-111 SDM Basics (see User Interfaces Overview)

### Related documents

- NN10059-461 Upgrading the SDM
- NN10103-511 SDM Configuration Management
- NN10125-811 SDM Accounting
- NN10169-611 SDM Security and Administration

## Succession Server Platform Foundation Software (SSPFS)

This section contains IEMS Northbound log samples and device documentation references for the SSPFS platform.

### SSPFS Fault Interface

#### Fault documentation for SSPFS

- NN10261-450v2 - Succession Network Volume 2 of 2

## Fault Mapping for SSPFS

The following criteria can be used for looking up information on specific faults for SSPFS.

### Fault Correlation for SSPFS

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                                       |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------------------------|
| SSPFS                     | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10261-<br>450v2<br>Succession<br>Network<br>Volume 2 of 2 |

## Northbound Fault Formats for SSPFS

The SSPFS SNMP interface is not implemented yet.

### SCC2

The following is an example of a SSPFS log in SCC2 format:

*Not available at time of publication*

### NTSTD

The following is an example of a SSPFS log in NTSTD format:

*Not available at time of publication*

### SNMP

The following is an example of a SSPFS log in SNMP format:

*Not available at time of publication*

### Syslog

The following is an example of a SSPFS log in Syslog format:

*Not available at time of publication*

## Performance

### OM and PM Documentation references for SSPFS

The SSPFS platform does not generate and OMs or PMs, but it does collect such information from other network elements. For more information see:

- NN10276-500 - ATM/IP Configuration Management (Configuration of SNMP Poller)

- Succession Network Volume 2 of 2, NN10261-450v2.

## Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

### XML

The following is an example of performance data for SSPFS platform in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

### CSV

The following is an example of performance data for SSPFS platform in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for SSPFS

### GUI Launching and User procedures

- NN10276-500 - ATM/IP Configuration Management

***Note:** Contains information on the SSPFS CLI interface*

### Related documents

- NN10281-600 - ATM/IP Administration and Security

# Element Managers

## CS2000 Core Manager

This section contains IEMS Northbound log samples and device documentation references for the CS2K Core Manager.

### CS2K Core Manager Fault Interface

#### Fault documentation for CS2000 Core Manager :

- NN10275-909 - Succession fault Management logs Reference
- NN10082-911 - CS 2000 Core Manager Fault Management

#### Fault Mapping for CS2000 Core Manager

The following criteria can be used for looking up information on specific faults for CS2000 Core Manager.

##### Fault Correlation for CS2000 Core Manager

| NB format -><br>Device/EM | SCC2                   | NTSTD                  | SNMP                   | Syslog                 | Document<br>Reference                                                                                                                         |
|---------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| CS2000 Core<br>Manager    | log name and<br>number | log name and<br>number | log name and<br>number | log name and<br>number | NN10275-909<br>Succession<br>fault<br>Management<br>logs<br>Reference<br><br>NN10082-911<br>CS 2000<br>Core<br>Manager<br>Fault<br>Management |

### Northbound Fault Formats for CS2000 Core Manager

#### SCC2

The following is an example of a CS2000 Core Manager log in SCC2 format:

```
* 06 SDM 550 1506 INFO Node Status Change
Node:   SDM 0
Status: ** ISTb      from  ** ISTb
```

Reason: Application alarm set. SDM\_ETA.eta

## NTSTD

The following is an example of a CS2000 Core Manager log in NTSTD format:

```
COMPACT506BT    * SDM550 Feb15 03:07:00 1520 INFO Node Status Change
Node:          SDM 0
Status:        InSv          from    * ISTb
Reason:        Application alarm cleared. SDM_ETA.eta
```

## SNMP

The following is an example of a CS2000 Core Manager log in SNMP format:

```
sysUpTime. => 1 day, 19:19:26
snmpTrapOID. => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmMessageDateAndTime => 2004-6-9,3:4:9.1
nnExtAlarmMessageDocumentationPointer => PM 610
nnExtAlarmMessageInfo => 04 PM 610 3352 INFO ABI XPM C-side Link State Change
```

Node: SMA2 0 Link: 0 Plane: 0 Port: 0

From: SYSB To: INSV

Reason: Link opened by MG9K/ABI

```
sysUpTime.0 => 1 day, 19:19:27
snmpTrapOID.0 =>
alarmActiveResourceId => .0.0
alarmActiveDateAndTime => 2004-6-9,3:4:9.3
alarmActiveDescription => DeviceSpecificInfo=Unavailable;
Node:          SDM 0
Status:        ** ISTb          from    ** ISTb
Reason:        Application alarm set. SDM_ETA.eta
```

## Syslog

The following is an example of a CS2000 Core Manager log in Syslog format:

```
Feb 14 22:06:01 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=1165~~ SDM550 MINOR INFO
Node Status Change^M          node CM          ^M          Node:   SDM 0^M          Status:  **
ISTb          from  ** ISTb          ^M          Reason: Application alarm set. SDM_ETA.eta
```

## Performance

### OM and PM Documentation references for CS2000 Core Manager

- NN10148-711 - CS 2000 Core Manager Performance Management

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for CS2000 Core Manager in XML format:

***Note:** Northbound performance interface not supported for this component.*

#### CSV

The following is an example of performance data for CS2000 Core Manager in CSV format:

***Note:** Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for CS2000 Core Manager

The CS2000 Core Manager provides both command-line and MAP-based interfaces.

### GUI/CLUI Launching and User procedures

- NN10018-111 - CS2000 Core Manager Basics

### Related documents

- NN10060-461 - Upgrading the CS 2000 Core Manager
- NN10082-911 - CS 2000 Core Manager Fault Management
- NN10104-511 - CS 2000 Core Manager Configuration Management
- NN10126-811 - CS 2000 Core Manager Accounting

- NN10170-611 - CS 2000 Core Manager Administration and Security

## Centrex IP Call Manager (CICM Manager)

This section contains IEMS Northbound log samples and device documentation references for the CICM Manager.

### CICM Fault Interface

#### Fault documentation for CICM Manager:

- NN10334-911 - IEMS Fault Management

#### Fault Mapping for CICM Manager

The following criteria can be used for looking up information on specific faults for CICM Manager.

#### Fault Correlation for CICM Manager

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                     |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------|
| CICM Mgr                  | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10334-911<br>- IEMS Fault<br>Management |

### Northbound Fault Formats for CICM Manager

#### SCC2

The following is an example of a CICM Manager log in SCC2 format:

?

```
44 IEMS399 0011 FLT Communication Regained
Location: 47.142.106.223
NotificationID: 0
State: Cleared
Category: Communications
Time: Jun 30 15:44:06 2004
ComponentId: 47.165.168.74-CICM-Mgr_Card_B
Description: IEMS regained communication with the managed device
```



?

```
*C44 IEMS398 0012 FLT Communication Lost
      Location: 47.142.106.223
      NotificationID: 0
      State: Raised
      Category: Communications
      Cause: Communications subsystem failure
      Time: Jun 30 15:44:15 2004
      ComponentId: 47.165.168.74-CICM-Mgr_Card_B
      Specific Problem: Connection Lost
      Description: IEMS Unable to communicate with managed device
```

## NTSTD

The following is an example of a CICM Manager log in NTSTD format:

```
test IEMS399 JUN30 15:44:06 0011 FLT Communication Regained
      Location: 47.142.106.223
      NotificationID: 0
      State: Cleared
      Category: Communications
      Time: Jun 30 15:44:06 2004
      ComponentId: 47.165.168.74-CICM-Mgr_Card_B
      Description: IEMS regained communication with the managed device
```

```
test *** IEMS398 JUN30 15:44:15 0012 FLT Communication Lost
      Location: 47.142.106.223
      NotificationID: 0
      State: Raised
      Category: Communications
      Cause: Communications subsystem failure
      Time: Jun 30 15:44:15 2004
      ComponentId: 47.165.168.74-CICM-Mgr_Card_B
      Specific Problem: Connection Lost
      Description: IEMS Unable to communicate with managed device
```

## SNMP

The following is an example of a CICM Manager log in SNMP format:

```
sysUpTime. => 1 day, 18:18:50
snmpTrapOID. => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.51.48.44.51.58.51.53.58.49.50.46.51.44.2
alarmActiveDateAndTime => 2004-6-30,3:35:12.3
alarmActiveDescription => DeviceSpecificInfo=transmitFailure(54);Location:
47.165.168.252
Notification Id: 13
State: Raised
Category: communications
Cause: transmitFailure(54)
Time: Jun 29 08:30:47 2004
Component Id: CICM=CICMEM-070-B;NodeType=Platform
Specific Problem: Syslog failure for securitylog stream.
Description: Syslog Failure.
nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CICM301
nnExtAlarmActiveResourceDescription => IEMS=47.165.168.252-CICM-
Mgr_Card_A;CICM=CICMEM-070-B;NodeType=Platform
nnExtAlarmActiveSequenceNumber => 7

sysUpTime. => 1 day, 18:19:00
snmpTrapOID. => nnExtAlarmMinor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.54.45.50.57.44.56.58.51.48.58.52.55.46.48.44.2965
alarmActiveDateAndTime => 2004-6-29,8:30:47.0
alarmActiveDescription => DeviceSpecificInfo=transmitFailure(54);Location:
47.165.168.252
Notification Id: 13
State: Raised
Category: communications
Cause: transmitFailure(54)
Time: Jun 29 08:30:47 2004
Component Id: CICM=CICMEM-070-B;NodeType=Platform
Specific Problem: Syslog failure for securitylog stream.
Description: Syslog Failure.
nnExtAlarmActiveEventType => 1
```

```

nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => C1CM301
nnExtAlarmActiveResourceDescription => IEMS=47.165.168.252-C1CM-
Mgr_Card_A;C1CM=C1CMEM-070-B;NodeType=Platform
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 8

```

## Syslog

The following is an example of a C1CM Manager log in Syslog format:

```

Jun 30 15:44:06 2004      ComponentId: 47.165.168.74-C1CM-Mgr_Card_B      Description:
IEMS regained communication with the managed device

Jun 30 15:44:15 znc0s0tm IEMS: _V2_~I=~H=znc0s0tm~A=IEMS~S=6162~~ IEMS398 CRIT FLT
Communication Lost      Location: 47.142.106.223      NotificationID: 0      State:
Raised      Category: Communications      Cause: Communications subsystem failure
Time:

Jun 30 15:44:15 2004      ComponentId: 47.165.168.74-C1CM-Mgr_Card_B      Specific
Problem: Connection Lost      Description: IEMS Unable to communicate with managed
device

```

## Performance

### OM and PM Documentation references for C1CM Manager

- NN10327-711 - IEMS Performance Management

### Northbound OM/PM Formats

Performance measurements for C1CM Manager are available only from the C1CM Manager interface. See NN10327-711 - IEMS Performance Management for more information.

## XML

The following is an example of Performance data for C1CM Manager in XML format:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
_ <PMFile xmlns:xsi="http://www.w3.org/2000/10/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="commonFormat.xsd" MeasurementCategory="PM">
<FileCreationTime>2004-06-23T13:36:04EST</FileCreationTime>
_ <System>
<SystemId>NortelNetworks/IEMS</SystemId>
_ <Entity Type="C1CM Mgr">
<EntityId>47.165.168.120</EntityId>

```

```

<Table MeasurementKind="Snapshot" IntervalDuration="5">
  <TableId>.iso.org.dod.internet.mgmt.mib-
  2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry</TableId>
  <CaptureTime>2004-06-23T13:35:01EST</CaptureTime>
  <Labels>
    <Label>usrHistoryControlInterval</Label>
    <Label>usrHistoryControlIndex</Label>
    <Label>usrHistoryControlStatus</Label>
    <Label>usrHistoryControlOwner</Label>
  </Labels>
  <RowOfValues>
    <RowValue>
      <Value>900</Value>
    </RowValue>
    <RowValue>
      <Value>5</Value>
    </RowValue>
    <RowValue>
      <Value>1</Value>
    </RowValue>
    <RowValue>
      <Value>CICM-120A</Value>
    </RowValue>
  </RowOfValues>
</Table>

<Table MeasurementKind="Snapshot" IntervalDuration="5">
  <TableId>.iso.org.dod.internet.mgmt.mib-
  2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry</TableId>
  <CaptureTime>2004-06-23T13:35:58EST</CaptureTime>
  <Labels>
    <Label>usrHistoryControlInterval</Label>
    <Label>usrHistoryControlIndex</Label>
    <Label>usrHistoryControlStatus</Label>
    <Label>usrHistoryControlOwner</Label>
  </Labels>
  <RowOfValues>
```

```
  <RowValue>
<Value>900</Value>
</RowValue>
  <RowValue>
<Value>5</Value>
</RowValue>
  <RowValue>
<Value>1</Value>
</RowValue>
  <RowValue>
<Value>CICM-120A</Value>
</RowValue>
</RowOfValues>
</Table>
  <Table MeasurementKind="Snapshot" IntervalDuration="5">
<TableId>.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerfRefMIB
.nnPerfMetricReferenceTable.nnPerfMetricReferenceEntry</TableId>
<CaptureTime>2004-06-23T13:35:02EST</CaptureTime>
  <Labels>
<Label>nnPerfMetricValue</Label>
<Label>nnPerfMetricSources</Label>
<Label>nnPerfMetricDataType</Label>
<Label>nnPerfMetricGroup</Label>
<Label>nnPerfMetricName</Label>
<Label>nnPerfMetricRefIndex</Label>
</Labels>
  <RowOfValues>
  <RowValue>
<Value>0</Value>
</RowValue>
  <RowValue>
<Value>2</Value>
</RowValue>
  <RowValue>
<Value>1</Value>
</RowValue>
```

```
<RowValue>
<Value>CICM</Value>
</RowValue>
<RowValue>
<Value>ActiveConnections</Value>
</RowValue>
<RowValue>
<Value>5</Value>
</RowValue>
</RowOfValues>
<RowOfValues>
<RowValue>
<Value>0</Value>
</RowValue>
<RowValue>
<Value>2</Value>
</RowValue>
<RowValue>
<Value>1</Value>
</RowValue>
<RowValue>
<Value>CICM</Value>
</RowValue>
<RowValue>
<Value>PercentageCpuUsed</Value>
</RowValue>
<RowValue>
<Value>4</Value>
</RowValue>
</RowOfValues>
<RowOfValues>
<RowValue>
<Value>0</Value>
</RowValue>
<RowValue>
<Value>2</Value>
```

```
</RowValue>
_ <RowValue>
<Value>1</Value>
</RowValue>
_ <RowValue>
<Value>CICM</Value>
</RowValue>
_ <RowValue>
<Value>PercentageMemoryUsed</Value>
</RowValue>
_ <RowValue>
<Value>3</Value>
</RowValue>
</RowOfValues>
_ <RowOfValues>
_ <RowValue>
<Value>0</Value>
</RowValue>
_ <RowValue>
<Value>2</Value>
</RowValue>
_ <RowValue>
<Value>1</Value>
</RowValue>
_ <RowValue>
<Value>CICM</Value>
</RowValue>
_ <RowValue>
<Value>NumberOfLogs</Value>
</RowValue>
_ <RowValue>
<Value>2</Value>
</RowValue>
</RowOfValues>
_ <RowOfValues>
_ <RowValue>
```

```
<Value>0</Value>
</RowValue>
_ <RowValue>
<Value>2</Value>
</RowValue>
_ <RowValue>
<Value>1</Value>
</RowValue>
_ <RowValue>
<Value>CICM</Value>
</RowValue>
_ <RowValue>
<Value>ActiveSessions</Value>
</RowValue>
_ <RowValue>
<Value>1</Value>
</RowValue>
</RowOfValues>
</Table>
</Entity>
</System>
</PMFile>
```

## CSV

The following is an example of Performance data for CICM Manager in CSV format:

PMFile=Begin

PM,commonFormat.xsd,2004-06-23T13:45:00EST

System=Begin

NortelNetworks/IEMS

Entity=Begin

47.165.168.120,CICM Mgr



Table=Begin

.iso.org.dod.internet.mgmt.mib-  
2.rmon.usrHistory.usrHistoryControlTable.usrHistoryControlEntry,Snapshot,  
5,2004-06-23T13:40:01EST

usrHistoryControlInterval,usrHistoryControlIndex,usrHistoryControlStatus,u  
srHistoryControlOwner

900,5,1,CICM-120A

Table=End

Table=Begin

.iso.org.dod.internet.private.enterprises.nortel.nortelGenericMIBs.nortelPerf  
RefMIB.nnPerfMetricReferenceTable.nnPerfMetricReferenceEntry,Snapshot  
,5,2004-06-23T13:40:02EST

nnPerfMetricValue,nnPerfMetricSources,nnPerfMetricDataType,nnPerfMetri  
cGroup,nnPerfMetricName,nnPerfMetricRefIndex

0,2,1,CICM,ActiveConnections,5

0,2,1,CICM,PercentageCpuUsed,4

0,2,1,CICM,PercentageMemoryUsed,3

0,2,1,CICM,NumberOfLogs,2

0,2,1,CICM,ActiveSessions,1

Table=End

Entity=End

System=End

PMFile=End

## GUI/CLUI Documentation for CICM Manager

### GUI Launching and User procedures

### Related documents

## GWC Manager

This section contains IEMS Northbound log samples and device documentation references for the GWC Manager.

### GWC Manager Fault Interface

#### Fault documentation for GWC Mgr :

- NN10325-900 - ATM/IP Fault Management

#### Fault Mapping for GWC Mgr

The following criteria can be used for looking up information on specific faults for GWC Mgr.

#### Fault Correlation for GWC Mgr

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                                                                   |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------------------------------------------------------------|
| GWC Mgr                   | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | PLN-07AT<br>OSS SN07<br>OSS Guide<br>(ATM)<br><br>PLN-07IPOSS<br>SN07 OSS<br>Guide (IP) |

### Northbound Fault Formats for GWC Mgr

#### SCC2

The following is an example of a GWC Mgr log in SCC2 format:

```
*C14 CMT 301 7248 TBL CMT Fault
Location: gwcem
NotificationID: 700
```

State: Raise  
Category: Processing Error  
Cause: Corrupt data  
Time: Jan 23 15:14:38 2004  
Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0  
Specific Problem: FTP Problem  
Description: Problem detected in GWC Recovery Subsystem

## NTSTD

The following is an example of a GWC Mgr log in NTSTD format:

```
COMPACT06BT *** CMT301 Jan23 20:14:38 7248 TBL CMT Fault
Location: gwcem
NotificationID: 700
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Jan 23 15:14:38 2004
Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0
Specific Problem: FTP Problem
Description: Problem detected in GWC Recovery Subsystem
```

## SNMP

The following is an example of a GWC Mgr log in SNMP format:

```
system.sysUpTime.0 => 23:10:15
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42847
alarmActiveDateAndTime => 2004-1-23,3:14:38.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: gwcem
NotificationID: 700
State: Raise
Category: Processing Error
Cause: Corrupt data
Time: Jan 23 15:14:38 2004
Component Id: SESM=GWCEMalarm;GWCEM=Recovery;GWC=GWC-2-UNIT-0
```

Specific Problem: FTP Problem

Description: Problem detected in GWC Recovery Subsystem

**nnExtAlarmActiveEventType => 5**

**nnExtAlarmActiveProbableCause => 118**

**nnExtAlarmActiveAdditionalText =>**

**nnExtAlarmActiveDocumentationPointer => CMT 301**

**nnExtAlarmActiveResourceDescription =>**

IEMS=znc0s0j6;SESM=GWCeMalarm;GWCeM=Recovery;GWC=GWC-2-UNIT-0

**nnExtAlarmActiveManualClear => 0**

**nnExtAlarmActiveSequenceNumber => 9027**

## Syslog

The following is an example of a GWC Mgr log in Syslog format:

```
Feb 23 15:15:56 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7305~~ CMT301 CRIT TBL CMT
Fault^M      Location: gwcem^M      NotificationID: 700^M      State: Raise^M
Category: Processing Error^M      Cause: Corrupt data^M      Time: Jan 23 15:14:38
2004^M      Component Id: SESM=GWCeMalarm;GWCeM=Recovery;GWC=GWC-2-UNIT-0^M
Specific Problem: FTP Problem^M      Description: Problem detected in GWC Recovery
Subsystem^M
```

## Performance

### OM and PM Documentation references for GWC Mgr

GWC Mgr has no operational or performance measurements.

- See NN10156-711 - GWC Performance Management for PM information.

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for GWC Mgr in XML format:

***Note:** Northbound performance interface not supported for this component.*

#### CSV

The following is an example of performance data for GWC Mgr in CSV format:

***Note:** Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for GWC Mgr

### GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management
- NN10281-600 - ATM/IP Administration and Security
- NN10325-900 - ATM/IP Fault Management

### Related documents

## Integrated Element Management System (IEMS)

This section contains IEMS Northbound log samples and device documentation references for the IEMS.

### IEMS Fault Interface

#### Fault documentation for IEMS :

- NN10334-911 - IEMS Fault Management

#### Fault Mapping for IEMS

The following criteria can be used for looking up information on specific faults for IEMS.

##### Fault Correlation for IEMS

| NB format -><br>Device/EM | SCC2                     | NTSTD                    | SNMP                     | Syslog                   | Document<br>Reference                            |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------------------------------|
| IEMS                      | logname and<br>logNumber | logname and<br>logNumber | logname and<br>logNumber | logname and<br>logNumber | NN10334-911<br>IEMS Fault<br>Management<br>Guide |

### Northbound Fault Formats for IEMS

#### SCC2

The following is an example of a IEMS log in SCC2 format:

36 IEMS603 0001 INFO Missed Notifications

Location: 47.142.122.202

Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr

Time: Feb 14 19:36:32 2004

Description: Notification(s) missed in ML 5050 - 5149

## NTSTD

The following is an example of a IEMS log in NTSTD format:

RTPU07BU IEMS603 Feb15 00:36:32 0001 INFO Missed Notifications

Location: 47.142.122.202

Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr

Time: Feb 14 19:36:32 2004

Description: Notification(s) missed in ML 5050 - 5149

## SNMP

The following is an example of a IEMS log in SNMP format:

**sysUpTime.0 =>** 9:34:06

**snmpTrapOID.0 =>** nnExtAlarmMessage

**nnExtAlarmMessageResource =>** .0.0

**nnExtAlarmMessageResourceDescription =>** IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;

**nnExtAlarmMessageDateAndTime =>** 2004-1-14,7:58:59.2

**nnExtAlarmMessageDocumentationPointer =>** IEMS603

**nnExtAlarmMessageInfo =>** 58 IEMS603 0234 INFO Missed Notifications

Location: 47.142.122.202

Component Id: IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr

Time: Feb 14 19:58:59 2004

Description: Notification(s) missed in ML 5050 - 5149

## Syslog

The following is an example of a IEMS log in Syslog format:

Feb 14 18:42:42 wnc0s0pf IEMS: \_V2\_~I=~H=wnc0s0pf~A=IEMS~S=9198~~ IEMS603 NONE INFO  
Missed Notifications^M Location: 47.142.122.202^M Component Id:  
IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr^M Time: Feb 14 18:42:41 2004^M  
Description: Notification(s) missed in ML 5050 - 5149

## Performance

### OM and PM Documentation references for IEMS

- NN10327-711 IEMS Performance Monitoring
- NN10321-111 - IEMS User Guide

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for IEMS in XML format:

***Note:** Northbound performance interface not supported for this component.*

#### CSV

The following is an example of performance data for IEMS in CSV format:

***Note:** Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for IEMS

### GUI Launching and User procedures

- NN10329-111 - IEMS Basics

### Related documents

- NN10336-611 - IEMS Administration and Security
- NN10330-511 - IEMS Operational Configuration
- NN10326-461 - IEMS Upgrades

## MG9000 Manager

This section contains IEMS Northbound log samples and device documentation references for the MG9000 Mgr.

### MG9000 Mgr Fault Interface

#### Fault documentation for MG9000 Mgr :

- NN10074-911 MG9000 Fault Management

- NN10325-900 ATM/IP Fault Management
- NN10275-909 Succession Fault Management Logs Reference

## Fault Mapping for MG9000 Mgr

The following criteria can be used for looking up information on specific faults for MG9000 Mgr.

### Fault Correlation for MG9000 Mgr

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                        |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------------------|
| MG9000 Mgr                | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10074-911<br>MG9000<br>Fault<br>Management |

## Northbound Fault Formats for MG9000 Mgr

### SCC2

The following is an example of a MG9000 Mgr log in SCC2 format:

```
49 MGEM302 4260 TBL MG9K InvalidEMIPAddress
  Location: MG9k EM Comm Network
  Notification Id: 17180020453
  State: Cleared
  Category: communications
  Cause: Communications Subsystem Failure
      Invalid EM IP Address - An invalid EM IP address has been set on the GW
  Component Id: MG9k EM Comm Network
  specificProblem: Invalid EM IP Address - An invalid EM IP address has be
en set on the GW
  Description: An invalid EM IP address has been set on the GW
```

### NTSTD

The following is an example of a MG9000 Mgr log in NTSTD format:

```
RTPU07BR      MGEM302 Jan20 06:49:09 4260 TBL MG9K InvalidEMIPAddress
  Location: MG9k EM Comm Network
  Notification Id: 17180020453
```



```

State: Cleared
Category: communications
Cause: Communications Subsystem Failure
      Invalid EM IP Address - An invalid EM IP address has been set on the GW
Component Id: MG9k EM Comm Network
specificProblem: Invalid EM IP Address - An invalid EM IP address has be
en set on the GW
Description: An invalid EM IP address has been set on the GW

```

## SNMP

The following is an example of a MG9000 Mgr log in SNMP format:

```

system.sysUpTime.0 => 20:33:14
iso.org.dod.internet.snmpV2.snmpModules.snmpMIB.snmpMIBObjects.snmpTrap.snmpTrapOID.0 => nnExtAlarmClear
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.19.50.48
.48.52.45.49.45.50.48.44.49.58.52.57.58.57.46.51.44.37279
alarmActiveDateAndTime => 2004-1-20,1:49:9.3,
alarmActiveDescription => Communications Subsystem Failure
Invalid EM IP Address - An invalid EM IP address has been set on the GW

nnExtAlarmActiveEventType => 1
nnExtAlarmActiveProbableCause => 6
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => MGEM302
nnExtAlarmActiveResourceDescription => IEMS=cco4;MG9k EM Comm Network
nnExtAlarmActiveSequenceNumber => 7768

```

## Syslog

The following is an example of a MG9000 Mgr log in Syslog format:

```

Feb 23 12:38:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4317~~ MGEM302 NONE TBL
MG9K InvalidEMIPAddress^M      Location: MG9k EM Comm Network^M      Notification
Id: 17180020453^M      State: Cleared^M      Category: communications^M      Cause:
Communications Subsystem Failure^M      Invalid EM IP Address - An invalid EM IP
address has been set on the GW^M      Component Id: MG9k EM Comm Network^M
specificProblem: Invalid EM IP Address - An invalid EM IP address has be^M      en
set on the GW^M      Description: An invalid EM IP address has been set on the GW

```

## **Performance**

### **OM and PM Documentation references for MG9000 Mgr**

There are no OM's or PM's associated with this component.

### **GUI/CLUI Documentation for MG9000 Mgr**

#### **GUI Launching and User procedures**

- NN10096-511 MG9000 Configuration Management

#### **Related documents**

- NN10221105 VoA OSS Guide
- NN10162-611 MG9000 Administration and Security
- NN10048-461 Upgrading the MG9000
- NN10276-500 ATM/IP Configuration Management
- NN10325-900 ATM/IP Fault Management

## **Multi-Service Data Manager (MDM)**

This section contains IEMS Northbound log samples and device documentation references for the MDM.

Information in this section also applies to the following Media Gateways : MSS 7400, 15000, 20000. All these devices are closely related and are covered by the same set of customer documentation.

### **MDM Fault Interface**

#### **Fault documentation for MDM:**

- 241-6001-011 - Preside MDM Fault Management User Guide
- NN10092-911 - Passport 15000 and Preside MDM in Succession Networks Fault Management
- NN10600-500 - Nortel Networks Multiservice Switch 7400/15000/20000 Alarms Reference
- 241-6001-501 - Preside MDM Proxy Alarms Reference Guide

#### **Fault Mapping for MDM**

The following criteria can be used for looking up information on specific faults for MDM.

MDM and Media Gateway devices (6400, 7480, 15000, 20000) use fault code to identify different alarms. Fault codes are eight digits or letters and are grouped by type (first four digits of fault code). Documentation for each fault code group is provided in the following table.

**Fault Documentation for MDM**

| <b>Fault Code Group</b> | <b>Document Reference</b>                                                              |
|-------------------------|----------------------------------------------------------------------------------------|
| <b>0000</b>             | NN10600-500 - Nortel Networks Multiservice Switch<br>7400/15000/20000 Alarms Reference |
| <b>1100</b>             | NN10600-500 - Nortel Networks Multiservice Switch<br>7400/15000/20000 Alarms Reference |
| <b>70xx</b>             | NN10600-500 - Nortel Networks Multiservice Switch<br>7400/15000/20000 Alarms Reference |
| <b>0999</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>301x</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>50xx</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>600x</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>A0xx</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>B000</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |
| <b>CDxx</b>             | 241-6001-501 - Preside MDM Proxy Alarms Reference Guide                                |

The faults that are fed northbound from the IEMS use log name and number for distinction. The mapping between log name/number and fault code can be found in the Succession Solution document.

- NN10092-911 - Passport 15000 and Preside MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1).

**Fault Correlation for MDM**

| <b>NB format -&gt;<br/>Device/EM</b>    | <b>SCC2</b>         | <b>NTSTD</b>        | <b>SNMP</b>         | <b>Syslog</b>       | <b>Document<br/>Reference</b>                                                                           |
|-----------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>Multi-Service Data manager (MDM)</b> | log name and number | log name and number | log name and number | log name and number | NN10092-911<br>Passport 15000 and Preside MDM in Succession Networks Fault Management (PT-AAL1/UA-AAL1) |

**Northbound Fault Formats for MDM****SCC2**

The following is an example of a MDM log in SCC2 format:

```
*C22 MDM 303 7891 TBL
time: 2004 01 25 09 22 32
event: set
compId: EM PP14
severity: critical
faultcode: 09990001
alarmType: equipment
commentData: FMDR_SURV@rt pimdm has lost connection to EM PP14. Please in
vestigate.
```

**NTSTD**

The following is an example of a MDM log in NTSTD format:

```
RTPU07BU *** MDM303 Jan25 14:22:32 7345 TBL
time: 2004 01 25 09 22 32
event: set
compId: EM PP14
severity: critical
faultcode: 09990001
alarmType: equipment
commentData: FMDR_SURV@rt pimdm has lost connection to EM PP14. Please in
vestigate.
```

## SNMP

The following is an example of a MDM log in SNMP format:

```
system.sysUpTime.0 => 3 days, 0:41:03
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.53.44.57.58.50.50.58.51.50.46.48.44.13270
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=equipmentFailure;FMDR_SURV@rtipmdm has
lost connection to EM PP14. Please investigate.

nnExtAlarmActiveEventType => 4
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => MDM 303
nnExtAlarmActiveResourceDescription => IEMS=47.142.116.75-MDM-Mgr_PP14;EM PP14
nnExtAlarmActiveManualClear => 1
nnExtAlarmActiveSequenceNumber => 17433
```

## Syslog

The following is an example of a MDM log in Syslog format:

```
Feb 27 11:16:54 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0402~~ MDM303 CRIT TBL ^M
time: 2004 01 27 11 15 32^M          event: set^M          compId: EM PP14^M          severity:
critical^M          faultcode: 09990001^M          alarmType: equipment^M          commentData:
FMDR_SURV@rtipmdm has lost connection to EM PP14. Please in^M          vestigate.
```

## Performance

### OM and PM Documentation references for MDM

- 241-6001-806 - Preside MDM MDP Data Formats Reference Guide

### Northbound OM/PM Formats

Performance measurements for MDM are available only from the MDM directly. For more information on MDM, MSS 7000, and MSS 15000 OMs, see 241-6001-806 - Preside MDM MDP Data Formats Reference Guide

## XML

The following is an example of Performance data for MDM in XML format:

*Note: The IEMS northbound performance interface does not support this device.*

## CSV

The following is an example of Performance data for MDM in CSV format:

*Note: The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for MDM

### GUI Launching and User procedures

The following documents provide specific details about the various user interfaces provided by the MDM.

- 241-6001-801 - Preside MDM Overview
- 241-6001-011 - Preside MDM Fault Management User Guide
- 241-6001-013 - Preside MDM Remote Network Communication System User Guide
- 241-6001-015 - Preside MDM Network Model Administrator Guide
- 241-6001-022 - Preside MDM Network Reporting System User Guide
- 241-6001-023 - Preside MDM Configuration Management for Passport User Guide
- 241-6001-030 - Preside MDMWeb User Guide
- 241-6001-031 - Preside MDM Performance Management User Guide
- 241-6001-040 - Preside MDM Security User Guide

### Related documents

Numerous documents are available on MDM installation, configuration, and planning. All the documents in the **241-6001-xxx** series are related to the MDM and its operations.

- NN10028-111 - Passport 15000 and Preside MDM in Succession Networks Product and Technology Fundamentals (PT-AAL1/U)
- NN10070-461 - Passport 15000 and Preside MDM in Succession Networks Upgrade Guide (PT-AAL1/UA-AAL1)
- NN10092-911 - Passport 15000 and Preside MDM in Succession Networks Fault Management Overview (PT-AAL1/UA-AAL1)
- NN10114-511 - Passport 15000 and Preside MDM in Succession Networks Configuration Overview (PT-AAL1/UA-AAL1)
- NN10158-711 - Passport 15000 and Preside MDM in Succession Networks Performance (PT-AAL1/UA-AAL1)

- NN10180-611 - Passport 15000 and Preside MDM in Succession Networks Security and Administration (PT-AAL1/UA-AAL1)
- NN10185-461 - Preside MDM in Succession Networks Upgrade Guide (PT-AAL1/UA-AAL1)
- NN10198-912 - Passport 15000 and Preside MDM in Succession Networks Fault Management Troubleshooting (PT-AAL1/UA-A)
- NN10225-512 - Passport 15000 and Preside MDM in Succession Networks Configuration Attribute Summary (PT-AAL1/UA-AA

## SAM21 Element Manager

This section contains IEMS Northbound log samples and device documentation references for the SAM21 EM.

### SAM21 EM Fault Interface

#### Fault documentation for SAM21 EM :

The SAM 21 Manager reports faults for the SAM 21 Shelf Controller. Please refer to the SAM 21 SC documents below for details about SAM 21 faults.

- NN10089-911 - SAM21 Shelf Controller Fault Management

#### Fault Mapping for SAM21 EM

The following criteria can be used for looking up information on specific faults for SAM21 EM.

##### Fault Correlation for SAM21 EM

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                                           |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------------------------------------|
| SAM21 Mgr                 | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10089-911<br>SAM21 Shelf<br>Controller<br>Fault<br>Management |

### Northbound Fault Formats for SAM21 EM

#### SCC2

The following is an example of a SAM21 EM log in SCC2 format:

```
**37 SCU 350 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

## NTSTD

The following is an example of a SAM21 EM log in NTSTD format:

```
COMPACT06BT ** SCU350 Jan15 00:37:17 0009 FLT Alarm Raised
Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:55:52 EST 2004
Reason:    Temperature in Sled 3 is high
```

## SNMP

The following is an example of a SAM21 EM log in SNMP format:

```
sysUpTime.0 => 9:14:20
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.51.58.49.52.58.51.56.46.48.44.42847
alarmActiveDateAndTime => 2004-1-23,3:14:38.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: SAM21 1:CSAM01-01:sled 3
Time:      Wed Jan 14 13:57:48 EST 2004
Reason:    Temperature in Sled 3 is high

nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SCU 350
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0kz.us.nortel.com-SAM21-Mgr;
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1
```

## Syslog

The following is an example of a SAM21 EM log in Syslog format:



```
Feb 12 18:30:19 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7929~~ SCU350 MAJOR FLT
Alarm Raised^M Location: SAM21 1:CSAM01-01:sled 3^M Time: Mon Jan 12
12:49:06 EST 2004^M Reason: Temperature in Sled 3 is high
```

## Performance

### OM and PM Documentation references for SAM21 EM

SAM21 EM has no operational or performance measurements.

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of performance data for SAM21 EM in XML format:

*Note: Northbound performance interface not supported for this component.*

#### CSV

The following is an example of performance data for SAM21 EM in CSV format:

*Note: Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for SAM21 EM

### GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10281-600 - ATM/IP Administration and Security

### Related documents

- NN10089-911 - SAM21 Shelf Controller Fault Management
- NN10325-900 - ATM/IP Fault Management
- NN10276-500 - ATM/IP Configuration Management

# Applications

## Audio Provisioning Server (APS)

This section contains IEMS Northbound log samples and device documentation references for the APS.

### APS Fault Interface

#### Fault documentation for APS :

- NN10328-911 - MS 2000 Series Fault Management

#### Fault Mapping for APS

The following criteria can be used for looking up information on specific faults for APS.

##### Fault Correlation for APS

| NB format -><br>Device/EM | SCC2            | NTSTD           | SNMP            | Syslog          | Document<br>Reference                                |
|---------------------------|-----------------|-----------------|-----------------|-----------------|------------------------------------------------------|
| APS                       | SpecificProblem | SpecificProblem | SpecificProblem | SpecificProblem | NN10328-911<br>MS 2000<br>Series Fault<br>Management |

### Northbound Fault Formats for APS

#### SCC2

The following is an example of a APS log in SCC2 format:

```
*C02 APS 398 2759 TBL APS Fault
Location: rtp2aps
Notification Id: 28673
State: Raise
Category: communications
Cause: softwareError
Time: Jan 27 07:02:30 2004
Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0
Specific Problem: 28673
Description: DB is not available, or the user cannot get a connection to
```

the DB

## NTSTD

The following is an example of a APS log in NTSTD format:

```
RTPU07BR *** APS398 Jan27 12:02:30 2207 TBL APS Fault
Location: rtp2aps
Notification Id: 28673
State: Raise
Category: communications
Cause: softwareError
Time: Jan 27 07:02:30 2004
Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0
Specific Problem: 28673
Description: DB is not available, or the user cannot get a connection to
the DB
```

## SNMP

The following is an example of a APS log in SNMP format:

```
sysUpTime.0 => 2 days, 18:44:37
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.18.50.48
.48.52.45.49.45.50.55.44.5
5.58.49.58.54.46.48.44.11202
alarmActiveDateAndTime => 2004-1-27,7:1:6.0
alarmActiveDescription => DeviceSpecificInfo=;DB is not available, or the user cannot
get a connection to
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => APS 398
nnExtAlarmActiveResourceDescription => IEMS=znc0s0j6-SSPFS-Unit-
0;APS;APSUnit=nc0rtp170;Software=Audio_Management_0
nnExtAlarmActiveManualClear => 4
nnExtAlarmActiveSequenceNumber => 13458
```

## Syslog

The following is an example of a APS log in Syslog format:

```
Feb 27 07:02:24 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=6645~~ APS398 CRIT TBL APS
Fault^M      Location: rtp2aps^M      NotificationID: 28673^M      State: Raise^M
Category: Communications^M      Cause: Software error^M      Time: Jan 27 07:02:30
2004^M      Component Id: APS;APSUnit=nc0rtp170;Software=Audio_Management_0^M
Specific Problem: 28673^M      Description: DB is not available, or the user cannot
get a connection to^M      the DB^M
```

## Performance

### OM and PM Documentation references for APS

- NN10331-711 - MS 2000 Series Performance Monitoring

### Northbound OM/PM Formats

#### XML

The following is an example of performance data for APS in XML format:

*Note: Northbound performance interface not supported for this component.*

#### CSV

The following is an example of performance data for APS in CSV format:

*Note: Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for APS

### GUI Launching and User procedures

- NN10340-511 - MS 2000 Series Configuration Management

### Related documents

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

## Line Maintenance Manager (LMM)

This section contains IEMS Northbound log samples and device documentation references for LMM.

## LMM Fault Interface

### Fault documentation for LMM :

There are no faults or logs associated with this application.

### Fault Mapping for LMM

There are no faults or logs associated with this application.

## Performance

There are no OMs or PMs associated with this application.

## GUI/CLUI Documentation for LMM

### GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10321-111 - IEMS User Guide

### Related documents

## Network Patch Manager (NPM)

This section contains IEMS Northbound log samples and device documentation references for the Network Patch Manager (NPM).

## NPM Fault Interface

### Fault documentation for NPM :

- NN10325-900 - ATM/IP Fault Management

### Fault Mapping for NPM

The following criteria can be used for looking up information on specific faults for NPM.

#### Fault Correlation for NPM

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                     |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------|
| NPM                       | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10325-900<br>ATM/IP Fault<br>Management |

## Northbound Fault Formats for NPM

### SCC2

The following is an example of an NPM log in SCC2 format:

```
38 NPM 360 6012 INFO Alarm Raised
Alarm ACT_NOT_APP has been raised.
Alarm Description: Activatable patches not applied.
```

### NTSTD

The following is an example of an NPM log in NTSTD format:

```
RTPU07BU      NPM360 Jan27 15:38:44 5466 INFO Alarm Raised
Alarm ACT_NOT_APP has been raised.
Alarm Description: Activatable patches not applied.
```

### SNMP

The following is an example of an NPM log in SNMP format:

```
system.sysUpTime.0 => 2 days, 22:22:15
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=znc0s0j6-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-1-27,10:38:44.0
nnExtAlarmMessageDocumentationPointer => NPM 360
nnExtAlarmMessageInfo => 38 NPM 360 6012 INFO Alarm Raised           Alarm
ACT_NOT_APP has been raised.

Alarm Description: Activatable patches not applied.
```

### Syslog

The following is an example of an NPM log in Syslog format:

```
Feb 27 10:40:03 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0201~~ NPM360 NONE INFO
Alarm Raised^M           Alarm ACT_NOT_APP has been raised.^M           Alarm Description:
Activatable patches not applied.
```

## **Performance**

### **OM and PM Documentation references for NPM**

There are no OMs or PMs associated with this application.

## **GUI/CLUI Documentation for NPM**

### **GUI Launching and User procedures**

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management

### **Related documents**

- NN10281-600 - ATM/IP Administration and Security
- NN10261-450 - Upgrading the Succession Network

## **OSSGate**

This section contains IEMS Northbound log samples and device documentation references for the OSSGate.

## **OSSGate Fault Interface**

### **Fault documentation for OSSGate :**

There are no faults or logs associated with this application.

### **Fault Mapping for OSSGate**

There are no faults or logs associated with this application.

## **Performance**

### **OM and PM Documentation references for OSSGate**

There are no OMs or PMs associated with this application.

### **Northbound OM/PM Formats**

There are no OMs or PMs associated with this application.

## **GUI/CLUI Documentation for OSSGate**

### **GUI Launching and User procedures**

- NE10004-512 OSSGate User's Guide

### Related documents

- 297-9051-8081 SERVORD Reference Manual Vol 1 of 2
- 297-9051-8082 SERVORD Reference Manual Vol 2 of 2

## QoS Collector Application (QCA)

This section contains IEMS Northbound log samples and device documentation references for the QCA.

### QCA Fault Interface

#### Fault documentation for QCA :

The QoS Collector reports faults as part of the CS2K Management Tools suite. The documents below contain information about QoS Collector faults.

- NN10083-911 - Communication Server 2000 Fault Management

#### Fault Mapping for QCA

The following criteria can be used for looking up information on specific faults for QCA.

##### Fault Correlation for QCA

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                                              |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------------------------------------------------|
| QCA                       | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10083-911<br>Communication<br>Server 2000<br>Fault<br>Management |

### Northbound Fault Formats for QCA

#### SCC2

The following is an example of a QCA log in SCC2 format:

```
*C34 QCA 310 0052 TBL wnc0y0kz
Location: wnc0y0kz
NotificationID : 49
State : Raise
Category : Processing Error
```



Cause : storageCapacityProblem  
Time : Jan 22 16:34:19 2004  
Component Id: /data/qca  
Specific Problem: checkDiskSpace() has shown that there is less than  
104857600 bytes available on the local disk.  
Description : More Disk space is required immediately.

## NTSTD

The following is an example of a QCA log in NTSTD format:

```
COMPACT06BT *** QCA 310 Jan22 21:34:19 0052 TBL wnc0y0kz
Location: wnc0y0kz
NotificationID : 49
State : Raise
Category : Processing Error
Cause : storageCapacityProblem
Time : Jan 22 16:34:19 2004
Component Id: /data/qca
Specific Problem: checkDiskSpace() has shown that there is less than
104857600 bytes available on the local disk.
Description : More Disk space is required immediately.
```

## SNMP

The following is an example of a QCA log in SNMP format:

```
system.sysUpTime.0 => 0:28:36
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.50.44.52.58.51.52.58.50.48.46.48.44.37495
alarmActiveDateAndTime => 2004-1-22,4:34:20.0,
alarmActiveDescription => DeviceSpecificInfo=;Location: wnc0y0kz
NotificationID : 49
State : Raise
Category : Processing Error
Cause : storageCapacityProblem
Time : Jan 22 16:34:19 2004
Component Id: /data/qca
```

Specific Problem: checkDiskSpace() has shown that there is less than 104857600 bytes available on the local disk.

Description : More Disk space is required immediately.

```
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => QCA 310
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0kz-QOS;/data/qca
nnExtAlarmActiveManualClear => 4
nnExtAlarmActiveSequenceNumber => 3
```

## Syslog

The following is an example of a QCA log in Syslog format:

```
Feb 22 16:34:19 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0062~~ QCA310 CRIT TBL
wnc0y0kz^M      Location: wnc0y0kz^M      NotificationID : 49^M      State :
Raise^M      Category : Processing Error^M      Cause : storageCapacityProblem^M
Time : Jan 22 16:26:49 2004^M      Component Id: /data/qca^M      Specific Problem:
checkDiskSpace() has shown that there is less than^M      104857600 bytes available
on the local disk.^M      Description : More Disk space is required immediately.^M
```

## Performance

### OM and PM Documentation references for QCA

- There are no OM or PMs associated with QCA.

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for QCA in XML format:

*Note: Northbound performance interface not supported for this component.*

#### CSV

The following is an example of Performance data for QCA in CSV format:

*Note: Northbound performance interface not supported for this component.*

## **GUI/CLUI Documentation for QCA**

### **GUI Launching and User procedures**

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10281-600 - ATM/IP Administration and Security
- NN10325-900 - ATM/IP Fault Management
- NN10276-500 - ATM/IP Configuration Management

### **Related documents**

## **Trunk Maintenance Manager (TMM)**

This section contains IEMS Northbound log samples and device documentation references for TMM.

### **TMM Fault Interface**

#### **Fault documentation for TMM :**

There are no faults or logs associated with this application.

#### **Fault Mapping for TMM**

There are no faults or logs associated with this application.

### **Performance**

#### **OM and PM Documentation references for TMM**

There are no OMs or PMs associated with this application.

## **GUI/CLUI Documentation for TMM**

### **GUI Launching and User procedures**

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10321-111 - IEMS User Guide

### **Related documents**



# Non-Topology Elements

This section contains references to applications that do not appear in the IEMS topology, but still report faults to the Northbound log streams.

## Data Audit System

This section contains IEMS Northbound log samples and device documentation references for the Data Audit System.

### Data Audit System Fault Interface

#### Fault documentation for Data Audit System :

- NN10325-900 - ATM/IP Fault Management

#### Fault Mapping for Data Audit System

The following criteria can be used for looking up information on specific faults for Data Audit System.

**Fault Correlation for Data Audit System**

| NB format -><br>Device/EM    | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                     |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------|
| <b>Data Audit<br/>System</b> | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10325-900<br>ATM/IP Fault<br>Management |

### Northbound Fault Formats for Data Audit System

#### SCC2

The following is an example of a Data Audit System log in SCC2 format:

```
*C43 CMT 300 5341 TBL CMT Fault
  Location: Audit
  NotificationID: 1001
  State: Raise
  Category: Processing Error
  Cause: Corrupt data
  Time: Jan 23 13:43:37 2004
  Component Id: SESM=AuditSystem;Audit=CS2K Data Integrity Audit
  Specific Problem: Data mismatches detected
  Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolved problems. To view and correct the problems, open the audit problem report from the Audit System found under the SESM Maintenance menu item.
```

## NTSTD

The following is an example of a Data Audit System log in NTSTD format:

```
COMPACT06BT *** CMT300 Jan23 18:43:37 5341 TBL CMT Fault
  Location: Audit
  NotificationID: 1001
  State: Raise
  Category: Processing Error
  Cause: Corrupt data
  Time: Jan 23 13:43:37 2004
  Component Id: SESM=AuditSystem;Audit=CS2K Data Integrity Audit
  Specific Problem: Data mismatches detected
  Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolv
d problems. To view and correct the problems, open the audit problem rep
ort from the Audit System found under the SESM Maintenance menu item.
```

## SNMP

The following is an example of a Data Audit System log in SNMP format:

```
system.sysUpTime.0 => 21:39:13
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.51.44.49.58.52.51.58.51.55.46.48.44.42485
alarmActiveDateAndTime => 2004-1-23,1:43:37.0,
alarmActiveDescription => DeviceSpecificInfo=;Event from Unknown Syslog Device
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CMT 300
nnExtAlarmActiveResourceDescription => IEMS=znc0s0j6;SESM=AuditSystem;Audit=CS2K Data
Integrity Audit
nnExtAlarmActiveManualClear => 0
nnExtAlarmActiveSequenceNumber => 8390
```

## Syslog

The following is an example of a Data Audit System log in Syslog format:

```
Feb 23 13:44:54 wnc0s0pf IEMS: _V2_-I=~H=wnc0s0pf~A=IEMS~S=5398~~ CMT300 CRIT TBL CMT
Fault^M Location: Audit^M NotificationID: 1001^M State: Raise^M Category: Processing
Error^M Cause: Corrupt data^M Time: Jan 23 13:43:37 2004^M Component Id:
SESM=AuditSystem;Audit=CS2K Data Integrity Audit^M Specific Problem: Data mismatches
detected^M Description: The SESM audit: CS2K Data Integrity Audit, has 59 unresolve^M
d problems. To view and correct the problems, open the audit problem rep^M ort from
the Audit System found under the SESM Maintenance menu item.^M
```

## Performance

### OM and PM Documentation references for Data Audit System

There are no OMs or PMs associated with this application.

### Northbound OM/PM Formats

There are no OMs or PMs associated with this application.

## GUI/CLUI Documentation for Data Audit System

### GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics
- NN10276-500 - ATM/IP Configuration Management
- NN10325-900 - ATM/IP Fault Management

### Related documents

## IW-SPM IP

This section contains IEMS Northbound log samples and device documentation references for the IW-SPM IP.

### IW-SPM IP Fault Interface

#### Fault documentation for IW-SPM IP :

- NN10078-911 - IW SPM IP Fault Management
- NN10275-909 - Succession Fault Management Logs Reference

### Fault Mapping for IW-SPM IP

The following criteria can be used for looking up information on specific faults for IW-SPM IP.

#### Fault Correlation for IW-SPM IP

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                           |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------------------------|
| IW-SPM IP                 | Logname and<br>number | Logname and<br>number | Logname and<br>number | Logname and<br>number | NN10078-911<br>IW SPM IP<br>Fault<br>Management |

## Northbound Fault Formats for IW-SPM IP

### SCC2

The following is an example of a IW-SPM IP log in SCC2 format:

```
**17 SPM 313 4488 TBL Fault
      SPM    0 CEM    0 : A                      Time: 12:16:13.890
      Source: None                State: Insv      Type: None
      Reason:      Loadname mismatch.
      Diagnostic: Autonomous fault detection
      Comp:MCM          RegAddr:0          Exp:0          Act:0
```

### NTSTD

The following is an example of a IW-SPM IP log in NTSTD format:

```
RTPU07BU ** SPM313 Feb28 00:06:14 9091 TBL Fault
      SPM    0 CEM    1 : A                      Time: 19:05:14.820
      Source: None                State: Insv      Type: None
      Reason:      SYNC OOSpec: prim. ref. NA.
      Diagnostic: Autonomous fault detection
      Comp:TIC          RegAddr:0          Exp:0          Act:0
```

### SNMP

The following is an example of a IW-SPM IP log in SNMP format:

```
system.sysUpTime.0 => 3 days, 6:54:40
snmpTrapOID.0 => nnExtAlarmMajor
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.50.45.50.55.44.55.58.49.50.58.50.55.46.54.44.14023
alarmActiveDateAndTime => 2004-2-27,7:12:27.6
alarmActiveDescription => DeviceSpecificInfo=Unavailable;SPM 0 CEM 0 : A
Time: 19:11:31.010
Source: None                State: Insv      Type: None
Reason:      SYNC OOSpec: prim. ref. NA.
Diagnostic: Autonomous fault detection
Comp:TIC          RegAddr:0          Exp:0          Act:0
```



```
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => SPM 313
nnExtAlarmActiveResourceDescription => IEMS=wnc0y0m0.us.nortel.com-CS2K-Mgr;
nnExtAlarmActiveManualClear => 3
nnExtAlarmActiveSequenceNumber => 18489
```

## Syslog

The following is an example of a IW-SPM IP log in Syslog format:

```
Feb 28 12:11:09 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=7983~~ SPM313 MAJOR TBL
Fault^M      SPM  0 CEM  1 : I      Time: 12:10:11.080^M      Source:
None      State: Insv      Type: None ^M      Reason:      No frame pulse from
DS-512 #0 ^M      Diagnostic: Autonomous fault detection ^M      Comp:TIC
RegAddr:0      Exp:0      Act:0
```

## Performance

### OM and PM Documentation references for IW-SPM IP

- NN10144-711 - IW SPM IP Performance Management

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for IW-SPM IP in XML format:

***Note:** The IEMS northbound performance interface does not support this device.*

#### CSV

The following is an example of Performance data for IW-SPM IP in CSV format:

***Note:** The IEMS northbound performance interface does not support this device.*

## GUI/CLUI Documentation for IW-SPM IP

### GUI Launching and User procedures

- NN10015-111 - IW SPM IP Basics

### Related documents

- NN10056-461 - Upgrading the IW SPM IP
- NN10100-511 - IW SPM IP Configuration Management
- NN10166-611 - IW SPM IP Administration and Security

## MG9000 Manager Mid-Tier

This section contains IEMS Northbound log samples and device documentation references for the MG9000 Mgr Mid-Tier.

### MG9000 Mgr Mid-Tier Fault Interface

#### Fault documentation for MG9000 Mgr Mid-Tier :

All MG9000 Mgr Mid-Tier faults are delivered via MG9000 Mgr. See document(s)

- NN10074-911 MG9000 Fault Management
- NN10325-900 ATM/IP Fault Management
- NN10275-909 Succession Fault Management Logs Reference

#### Fault Mapping for MG9000 Mgr Mid-Tier

The following criteria can be used for looking up information on specific faults for MG9000 Mgr Mid-Tier.

##### Fault Correlation for MG9000 Mgr Mid-Tier

| NB format -><br>Device/EM | SCC2                | NTSTD               | SNMP                | Syslog              | Document<br>Reference                        |
|---------------------------|---------------------|---------------------|---------------------|---------------------|----------------------------------------------|
| MG9K Mid-Tier             | log name and number | log name and number | log name and number | log name and number | NN10074-911<br>MG9000<br>Fault<br>Management |

## Northbound Fault Formats for MG9000 Mgr Mid-Tier

### SCC2

The following is an example of a MG9000 Mgr Mid-Tier log in SCC2 format:

```
52 MGEM703 0193 INFO Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

### NTSTD

The following is an example of a MG9000 Mgr Mid-Tier log in NTSTD format:

```
RTPU07BT      MGEM703 Feb02 20:52:08 0197 INFO Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

### SNMP

The following is an example of a MG9000 Mgr Mid-Tier log in SNMP format:

```
sysUpTime.0 => 1:30:14
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0y0nr.us.nortel.com-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-2-2,3:52:8.0
nnExtAlarmMessageDocumentationPointer => MGEM703
nnExtAlarmMessageInfo => 52 MGEM703 0193 INFO Shutdown_Event          Status:
Shutting MG 9K Midtier Server down ...
```

### Syslog

The following is an example of a MG9000 Mgr Mid-Tier log in Syslog format:

```
Mar  4 15:27:47 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=0682~~ MGEM703 NONE INFO
Shutdown_Event
Status: Shutting MG 9K Midtier Server down ...
```

## Performance

### OM and PM Documentation references for MG9000 Mgr Mid-Tier

There are no OMs or PMs associated with this component.

## GUI/CLUI Documentation for MG9000 Mgr Mid-Tier

### GUI Launching and User procedures

The MG9000 Mgr Mid-Tier is an application that runs on an SSPFS machine. See SSPFS platform for client launch details.

- NN10096-511 MG9000 Configuration Management

### Related documents

- NN10221105 VoA OSS Guide
- NN10048-461 Upgrading the MG9000
- NN10276-500 ATM/IP Configuration Management
- NN10325-900 ATM/IP Fault Management
- NN10162-611 MG9000 Administration and Security

## OM Collector

### OM Collector Fault Interface

This section contains IEMS Northbound log samples and device documentation references for the OM Collector.

#### Fault documentation for OM Collector :

- NN10074-911 MG9000 Fault Management

#### Fault Mapping for OM Collector

- NN10074-911 MG9000 Fault Management

The following criteria can be used for looking up information on specific faults for OM Collector.

#### Fault Correlation for OM Collector

| NB format -><br>Device/EM | SCC2                  | NTSTD                 | SNMP                  | Syslog                | Document<br>Reference                        |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------------------|
| OM<br>Collector           | logname and<br>number | logname and<br>number | logname and<br>number | logname and<br>number | NN10074-911<br>MG9000<br>Fault<br>Management |

## Northbound Fault Formats for OM Collector

### SCC2

The following is an example of a OM Collector log in SCC2 format:

```
27 OMC 700 0470 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

### NTSTD

The following is an example of a OM Collector log in NTSTD format:

```
RTPU07BR      OMC700 Jan28 21:27:53 9923 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

### SNMP

The following is an example of a OM Collector log in SNMP format:

```
system.sysUpTime.0 => 4 days, 4:10:00
snmpTrapOID.0 => nnExtAlarmMessage
nnExtAlarmMessageResource => .0.0
nnExtAlarmMessageResourceDescription => IEMS=wnc0s0kq.us.nortel.com-SSPFS-Unit-0;
nnExtAlarmMessageDateAndTime => 2004-1-28,4:27:53.0
nnExtAlarmMessageDocumentationPointer => OMC 700
nnExtAlarmMessageInfo => 27 OMC 700 0470 INFO Startup_Event
Status: OMCLTR_Process: OMCollector Process was started with PSID 17585
```

### Syslog

The following is an example of a OM Collector log in Syslog format:

```
Feb 28 16:27:48 wnc0s0pf IEMS: _V2_~I=~H=wnc0s0pf~A=IEMS~S=4656~~ OMC700 NONE INFO
Startup_Event^M      Status: OMCLTR_Process: OMCollector Process was started with
PSID 17585
```

## Performance

### OM and PM Documentation references for OM Collector

There are no OMs or PMs associated with this application. For MG9000 performance information see:

- NN10140-711 MG9000 Performance Management

### **Northbound OM/PM Formats**

There are no OMs or PMs associated with this application.

## **GUI/CLUI Documentation for OM Collector**

### **GUI Launching and User procedures**

- NN10140-711 MG9000 Performance Management
- NN10096-511 MG9000 Configuration Management

### **Related documents**

- NN10276-500 ATM/IP Configuration Management

## **V5.2 Data Audit**

This section contains IEMS Northbound log samples and device documentation references for the V5.2 Data Audit.

## **V5.2 Data Audit Fault Interface**

### **Fault documentation for V5.2 Data Audit :**

The V5.2 Data Integrity Audit Module of V5.2 Data Audit will raise CMT300 faults, and it will be covered in **DataAudit**'s Fault Management.

The Data Audit system will generate CMT300 logs when problems are found during any of its audits. The component ID of the log can be used to identify the specific audit that encountered a problem.

- NN10275-909 - Succession Fault Management Logs Reference
- NN10325-900 - ATM/IP Fault Management

### **Fault Mapping for V5.2 Data Audit**

The following criteria can be used for looking up information on specific faults for V5.2 Data Audit.

**Fault Correlation for V5.2 Data Audit**

| <b>NB format -&gt;<br/>Device/EM</b> | <b>SCC2</b>                                                                                                                                           | <b>NTSTD</b>                                                                                                                                          | <b>SNMP</b>                                                                                                                                           | <b>Syslog</b>                                                                                                                                         | <b>Document Reference</b>                              |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>V5.2 Data Audit</b>               | log name and log number.<br>Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit | log name and log number.<br>Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit | log name and log number.<br>Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit | log name and log number.<br>Seen as component ID in generic CMT300 Audit log. example: componentid = SESM=AuditSystem;Audit=V5.2 Data Integrity Audit | NN10275-909 Succession Fault Management Logs Reference |

**Northbound Fault Formats for V5.2 Data Audit****SCC2**

The following is an example of a V5.2 Data Audit log in SCC2 format:

```
*C12 CMT 300 0002 TBL CMT Fault
  Location: Audit
  NotificationID: 1002
  State: Raise
  Category: Processing Error
  Cause: Corrupt data
  Time: Feb 14 23:12:48 2004
  Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit
  Specific Problem: Data mismatches detected
  Description: The SESM audit: V5.2 Data Integrity Audit, has 5 unresolved
  problems. To view and correct the problems, open the audit problem report
  from the Audit System found under the SESM Maintenance menu item.
```

**NTSTD**

The following is an example of a V5.2 Data Audit log in NTSTD format:

```
COMPACT06BT *** CMT300 Feb15 07:12:48 0002 TBL CMT Fault
```

Location: Audit  
 NotificationID: 1002  
 State: Raise  
 Category: Processing Error  
 Cause: Corrupt data  
 Time: Feb 14 23:12:48 2004  
 Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit  
 Specific Problem: Data mismatches detected  
 Description: The SESM audit: V5.2 Data Integrity Audit, has 5 unresolved problems. To view and correct the problems, open the audit problem report from the Audit System found under the SESM Maintenance menu item.

## SNMP

The following is an example of a V5.2 Data Audit log in SNMP format:

```

system.sysUpTime.0 => 3:05:01
snmpTrapOID.0 => nnExtAlarmCritical
alarmActiveResourceId =>
.1.3.6.1.2.1.111.1.2.2.1.10.12.78.111.114.116.101.108.95.102.97.117.108.116.20.50.48
.48.52.45.49.45.50.49.44.54.58.52.49.58.49.52.46.48.44.8995
alarmActiveDateAndTime => 2004-1-21,6:41:14.0,
alarmActiveDescription => DeviceSpecificInfo=;Event from Unknown Syslog Device
nnExtAlarmActiveEventType => 5
nnExtAlarmActiveProbableCause => 118
nnExtAlarmActiveAdditionalText =>
nnExtAlarmActiveDocumentationPointer => CMT 300
nnExtAlarmActiveResourceDescription => IEMS=zsups228;SESM=AuditSystem;Audit=V5.2 Data
Integrity Audit
nnExtAlarmActiveManualClear => 2
nnExtAlarmActiveSequenceNumber => 1
  
```

## Syslog

The following is an example of a V5.2 Data Audit log in Syslog format:

```

Feb 14 23:12:50 zsups228 IEMS: _V2_~I=~H=zsups228~A=IEMS~S=0008~~ CMT300 CRIT TBL CMT
Fault^M      Location: Audit^M      NotificationID: 1002^M      State: Raise^M
Category: Processing Error^M      Cause: Corrupt data^M      Time: Feb 14 23:12:48
2004^M      Component Id: SESM=AuditSystem;Audit=V5.2 Data Integrity Audit^M
Specific Problem: Data mismatches detected^M      Description: The SESM audit: V5.2
Data Integrity Audit, has 5 unresolved^M      problems. To view and correct the
  
```



problems, open the audit problem repository from the Audit System found under the SESM Maintenance menu item.

## Performance

### OM and PM Documentation references for V5.2 Data Audit

- There are no performance measurements for V5.2 Data Audit V5.2 Data Audit

### Northbound OM/PM Formats

This section provides example output of Performance Measurement data in each of the Northbound formats provided

#### XML

The following is an example of Performance data for V5.2 Data Audit in XML format:

***Note:** Northbound performance interface not supported for this component.*

#### CSV

The following is an example of Performance data for V5.2 Data Audit in CSV format:

***Note:** Northbound performance interface not supported for this component.*

## GUI/CLUI Documentation for V5.2 Data Audit

### GUI Launching and User procedures

- NN10320-100 - ATM Solutions Basics
- NN10300-100 - IP Solutions Basics

### Related documents

- NN10083-911 - CS2000 Fault Management
- NN10281-600 - ATM/IP Administration and Security
- NN10276-500 - ATM/IP Configuration Management
- NIS V208-1 - DMS-100 International Switching V5: CS2K Interface Specification to Support V5.2 Protocol



# References

## Fault Specifications

- [1] Syslog Protocol (RFC 3164): <http://www.ietf.org/rfc/rfc3164.txt>
- [2] Alarm MIB (draft): <http://www.ietf.org/html.charters/disman-charter.html>
- [3] Notification Log MIB (RFC 3014):  
<http://www.ietf.org/rfc/rfc3014.txt?number=3014>

## OAM&P Security

- [4] NN10281-600 - ATM/IP Administration and Security

## Network Engineering

- [5] <SN07 SEB number> - IAC Engineering Guidelines
- [6] <SN07 SEB number> - IAW Engineering Guidelines
- [7] <SN07 SEB number> - UAIP Engineering Guidelines
- [8] <SN07 SEB number> - PT-IP Engineering Guidelines
- [9] <SN07 SEB number> - VoATM Engineering Guidelines
- [10] <SN07 SEB number> - TRIMODAL Engineering Guidelines

## Industry Standards

### PAM

- [11] Introduction to PAM: <http://docs.sun.com/db/doc/805-7229/6j6q8svdi?q=pam.conf&a=view>
- [12] PAM RFC from OpenGroup: <http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt>
- [13] pam.conf (Solaris 8): <http://docs.sun.com/db/doc/806-0633/6j9vn6q5t?q=pam.conf&a=view>

## NSSwitch

- [14] Solaris Name Services: <http://docs.sun.com/db/doc/806-1387/6jam6926b?q=nsswitch&a=view>
- [15] nsswitch.conf (Solaris 8): <http://docs.sun.com/db/doc/806-0633/6j9vn6q5m?q=nsswitch&a=view>

## Secure Shell (SSH )

- [16] Secure Shell (secsh) Internet Drafts: <http://www.ietf.org/html.charters/secsh-charter.html>
- [17] OpenSSH: <http://www.openssh.org>

## SNMP V3/USM

- [18] An Architecture for Describing SNMP Management Frameworks (RFC3411): <http://www.ietf.org/rfc/rfc3411.txt?number=3411>
- [19] User-based Security Model (RFC3414): <http://www.ietf.org/rfc/rfc3414.txt?number=3414>
- [20] View-based Access Control Model (RFC3415): <http://www.ietf.org/rfc/rfc3415.txt?number=3415>

## HTTPS

- [21] The SSL Protocol V3.0: <http://wp.netscape.com/eng/ssl3/ssl-toc.html>
- [22] Transport Layer Security (TLS) Extensions (RFC2246): <http://www.ietf.org/rfc/rfc3546.txt>
- [23] HTTP over TLS (RFC 2818): <http://www.ietf.org/rfc/rfc2818.txt>
- [24] OpenSSL: <http://www.openssl.org>

# Appendix 1: Northbound OSS Configurations

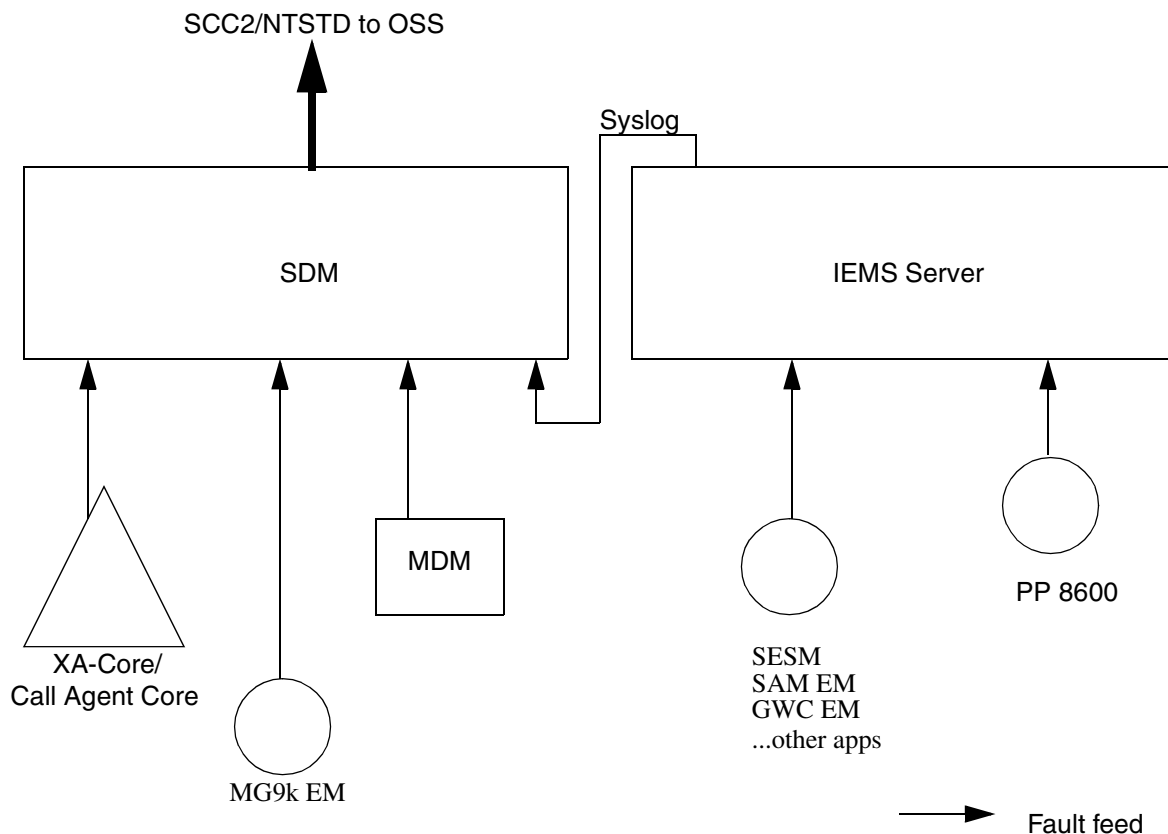
Depending on customer requirements, a single-source OSS interface can be provided from either the IEMS server or the SDM platform. In either scenario, one system is configured as the primary and the other a subordinate log source .

For existing Nortel Networks ATM customers, the SDM provides the external interface to third party OSSs. The IEMS is configured to forward all of its collected faults to the SDM through its Syslog interface. The SDM then aggregates all incoming faults and forwards them to the standard SCC2 and NTSTD interfaces used by customers. See figure .

Conversely, for Nortel Networks Carrier VoIP customers, IEMS provides the single Northbound interface using the SDM as a one of several subordinate fault collectors/forwarders in the network. See figure .

## Using the SDM as a Northbound Fault Feed

As an OAM&P requirement, fault information must be available from the existing SDM northbound interfaces. In order to support that, the IEMS can be configured to send its northbound information to the SDM.

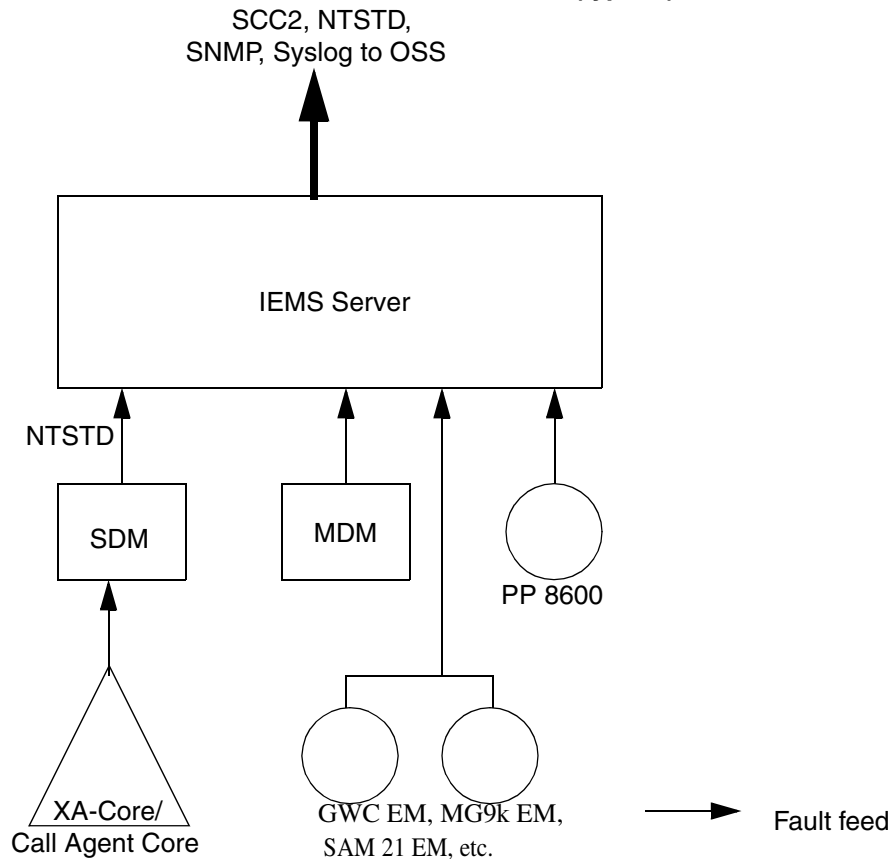
**Fault flow with SDM as Northbound interface (ATM Market only)**

**Note:** The IEMS northbound Syslog stream is sent on local7.notice. The SDM syslog.conf file will need to be configured to accept this stream.

The following figure shows the fault feeds that are used in the ATM market to provide a single source feed for all devices. In this case, the SDM serves as the Northbound fault interface.

The MDM and MG9000 Manager send their information to the SDM. This information is sent by the SDM northbound along with the CS2k core information (XA-Core as illustrated or Call Agent Core).

Additional data comes to the IEMS server from the CS2000 Manager applications and element managers (GWC-EM, NPM, SAM 21 EM, etc.). The IEMS then sends this data to the SDM via its Syslog facility. In this way, the IEMS acts as a mediator for devices that cannot directly send events to the SDM.

**Fault flow with IEMS as Northbound interface (typical)**

**Note:** The SDM SCC2 and NTSTD logroute streams must be configured for SCC2\_old or NTstd\_old in SN07. This is a change from SN06.2

This figure shows the fault flows in an office where the IEMS will be the northbound interface. In this configuration, all the devices that have been implemented in IEMS forward their fault information to IEMS. The SDM will only be responsible for forwarding core faults to the IEMS.

**Note:** The SDM logroute stream must be configured from tcpin.





# Appendix 2: Nortel Alarm Extension MIB

-- Draft Version

NORTEL-ALARM-EXT-MIB

DEFINITIONS ::= BEGIN

IMPORTS

nortelGenericMIBs FROM NORTEL-GENERIC-MIB  
alarmActiveEntry, alarmActiveResourceId, alarmActiveDescription,  
ResourceId, alarmActiveDateAndTime  
FROM ALARM-MIB  
IANAItuEventType, IANAItuProbableCause  
FROM IANA-ITU-ALARM-TC  
AdminState, OperState, UsageState,  
AlarmStatus, StandbyStatus FROM ENTITY-STATE-MIB  
nlmLogName, nlmLogIndex FROM NOTIFICATION-LOG-MIB  
NOTIFICATION-GROUP FROM SNMPv2-CONF  
DateAndTime, DisplayString FROM SNMPv2-TC  
SnmpAdminString FROM SNMP-FRAMEWORK-MIB  
MODULE-IDENTITY, OBJECT-IDENTITY,  
OBJECT-TYPE, NOTIFICATION-TYPE,  
Unsigned32  
FROM SNMPv2-SMI;

nnExtAlarmMIB MODULE-IDENTITY

LAST-UPDATED "200401270000Z"

ORGANIZATION "Nortel Networks"

CONTACT-INFO

" Nortel Networks  
8200 Dixie Road  
Brampton, Ontario L6T 5P6  
Canada

1-800-4Nortel

www.nortelnetworks.com "

```
DESCRIPTION
    "This module contains objects that extend the IETF Alarm MIB, including
    notifications."

-- Revision history

REVISION "200401270000Z"
DESCRIPTION
    " Initial version"

::= { nortelGenericMIBs 6 }

nnExtAlarmObjects OBJECT IDENTIFIER ::= { nnExtAlarmMIB 1 }
nnExtAlarmConformance OBJECT IDENTIFIER ::= { nnExtAlarmMIB 2 }
nnExtAlarmCompliances OBJECT IDENTIFIER ::= { nnExtAlarmConformance 1 }
nnExtAlarmGroups OBJECT IDENTIFIER ::= { nnExtAlarmConformance 2 }

-- Textual Conventions

NnAvailabilityStatus ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "Represents the availability status"
    SYNTAX INTEGER {
        notSupported (1),
        inTest (2),
        failed (3),
        powerOff (4),
        offLine (5),
        offDuty (6),
        dependency (7),
        degraded (8),
        notInstalled (9),
        logFull (10)
    }

NnControlStatus ::= TEXTUAL-CONVENTION
    STATUS current
```

```
DESCRIPTION
    "Represents the control status"
SYNTAX INTEGER {
    notSupported (1),
    subjectToTest (2),
    partOfServiceLocked (3),
    reservedForTest (4),
    suspended (5)
}

NnProceduralStatus ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "Represents the procedural status"
    SYNTAX INTEGER {
        notSupported (1),
        initializationRequired (2),
        notInitialized (3),
        initializing (4),
        reporting (5),
        terminating (6)
    }

NnUnknownStatus ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "The unknown status attribute is used to indicate that
        the state of the resource represented by the managed object
        is unknown. When the unknown status attribute value is
        true, the value of the state attributes may not reflect
        the actual state of the resource."
    SYNTAX          INTEGER {
        false(1),
        true(2)
    }

-- Nortel Extended Active Alarm Table
```

nnExtAlarmActiveTable OBJECT-TYPE

SYNTAX SEQUENCE OF NnExtAlarmActiveEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains additional information about active alarms than what is found in the IETF Alarm MIB."

::= { nnExtAlarmObjects 1 }

nnExtAlarmActiveEntry OBJECT-TYPE

SYNTAX NnExtAlarmActiveEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An active alarm entry"

AUGMENTS { alarmActiveEntry }

::= { nnExtAlarmActiveTable 1 }

NnExtAlarmActiveEntry ::= SEQUENCE {

nnExtAlarmActiveEventType IANAItuEventType,

nnExtAlarmActiveProbableCause IANAItuProbableCause,

nnExtAlarmActiveAdditionalText SnmpAdminString,

nnExtAlarmActiveDocumentationPointer SnmpAdminString,

nnExtAlarmActiveResourceDescription SnmpAdminString,

nnExtAlarmActiveManualClear INTEGER,

nnExtAlarmActiveSequenceNumber Integer32

}

nnExtAlarmActiveEventType OBJECT-TYPE

SYNTAX IANAItuEventType

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Represents the per active alarm instance event type values."

REFERENCE

"ITU Recommendation M.3100, 'Generic Network Information Model', 1995

```
ITU Recommendation X.733, 'Information Technology - Open
Systems Interconnection - System Management: Alarm
Reporting Function', 1992
ITU Recommendation X.736, 'Information Technology - Open
Systems Interconnection - System Management: Security
Alarm Reporting Function', 1992"
::= { nnExtAlarmActiveEntry 1 }
```

nnExtAlarmActiveProbableCause OBJECT-TYPE

```
SYNTAX      IANAItuProbableCause
MAX-ACCESS  read-write
STATUS      current
```

DESCRIPTION

"Per active alarm instance ITU probable cause values."

REFERENCE

```
"ITU Recommendation M.3100, 'Generic Network Information
Model', 1995
ITU Recommendation X.733, 'Information Technology - Open
Systems Interconnection - System Management: Alarm
Reporting Function', 1992
ITU Recommendation X.736, 'Information Technology - Open
Systems Interconnection - System Management: Security
Alarm Reporting Function', 1992"
::= { nnExtAlarmActiveEntry 2 }
```

nnExtAlarmActiveAdditionalText OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-write
STATUS      current
```

DESCRIPTION

"Represents the per active alarm instance additional text field."

REFERENCE

```
"ITU Recommendation M.3100, 'Generic Network Information
Model', 1995
```

```
ITU Recommendation X.733, 'Information Technology - Open
Systems Interconnection - System Management: Alarm
Reporting Function', 1992"
::= { nnExtAlarmActiveEntry 3 }
```

nnExtAlarmActiveDocumentationPointer OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object services as a pointer to documentation related to this problem.

If there is no specific document pointer for this alarm, this object is a null length string."

```
::= { nnExtAlarmActiveEntry 4 }
```

nnExtAlarmActiveResourceDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a textual description of the resource under under alarm.

The format of the string is as follows:

```
NEtype=NEname;componentType=componentInstanceId;subcompType=subcompInstanceId;....
```

With NE as the root, the entire containment with the list of Relative Distinguished Names (RDNs) is presented upto the point where the alarming component is clearly identified. Semicolon is the delimiter between a 'category=value' pair. The string can only contain alphanumeric characters and underscores. No commas, spaces, slashes, hyphens, or dollar signs are allowed

"

```
::= { nnExtAlarmActiveEntry 5 }
```

nnExtAlarmActiveManualClear OBJECT-TYPE

```
SYNTAX      INTEGER {  
    other (1),  
    forbidden (2),  
    required (3),  
    optional (4)  
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object provides guidance to a mid-level manager on the handling of this alarm. A value of forbidden indicates that a mid-level manager MUST NOT allow this alarm to be manually cleared. A value of required indicates that this alarm has no corresponding clear so MUST always be manually cleared. A value of optional indicates that this alarm does have a corresponding clear, but that is MAY also be cleared manually. A value of other indicates that the manual clear status is either unknown or not one of the specified values."

::= { nnExtAlarmActiveEntry 6 }

nnExtAlarmActiveSequenceNumber OBJECT-TYPE

```
SYNTAX      Integer32
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The sequence number of this notification. This object MUST have a value of 0 for notifications without sequence numbers or solutions that don't support sequence numbers."

DEFVAL { 0 }

::= { nnExtAlarmActiveEntry 7 }

-- Nortel Extended Alarm State Information

nnExtAlarmStateTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF NnExtAlarmStateEntry
```

```
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
    "This table contains state information about active alarms than
    what is found in the IETF Alarm MIB."
 ::= { nnExtAlarmObjects 2 }
```

nnExtAlarmStateEntry OBJECT-TYPE

```
SYNTAX        NnExtAlarmStateEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
    "An active alarm state entry"
AUGMENTS { alarmActiveEntry }
 ::= { nnExtAlarmStateTable 1 }
```

NnExtAlarmStateEntry ::= SEQUENCE {

```
    nnExtAlarmStateAdministrative    AdminState,
    nnExtAlarmStateOperational       OperState,
    nnExtAlarmStateUsage              UsageState,
    nnExtAlarmStateAlarm              AlarmStatus,
    nnExtAlarmStateAvailability       NnAvailabilityStatus,
    nnExtAlarmStateControl            NnControlStatus,
    nnExtAlarmStateProcedural         NnProceduralStatus,
    nnExtAlarmStateStandby            StandbyStatus,
    nnExtAlarmStateUnknown            NnUnknownStatus
}
```

nnExtAlarmStateAdministrative OBJECT-TYPE

```
SYNTAX        AdminState
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 1 }
```

nnExtAlarmStateOperational OBJECT-TYPE

```
SYNTAX        OperState
```



```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    " "
 ::= { nnExtAlarmStateEntry 2 }
```

```
nnExtAlarmStateUsage OBJECT-TYPE
    SYNTAX      UsageState
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " "
    ::= { nnExtAlarmStateEntry 3 }
```

```
nnExtAlarmStateAlarm OBJECT-TYPE
    SYNTAX      AlarmStatus
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " "
    ::= { nnExtAlarmStateEntry 4 }
```

```
nnExtAlarmStateAvailability OBJECT-TYPE
    SYNTAX      NnAvailabilityStatus
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " "
    ::= { nnExtAlarmStateEntry 5 }
```

```
nnExtAlarmStateControl OBJECT-TYPE
    SYNTAX      NnControlStatus
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        " "
    ::= { nnExtAlarmStateEntry 6 }
```

nnExtAlarmStateProcedural OBJECT-TYPE

SYNTAX NnProceduralStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 7 }

nnExtAlarmStateStandby OBJECT-TYPE

SYNTAX StandbyStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 8 }

nnExtAlarmStateUnknown OBJECT-TYPE

SYNTAX NnUnknownStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" "

::= { nnExtAlarmStateEntry 9 }

-- Table of Information related to Messages

nnExtAlarmMessageTable OBJECT-TYPE

SYNTAX SEQUENCE OF NnExtAlarmMessageEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of information on messages. Entries are added to this table when their corresponding notifications have been sent. Entries will be removed from this table as outlined in the Notification Log MIB [RFC3014]. Implementations that do not support the Notification Log MIB should provide behaviour for nlmLogName, nlmLogIndex and

```
        this table as if they did."
 ::= { nnExtAlarmObjects 3 }
```

nnExtAlarmMessageEntry OBJECT-TYPE

```
SYNTAX      NnExtAlarmMessageEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An alarm message entry."
INDEX       { nlmLogName, nlmLogIndex }
 ::= { nnExtAlarmMessageTable 1 }
```

NnExtAlarmMessageEntry ::= SEQUENCE {

```
    nnExtAlarmMessageResource      ResourceId,
    nnExtAlarmMessageResourceDescription SnmpAdminString,
    nnExtAlarmMessageDateAndTime    DateAndTime,
    nnExtAlarmMessageDocumentationPointer SnmpAdminString,
    nnExtAlarmMessageInfo           SnmpAdminString
}
```

nnExtAlarmMessageResource OBJECT-TYPE

```
SYNTAX      ResourceId
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This object identifies the resource that this message pertains to

    If there is no corresponding resource, then
    the value of this object MUST be 0.0."
 ::= { nnExtAlarmMessageEntry 1 }
```

nnExtAlarmMessageResourceDescription OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This is a textual description of the resource this message
    pertains to."
```

The format of the string is as follows:

```
NType=NEname;componentType=componentInstanceId;subcompType=subcompInstanceId;....
```

With NE as the root, the entire containment with the list of Relative Distinguished Names (RDNs) is presented upto the point where the messaging component is clearly identified. Semicolon is the delimiter between a 'category=value' pair. The string can only contain alphanumeric characters and underscores. No commas, spaces, slashes, hyphens, or dollar signs are allowed

"

```
::= { nnExtAlarmMessageEntry 2 }
```

nnExtAlarmMessageDateAndTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The local date and time when the message originated.

Implementations MUST include the offset from UTC, if available. Implementation in environments in which the UTC offset is not available is NOT RECOMMENDED."

```
::= { nnExtAlarmMessageEntry 3 }
```

nnExtAlarmMessageDocumentationPointer OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object services as a pointer to documentation related to this problem.

If there is no specific document pointer for this alarm, this object is a null length string."

```
 ::= { nnExtAlarmMessageEntry 4 }

nnExtAlarmMessageInfo OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A textual discription of the event that has occurred,
        suitable to display to an operator. "
 ::= { nnExtAlarmMessageEntry 5 }

-- all notification OIDs would be prefixed with a zero OID to
-- facilitate snmp v1<->v2 conversion

nnExtNotificationPrefix OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "This OID represents the prefix branch for all Nortel ITU
        Alarm Notifications.
        The last but one sub identifier in the OID of
        any Notification must have the value zero to facilitate
        v2<-->v1 conversion."
 ::= {nnExtAlarmObjects 0 }

-- Alarm Notifications

nnExtAlarmClear NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
              alarmActiveDateAndTime,
              alarmActiveDescription,
              nnExtAlarmActiveEventType,
              nnExtAlarmActiveProbableCause,
              nnExtAlarmActiveAdditionalText,
              nnExtAlarmActiveDocumentationPointer,
              nnExtAlarmActiveResourceDescription,
              nnExtAlarmActiveSequenceNumber
            }
}
```

STATUS current

DESCRIPTION

"This notification indicates that one or more previously reported alarms have been cleared and the previously reported alarms are identified via the correlation id list field. The varbinds include alarm context via the ComponentId field and other additional useful information."

::= { nnExtNotificationPrefix 301 }

nnExtAlarmWarning NOTIFICATION-TYPE

```
OBJECTS { alarmActiveResourceId,
           alarmActiveDateAndTime,
           alarmActiveDescription,
           nnExtAlarmActiveEventType,
           nnExtAlarmActiveProbableCause,
           nnExtAlarmActiveAdditionalText,
           nnExtAlarmActiveDocumentationPointer,
           nnExtAlarmActiveResourceDescription,
           nnExtAlarmActiveManualClear,
           nnExtAlarmActiveSequenceNumber
        }
```

STATUS current

DESCRIPTION

"This notification indicates that an alarm of 'Warning' severity has been raised on a NE. The varbinds include alarm context via the ComponentId field and other additional useful information on the alarm condition."

::= { nnExtNotificationPrefix 302 }

nnExtAlarmMinor NOTIFICATION-TYPE

```
OBJECTS { alarmActiveResourceId,
           alarmActiveDateAndTime,
```

```
        alarmActiveDescription,
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
    nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
        nnExtAlarmActiveSequenceNumber
    }

STATUS    current
DESCRIPTION
    "This notification indicates that an alarm of 'Minor' severity
    has been raised on a NE.

    The varbinds include alarm context via the ComponentId field
    and other additional useful information on the alarm condition."

 ::= { nnExtNotificationPrefix 303 }


nnExtAlarmMajor NOTIFICATION-TYPE
    OBJECTS { alarmActiveResourceId,
        alarmActiveDateAndTime,
        alarmActiveDescription,
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
    nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
    nnExtAlarmActiveSequenceNumber
    }

STATUS    current
DESCRIPTION
    "This notification indicates that an alarm of 'Major' severity
    has been raised on a NE.

    The varbinds include alarm context via the ComponentId field
```

and other additional useful information on the alarm condition."

```
::= { nnExtNotificationPrefix 304 }
```

nnExtAlarmCritical NOTIFICATION-TYPE

```
    OBJECTS { alarmActiveResourceId,  
               alarmActiveDateAndTime,  
               alarmActiveDescription,  
               nnExtAlarmActiveEventType,  
               nnExtAlarmActiveProbableCause,  
               nnExtAlarmActiveAdditionalText,  
               nnExtAlarmActiveDocumentationPointer,  
               nnExtAlarmActiveResourceDescription,  
               nnExtAlarmActiveManualClear,  
               nnExtAlarmActiveSequenceNumber  
            }
```

STATUS current

DESCRIPTION

"This notification indicates that an alarm of 'Critical' severity  
has been raised on a NE.

The varbinds include alarm context via the ComponentId field  
and other additional useful information on the alarm condition."

```
::= { nnExtNotificationPrefix 305 }
```

nnExtAlarmMessage NOTIFICATION-TYPE

```
    OBJECTS {  
        nnExtAlarmMessageResource,  
        nnExtAlarmMessageResourceDescription,  
        nnExtAlarmMessageDateAndTime,  
        nnExtAlarmMessageDocumentationPointer,  
        nnExtAlarmMessageInfo  
    }
```

STATUS current

DESCRIPTION



```
"An informational message. This notification does not
correspond to an alarm so would not be stored in the
active alarm table and it does not have a corresponing
clear."

::= { nnExtNotificationPrefix 306 }

-- Notification group definitions

nnExtAlarmNotificationsGroup NOTIFICATION-GROUP

    NOTIFICATIONS {
        nnExtAlarmClear,
        nnExtAlarmWarning,
        nnExtAlarmMinor,
        nnExtAlarmMajor,
        nnExtAlarmCritical
    }

    STATUS    current
    DESCRIPTION
        " Nortel alarm notification group."
    ::= { nnExtAlarmGroups 1}

nnExtAlarmGroup OBJECT-GROUP

    OBJECTS {
        nnExtAlarmActiveEventType,
        nnExtAlarmActiveProbableCause,
        nnExtAlarmActiveAdditionalText,
        nnExtAlarmActiveDocumentationPointer,
        nnExtAlarmActiveResourceDescription,
        nnExtAlarmActiveManualClear,
        nnExtAlarmActiveSequenceNumber
    }

    STATUS    current
    DESCRIPTION
        " Nortel alarm group."
    ::= { nnExtAlarmGroups 2}

nnExtAlarmStateGroup OBJECT-GROUP
```

```

    OBJECTS {
        nnExtAlarmStateAdministrative,
nnExtAlarmStateOperational,
        nnExtAlarmStateUsage,
        nnExtAlarmStateAlarm,
        nnExtAlarmStateAvailability,
        nnExtAlarmStateControl,
        nnExtAlarmStateProcedural,
        nnExtAlarmStateStandby,
        nnExtAlarmStateUnknown
    }
STATUS    current
DESCRIPTION
    " Nortel  alarm state group."
    ::= { nnExtAlarmGroups 3}

nnExtAlarmMessageGroup OBJECT-GROUP
    OBJECTS {
        nnExtAlarmMessageResource,
        nnExtAlarmMessageInfo,
        nnExtAlarmMessageDocumentationPointer,
        nnExtAlarmMessageDateAndTime,
        nnExtAlarmMessage
    }
STATUS    current
DESCRIPTION
    " Nortel  alarm message group."
    ::= { nnExtAlarmGroups 4}

-- Compliance
nnExtAlarmCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for entities which implement
        the Nortel Alarm MIB."
    MODULE      -- this module
        MANDATORY-GROUPS {
            nnExtAlarmGroup

```

```
    }  
    ::= { nnExtAlarmCompliances 1}  
END
```

## Appendix A: Passport 8600 Performance Metrics

| <u>Performance Metric Identifier</u> | <u>MIB Name</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Default Succession<br/>IEMS Collection<br/>Interval</u> |
|--------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>RFC1213-MIB</b>                   |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| sysDescr                             | RFC1213-MIB     | A textual description of the entity. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software. It is mandatory that this only contain printable ASCII characters.                                                                                                                                                                                   | Every 30 mins                                              |
| sysObjectID                          | RFC1213-MIB     | The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining 'what kind of box' is being managed. For example, if vendor 'Flintstones, Inc.' was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its 'Fred Router'. | Every 30 mins                                              |
| sysUpTime                            | RFC1213-MIB     | The time (in hundredths of a second) since the network management portion of the system was last re-initialized.                                                                                                                                                                                                                                                                                                                                | Every 30 mins                                              |
| sysName                              | RFC1213-MIB     | An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name.                                                                                                                                                                                                                                                                                                                         | Every 30 mins                                              |
| sysLocation                          | RFC1213-MIB     | The physical location of this node (e.g., 'telephone closet, 3rd floor').                                                                                                                                                                                                                                                                                                                                                                       | Every 30 mins                                              |
| ifInOctets                           | RFC1213-MIB     | The total number of octets received on the interface, including framing characters.                                                                                                                                                                                                                                                                                                                                                             | Every 5 and 30 mins                                        |
| ifInDiscards                         | RFC1213-MIB     | The number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.                                                                                                                                                                                       | Every 30 mins                                              |
| ifInErrors                           | RFC1213-MIB     | The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.                                                                                                                                                                                                                                                                                                                          | Every 30 mins                                              |
| ifOutOctets                          | RFC1213-MIB     | The total number of octets transmitted out of the interface, including framing characters.                                                                                                                                                                                                                                                                                                                                                      | Every 5 and 30 mins                                        |
| ifOutDiscards                        | RFC1213-MIB     | The number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free up buffer space.                                                                                                                                                                                                                 | Every 30 mins                                              |
| ifOutErrors                          | RFC1213-MIB     | The number of outbound packets that could not be transmitted because of errors.                                                                                                                                                                                                                                                                                                                                                                 | Every 30 mins                                              |
| ipInReceives                         | RFC1213-MIB     | The total number of input datagrams received from interfaces, including those received in error.                                                                                                                                                                                                                                                                                                                                                | Every 5 and 30 mins                                        |
| ipInDiscards                         | RFC1213-MIB     | The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (e.g., for lack of buffer space). Note that this counter does not include any datagrams discarded while awaiting re-assembly.                                                                                                                                                                           | Every 30 mins                                              |
| ipOutRequests                        | RFC1213-MIB     | The total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in ipForwDatagrams.                                                                                                                                                                                                                                  | Every 5 and 30 mins                                        |
| ipOutDiscards                        | RFC1213-MIB     | The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g., for lack of buffer space). Note that this counter would include datagrams counted in ipForwDatagrams if any such packets met this (discretionary) discard criterion.                                                                                                                 | Every 30 mins                                              |
| <b>RFC1271-MIB</b>                   |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| etherStatsCRCAlignErrors             | RFC1271-MIB     | The total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, but were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                                                                                                                                                                                | Every 30 mins                                              |

| <u>Performance Metric Identifier</u> | <u>MIB Name</u>    | <u>Description</u>                                                                                                                                                                                                                                                   | <u>Default Succession</u>                 |
|--------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                      |                    |                                                                                                                                                                                                                                                                      | <u>IEMS Collection</u><br><u>Interval</u> |
| etherStatsUndersizePkts              | RFC1271-MIB        | The total number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                           | Every 30 mins                             |
| etherStatsOversizePkts               | RFC1271-MIB        | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.                                                                                                            | Every 30 mins                             |
| etherStatsFragments                  | RFC1271-MIB        | The total number of packets received that were not an integral number of octets in length or that had a bad Frame Check Sequence (FCS), and were less than 64 octets in length (excluding framing bits but including FCS octets).                                    | Every 30 mins                             |
| etherStatsJabbers                    | RFC1271-MIB        | The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                              | Every 30 mins                             |
| etherStatsCollisions                 | RFC1271-MIB        | The best estimate of the total number of collisions on this Ethernet segment.                                                                                                                                                                                        | Every 30 mins                             |
| etherHistoryCRCAlignErrors           | RFC1271-MIB        | The number of packets received during this sampling interval that had a length (excluding framing bits but including FCS octets) between 64 and 1518 octets, inclusive, but were not an integral number of octets in length or had a bad Frame Check Sequence (FCS). | Every 30 mins                             |
| etherHistoryUndersizePkts            | RFC1271-MIB        | The number of packets received during this interval that were less than 64 octets long (excluding framing bits but including FCS octets) and were otherwise well formed.                                                                                             | Every 30 mins                             |
| etherHistoryOversizePkts             | RFC1271-MIB        | The number of packets received during this interval that were longer than 1518 octets (excluding framing bits but including FCS octets) but were otherwise well formed.                                                                                              | Every 30 mins                             |
| etherHistoryFragments                | RFC1271-MIB        | The total number of packets received during this sampling interval that were not an integral number of octets in length or that had a bad Frame Check Sequence (FCS), and were less than 64 octets in length (excluding framing bits but including FCS octets).      | Every 30 mins                             |
| etherHistoryJabbers                  | RFC1271-MIB        | The number of packets received during this interval that were longer than 1518 octets (excluding framing bits but including FCS octets), and were not an integral number of octets in length or had a bad Frame Check Sequence (FCS).                                | Every 30 mins                             |
| etherHistoryCollisions               | RFC1271-MIB        | The best estimate of the total number of collisions on this Ethernet segment during this interval.                                                                                                                                                                   | Every 30 mins                             |
| <b>OSPF-MIB</b>                      |                    |                                                                                                                                                                                                                                                                      |                                           |
| ospfIfEvents                         | OSPF-MIB           | The number of times this OSPF interface has changed its state, or an error has occurred.                                                                                                                                                                             | Every 30 mins                             |
| <b>OSPF-MIB</b>                      |                    |                                                                                                                                                                                                                                                                      |                                           |
| ospfNbrIpAddr                        | OSPF-MIB           | The IP address this neighbor is using in its IP Source Address. Note that, on addressless links, this will not be 0.0.0.0, but the address of another of the neighbor's interfaces.                                                                                  | Every 30 mins                             |
| ospfNbrEvents                        | OSPF-MIB           | The number of times this neighbor relationship has changed state, or an error has occurred.                                                                                                                                                                          | Every 30 mins                             |
| <b>SNMP-FRAMEWORK-MIB</b>            |                    |                                                                                                                                                                                                                                                                      |                                           |
| snmplnInvalidMsgs                    | SNMP-FRAMEWORK-MIB | The total number of packets received by the SNMP engine which were dropped because there were invalid or inconsistent components in the SNMP message.                                                                                                                | Every 30 mins                             |
| <b>SNMP-FRAMEWORK-MIB</b>            |                    |                                                                                                                                                                                                                                                                      |                                           |
| snmplnPkts                           | SNMP-FRAMEWORK-MIB | The total number of Messages delivered to the SNMP entity from the transport service.                                                                                                                                                                                | Every 30 mins                             |
| snmpOutPkts                          | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages which were passed from the SNMP protocol entity to the transport service.                                                                                                                                                          | Every 30 mins                             |
| snmplnBadVersions                    | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages which were delivered to the SNMP protocol entity and were for an unsupported SNMP version.                                                                                                                                         | Every 30 mins                             |
| snmplnBadCommunityUses               | SNMP-FRAMEWORK-MIB | The total number of SNMP Messages delivered to the SNMP protocol entity which represented an SNMP operation which was not allowed by the SNMP community named in the Message.                                                                                        | Every 30 mins                             |
| snmplnASNParseErrs                   | SNMP-FRAMEWORK-MIB | The total number of ASN.1 or BER errors encountered by the SNMP protocol entity when decoding received SNMP Messages.                                                                                                                                                | Every 30 mins                             |

| <u>Performance Metric Identifier</u> | <u>MIB Name</u>        | <u>Description</u>                                                                                                                                                      | <u>Default Succession</u>                 |
|--------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                      |                        |                                                                                                                                                                         | <u>IEMS Collection</u><br><u>Interval</u> |
| snmplnTotalReqVars                   | SNMP-<br>FRAMEWORK-MIB | The total number of MIB objects which have been retrieved successfully by the SNMP protocol entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs. | Every 30 mins                             |
| snmplnTotalSetVars                   | SNMP-<br>FRAMEWORK-MIB | The total number of MIB objects which have been altered successfully by the SNMP protocol entity as the result of receiving valid SNMP Set-Request PDUs.                | Every 30 mins                             |
| snmpOutTraps                         | SNMP-<br>FRAMEWORK-MIB | The total number of SNMP Trap PDUs which have been generated by the SNMP protocol entity.                                                                               | Every 30 mins                             |
| <b>VRRP-MIB</b>                      |                        |                                                                                                                                                                         |                                           |
| vrrpStatsBecomeMaster                | VRRP-MIB               | The total number of times that this virtual router's state has transitioned from BACKUP to MASTER.                                                                      | Every 30 mins                             |
| <b>RAPID-CITY</b>                    |                        |                                                                                                                                                                         |                                           |
| rcSysBufferUtil                      | RAPID-CITY             | Buffer utilization as a percentage of the total amount of buffer space in the system. A high value indicates congestion.                                                | Every 30 mins                             |
| rcSysBufferUtilPeak                  | RAPID-CITY             | The largest buffer utilization since sysUpTime.                                                                                                                         | Every 30 mins                             |
| rcSysBufferUtilPeakTime              | RAPID-CITY             | Timestamp for rcSysPeakBandwidth.                                                                                                                                       | Every 30 mins                             |
| rcSysNVRamUsed                       | RAPID-CITY             | Non-volatile RAM in use in Kbytes.                                                                                                                                      | Every 30 mins                             |
| rcSysCpuUtil                         | RAPID-CITY             | Percentage of CPU utilization.                                                                                                                                          | Every 30 mins                             |
| rcSysSwitchFabricUtil                | RAPID-CITY             | Percentage of Switching Fabric utilization.                                                                                                                             | Every 30 mins                             |
| rcStatFrameTooShorts                 | RAPID-CITY             | The total number of frames that are too short that were encountered on this interface.                                                                                  | Every 30 mins                             |
| rcStatBridgeInDiscards               | RAPID-CITY             | The total number of frames that were discarded by the bridging entity.                                                                                                  | Every 30 mins                             |
| rcStatRouteInDiscards                | RAPID-CITY             | The total number of frames that were discarded by the routing entity.                                                                                                   | Every 30 mins                             |
| rcStatStgForwardTransitions          | RAPID-CITY             | The number of times this port has transitioned from the Learning state to the Forwarding state.                                                                         | Every 30 mins                             |
| rcStatGigLinkFailures                | RAPID-CITY             | The total number of link failures encountered on this interface.                                                                                                        | Every 30 mins                             |
| rcStatGigPacketErrors                | RAPID-CITY             | The total number of packet errors encountered on this interface.                                                                                                        | Every 30 mins                             |
| rcStatGigCarrierErrors               | RAPID-CITY             | The total number of carrier errors encountered on this interface.                                                                                                       | Every 30 mins                             |
| rcStatGigLinkInactiveErrors          | RAPID-CITY             | The total number of link inactive errors encountered on this interface.                                                                                                 | Every 30 mins                             |
| rcStatSmltStDownCnt                  | RAPID-CITY             | Counters that counts how the session between the two peering switches has done down since last boot.                                                                    | Every 30 mins                             |
| rcStatSmltSmltDownTxMsgCnt           | RAPID-CITY             | Counters that counts the tx Smlt Down msg.                                                                                                                              | Every 30 mins                             |
| rcStatSmltSmltDownRxMsgCnt           | RAPID-CITY             | Counters that counts the rx Smlt Down msg.                                                                                                                              | Every 30 mins                             |
| rcStatSmltSmltUpTxMsgCnt             | RAPID-CITY             | Counters that counts the tx Smlt Up msg.                                                                                                                                | Every 30 mins                             |
| rcStatSmltSmltUpRxMsgCnt             | RAPID-CITY             | Counters that counts the rx Smlt Up msg.                                                                                                                                | Every 30 mins                             |
| rc2kAtmPortStatsInDroppedPkts        | RAPID-CITY             | Number of AAL5 CPCS PDUs dropped due to resource exhaustion.                                                                                                            | Every 30 mins                             |
| rc2kAtmPortStatsOutDroppedPkts       | RAPID-CITY             | Number of AAL5 CPCS PDUs dropped because the transmitter closed the channel.                                                                                            | Every 30 mins                             |
| rc2kAtmVPortStatsInOctets            | RAPID-CITY             | AAL5 CPCS PDU octets received from ATM interface                                                                                                                        | Every 5 and 30 mins                       |
| rc2kAtmVPortStatsOutOctets           | RAPID-CITY             | AAL5 CPCS PDU octets transmitted out of ATM interface                                                                                                                   | Every 5 and 30 mins                       |
| rc2kAtmVPortStatsInErrors            | RAPID-CITY             | AAL5 CPCS PDUs received with errors from ATM interface. These errors include CRC-32 errors,SAR time-out errors and oversized SDU errors.                                | Every 30 mins                             |
| rc2kAtmVPortStatsOutErrors           | RAPID-CITY             | Number of AAL5 CPCS PDUs that couldn't be transmitted due to errors.                                                                                                    | Every 30 mins                             |
| rc2kAtmVPortStatsInDiscards          | RAPID-CITY             | Number of received AAL5 CPCS PDUs discarded.                                                                                                                            | Every 30 mins                             |
| rc2kAtmVPortStatsOutDiscards         | RAPID-CITY             | Number of AAL5 CPCS PDUs which are to be transmitted but discarded.                                                                                                     | Every 30 mins                             |
| rcStgPortForwardTransitions          | RAPID-CITY             | The number of times this port has transitioned from the Learning state to the Forwarding state.                                                                         | Every 30 mins                             |

## Appendix B: MG 9000 MIB OMs/PMs

| OM Name                                                                 | Type       | Duration                                  | Description                                                                               | EM PM Browser Section            | Browser Tab                             | Browser Name                                     | MIB Table Name                       | MIB Name                | For OSS | Release | Test Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------|------------|-------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------|--------------------------------------------------|--------------------------------------|-------------------------|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NORTEL-UEMG-NODE-MIB</b><br><b>norNodeAlarmsTable</b>                |            |                                           |                                                                                           |                                  |                                         |                                                  |                                      |                         |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| norNodeAlarmsCritical                                                   | Counter32  | count goes up and down, does not rollover | Number of Critical Alarms currently on this Node                                          | ITP, OC3, IMA, ITX, and DS1 Card | Card Alarm Statistics : Current data    | Number of Critical alarms currently on this card | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      | SN04    | Generate any Critical Alarm (See Fault test procedures) and see that the alarm counts match between the MG9K and the MG9K EM display for that MG9K                                                                                                                                                                                                                                                                                                               |
| norNodeAlarmsMajor                                                      | Counter32  | count goes up and down, does not rollover | Number of Major Alarms currently on this Node                                             | ITP, OC3, IMA, ITX, and DS1 Card | Card Alarm Statistics : Current data    | Number of Critical alarms currently on this card | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      | SN04    | Generate any Major Alarm (See Fault test procedures) and see that the alarm counts match between the MG9K and the MG9K EM display for that MG9K                                                                                                                                                                                                                                                                                                                  |
| norNodeAlarmsMinor                                                      | Counter32  | count goes up and down, does not rollover | Number of Minor Alarms currently on this Node                                             | ITP, OC3, IMA, ITX, and DS1 Card | Card Alarm Statistics : Current data    | Number of Critical alarms currently on this card | norNodeAlarmsTable                   | NORTEL-UEMG-NODE-MIB    | No      | SN04    | Generate any Minor Alarm (See Fault test procedures) and see that the alarm counts match between the MG9K and the MG9K EM display for that MG9K                                                                                                                                                                                                                                                                                                                  |
| <b>NORTEL-UEMG-CARRIER-MIB</b><br><b>norCarrSonetMediumCurrentTable</b> |            |                                           |                                                                                           |                                  |                                         |                                                  |                                      |                         |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| norCarrSonetMedCurrentOpt                                               | Unsigned32 | count goes up and down, does not rollover | Optical Power Transmitted. This is interpreted as a Percentage                            | OC3 Port                         | Sonet Medium Statistics : Current data  | Optical Tx Power (%)                             | norCarrSonetMediumCurrentTable       | NORTEL-UEMG-CARRIER-MIB | No      | SN04    | On the MG9K EM Performance Browser collect this particular OM. For an operational OC3 interface the value will be non-zero.                                                                                                                                                                                                                                                                                                                                      |
| norCarrSonetMedCurrentLBC                                               | Unsigned32 | count goes up and down, does not rollover | Laser Bias Current.                                                                       | OC3 Port                         | Sonet Medium Statistics : Current data  | Laser Bias Current (%)                           | norCarrSonetMediumCurrentTable       | NORTEL-UEMG-CARRIER-MIB | No      | SN04    | On the MG9K EM Performance Browser collect this particular OM. For an operational OC3 interface the value will be non-zero.                                                                                                                                                                                                                                                                                                                                      |
| <b>norCarrSonetMediumIntervalTable</b>                                  |            |                                           |                                                                                           |                                  |                                         |                                                  |                                      |                         |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| norCarrSonetMedCurrentOpt                                               | Unsigned32 | count goes up and down, does not rollover | Optical Power Transmitted. This is interpreted as a Percentage                            | OC3 Port                         | Sonet Medium Statistics : History data  | Optical Tx Power (%)                             | norCarrSonetMediumIntervalTable      | NORTEL-UEMG-CARRIER-MIB | Yes     | SN04    | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM. For an operational OC3 interface the values will be non-zero.                                                                                                                                                                                                                                                                                                                 |
| norCarrSonetMedIntervalLBC                                              | Unsigned32 | count goes up and down, does not rollover | Laser Bias Current.                                                                       | OC3 Port                         | Sonet Medium Statistics : History data  | Laser Bias Current (%)                           | norCarrSonetMediumIntervalTable      | NORTEL-UEMG-CARRIER-MIB | Yes     | SN04    | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM. For an operational OC3 interface the values will be non-zero.                                                                                                                                                                                                                                                                                                                 |
| <b>NORTEL-UEMG-MEGACO-MIB</b><br><b>nnMegacoOMMedGwyIntervalTable</b>   |            |                                           |                                                                                           |                                  |                                         |                                                  |                                      |                         |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nnMegacoOMMedGwyNumInMessages                                           | Unsigned32 | Counts only for last 15 min               | Total number of messages received from the Gateway Controller (GWC) during this interval. | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Total number of messages received on the link    | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM under the following conditions. 1.) No traffic 2.) with traffic The counts for this OM will be higher during traffic. To ensure exact counts are collected a Packet Sniffer will have to be used to collect the actual number of messages. Also wait for a little longer than 15 min, collect the 96 OM entries, and ensure the counts have moved to the proper time interval. |
| nnMegacoOMMedGwyNumInOctets                                             | Unsigned32 | Counts only for last 15 min               | Total number of octets received from the Gateway Controller (GWC) during this interval.   | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Total number of octets received on the link      | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyAvrgInMsgRate                                           | Unsigned32 | Counts only for last 15 min               | Average message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Average message rate for received messages       | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyMaxInMsgRate                                            | Unsigned32 | Counts only for last 15 min               | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Maximum received message rate per minute         | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyNumOutMessages                                          | Unsigned32 | Counts only for last 15 min               | Total number of messages sent to the Gateway Controller (GWC) during this interval.       | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Total number of messages sent on the link        | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyNumOutOctets                                            | Unsigned32 | Counts only for last 15 min               | Total number of octets sent to the Gateway Controller (GWC) during this interval.         | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Total number of octets sent on the link          | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyAvrgOutMsgRate                                          | Unsigned32 | Counts only for last 15 min               | Average message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Average message rate for sent messages           | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyMaxOutMsgRate                                           | Unsigned32 | Counts only for last 15 min               | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Statistics : History data           | Maximum sent message rate per minute             | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>nnMegacoOMMedGwyCurrentDayTotalTable</b>                             |            |                                           |                                                                                           |                                  |                                         |                                                  |                                      |                         |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nnMegacoOMMedGwyNumInMessagesTotCurDay                                  | Unsigned32 | Rolling 24 hour total                     | Total number of messages received from the Gateway Controller (GWC) during this interval. | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Total number of messages received on the link    | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with traffic The counts for this OM will be higher during traffic. To ensure exact counts are collected a Packet Sniffer will have to be used to collect the actual number of messages. Also wait for a little longer than 15 min, collect the 96 OM entries, and ensure the counts have moved to the proper time interval.                     |
| nnMegacoOMMedGwyNumInOctetsTotCurDay                                    | Unsigned32 | Rolling 24 hour total                     | Total number of octets received from the Gateway Controller (GWC) during this interval.   | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Total number of octets received on the link      | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyAvrgInMsgRateTotCurDay                                  | Unsigned32 | Rolling 24 hour total                     | Average message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Average message rate for received messages       | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyMaxInMsgRateTotCurDay                                   | Unsigned32 | Rolling 24 hour total                     | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Maximum received message rate per minute         | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyNumOutMessagesTotCurDay                                 | Unsigned32 | Rolling 24 hour total                     | Total number of messages sent to the Gateway Controller (GWC) during this interval.       | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Total number of messages sent on the link        | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyNumOutOctetsTotCurDay                                   | Unsigned32 | Rolling 24 hour total                     | Total number of octets sent to the Gateway Controller (GWC) during this interval.         | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Total number of octets sent on the link          | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| nnMegacoOMMedGwyAvrgOutMsgRateTotCurDay                                 | Unsigned32 | Rolling 24 hour total                     | Average message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway       | VMG Day Total Statistics : Current data | Average message rate for sent messages           | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB  | No      | SN04    | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                          |            |                             |                                                                                           |                            |                                                  |                                               |                                   |                        |    |      |                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------|------------|-----------------------------|-------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------|-----------------------------------------------|-----------------------------------|------------------------|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnMegacoOMMedGwyMaxOutMsgRateTotCurDay   | Unsigned32 | Rolling 24 hour total       | Maximum message send rate (per minute) for messages sent to the GWC during this interval. | MG5K Virtual Media Gateway | VMG Day Total Statistics : Current data          | Maximum sent message rate per minute          | nnMegacoOMMedGwyCurrDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>nnMegacoOMCMRIntervalTable</b>        |            |                             |                                                                                           |                            |                                                  |                                               |                                   |                        |    |      |                                                                                                                                                                                                                                                                                                                                                                                                               |
| nnMegacoOMCMRmaxSimultCNDreq             | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of CND requests during this interval.                     | ITP Card                   | Class Modern Statistics : History data           | Maximum simultaneous number of CND requests   | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display all 96 entries and ensure they are all zero. Then make a number of Caller ID calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls. Do this over a number of 15 min intervals, then display all 96 entries. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnMegacoOMCMRtotNumberCNDreq             | Unsigned32 | Counts only for last 15 min | The total number of CND requests during this interval.                                    | ITP Card                   | Class Modern Statistics : History data           | Total number of CND requests                  | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumCNDcompleted             | Unsigned32 | Counts only for last 15 min | The number of CND requests during this interval that completed.                           | ITP Card                   | Class Modern Statistics : History data           | Number of CND requests that completed         | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRmaxSimultADSIreq            | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of ADSI requests during this interval.                    | ITP Card                   | Class Modern Statistics : History data           | Maximum simultaneous number of ADSI requests  | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display all 96 entries and ensure they are all zero. Then make a number of ADSI calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls. Do this over a number of 15 min intervals, then display all 96 entries.                                                                                            |
| nnMegacoOMCMRtotNumberADSIreq            | Unsigned32 | Counts only for last 15 min | The total number of ADSI requests during this interval.                                   | ITP Card                   | Class Modern Statistics : History data           | Total number of ADSI requests                 | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumADSIcompleted            | Unsigned32 | Counts only for last 15 min | The number of ADSI requests during this interval that completed.                          | ITP Card                   | Class Modern Statistics : History data           | Number of ADSI requests that completed        | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRmaxSimultBCLIDreq           | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of BCLID requests during this interval.                   | ITP Card                   | Class Modern Statistics : History data           | Maximum simultaneous number of BCLID requests | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display all 96 entries and ensure they are all zero. Then make a number of BCLID calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls. Do this over a number of 15 min intervals, then display all 96 entries. Also ensure the counts have moved to the proper time interval after each 15 interval.     |
| nnMegacoOMCMRtotNumberBCLIDreq           | Unsigned32 | Counts only for last 15 min | The total number of BCLID requests during this interval.                                  | ITP Card                   | Class Modern Statistics : History data           | Total number of BCLID requests                | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumBCLIDcompleted           | Unsigned32 | Counts only for last 15 min | The number of BCLID requests during this interval that completed.                         | ITP Card                   | Class Modern Statistics : History data           | Number of BCLID requests that completed       | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRmaxSimultSCWIDreq           | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of SCWID requests during this interval.                   | ITP Card                   | Class Modern Statistics : History data           | Maximum simultaneous number of SCWID requests | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display all 96 entries and ensure they are all zero. Then make a number of SCWID calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls. Do this over a number of 15 min intervals, then display all 96 entries. Also ensure the counts have moved to the proper time interval after each 15 interval.     |
| nnMegacoOMCMRtotNumberSCWIDreq           | Unsigned32 | Counts only for last 15 min | The total number of SCWID requests during this interval.                                  | ITP Card                   | Class Modern Statistics : History data           | Total number of SCWID requests                | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumSCWIDcompleted           | Unsigned32 | Counts only for last 15 min | The number of SCWID requests during this interval that completed.                         | ITP Card                   | Class Modern Statistics : History data           | Number of SCWID requests that completed       | nnMegacoOMCMRIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>nnMegacoOMCMRCurrentDayTotalTable</b> |            |                             |                                                                                           |                            |                                                  |                                               |                                   |                        |    |      |                                                                                                                                                                                                                                                                                                                                                                                                               |
| nnMegacoOMCMRmaxSimultCNDreqTotCurDay    | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of CND requests.                    | ITP Card                   | Class Modern Day Total Statistics : Current data | Maximum simultaneous number of CND requests   | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display the OM and ensure it is zero. Then make a number of Caller ID calls (some at the same time) and then display this OM. The count will show appropriate results matching the number of calls.                                                                                                                                                                               |
| nnMegacoOMCMRtotNumberCNDreqTotCurDay    | Unsigned32 | Rolling 24 hour total       | The current day's total number of CND requests.                                           | ITP Card                   | Class Modern Day Total Statistics : Current data | Total number of CND requests                  | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumCNDcompletedTotCurDay    | Unsigned32 | Rolling 24 hour total       | The current day's total number of CND requests that completed.                            | ITP Card                   | Class Modern Day Total Statistics : Current data | Number of CND requests that completed         | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRmaxSimultADSIreqTotCurDay   | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of ADSI requests.                   | ITP Card                   | Class Modern Day Total Statistics : Current data | Maximum simultaneous number of ADSI requests  | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display the OM and ensure it is zero. Then make a number of ADSI calls (some at the same time) and then display this OM. The count will show appropriate results matching the number of calls.                                                                                                                                                                                    |
| nnMegacoOMCMRtotNumberADSIreqTotCurDay   | Unsigned32 | Rolling 24 hour total       | The current day's total number of ADSI requests.                                          | ITP Card                   | Class Modern Day Total Statistics : Current data | Total number of ADSI requests                 | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRnumADSIcompletedTotCurDay   | Unsigned32 | Rolling 24 hour total       | The current day's total number of ADSI requests that completed.                           | ITP Card                   | Class Modern Day Total Statistics : Current data | Number of ADSI requests that completed        | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |
| nnMegacoOMCMRmaxSimultBCLIDreqTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of BCLID requests.                  | ITP Card                   | Class Modern Day Total Statistics : Current data | Maximum simultaneous number of BCLID requests | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Starting with no calls made display the OM and ensure it is zero. Then make a number of BCLID calls (some at the same time) and then display this OM. The count will show appropriate results matching the number of calls.                                                                                                                                                                                   |
| nnMegacoOMCMRtotNumberBCLIDreqTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's total number of BCLID requests.                                         | ITP Card                   | Class Modern Day Total Statistics : Current data | Total number of BCLID requests                | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                 |



|                                              |            |                             |                                                                                                   |                          |                                                    |                                                       |                                   |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------|------------|-----------------------------|---------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------|-------------------------------------------------------|-----------------------------------|------------------------|-----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnMegacoOMCMRnumBCLIDcompleteTotCurDay       | Unsigned32 | Rolling 24 hour total       | The current day's total number of BCLID requests that completed.                                  | ITP Card                 | Class Modern Day Total Statistics : Current data   | Number of BCLID requests that completed               | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMCMRmaxSimultSCWIDreqTotCurDay      | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of SCWID requests.                          | ITP Card                 | Class Modern Day Total Statistics : Current data   | Maximum simultaneous number of SCWID requests         | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Starting with no calls made display the OM and ensure it is zero. Then make a number of SCWID calls (some at the same time) and then display this OM. The count will show appropriate results matching the number of calls..                                                                                                                                                                                          |
| nnMegacoOMCMRtotNumberSCWIDreqTotCurDay      | Unsigned32 | Rolling 24 hour total       | The current day's total number of SCWID requests.                                                 | ITP Card                 | Class Modern Day Total Statistics : Current data   | Total number of SCWID requests                        | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMCMRnumSCWIDcompletedTotCurDay      | Unsigned32 | Rolling 24 hour total       | The current day's total number of SCWID requests that completed.                                  | ITP Card                 | Class Modern Day Total Statistics : Current data   | Number of SCWID requests that completed               | nnMegacoOMCMRCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>nnMegacoOMDSPIntervalTable</b>            |            |                             |                                                                                                   |                          |                                                    |                                                       |                                   |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| nnMegacoOMDSPmaxSimultToneRcvrInUse          | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of tone receivers in use during this interval.                    | ITP Card                 | Digital Signal Statistics : History data           | Maximum simultaneous number of tone receivers in use  | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM under the following conditions. 1.) No traffic 2.) with traffic The counts for this OM will be higher during traffic. To ensure exact counts are collected keep track of the number of calls made. Also ensure the counts have moved to the proper time interval after each 15 interval.                                            |
| nnMegacoOMDSPnumToneRcvrReq                  | Unsigned32 | Counts only for last 15 min | The number of tone receiver requests during this interval.                                        | ITP Card                 | Digital Signal Statistics : History data           | Number of tone receiver requests                      | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneRcvrReqFail              | Unsigned32 | Counts only for last 15 min | The number of tone receiver requests that failed during this interval.                            | ITP Card                 | Digital Signal Statistics : History data           | Number of tone receiver requests which failed         | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPmaxSimultToneGenInUse           | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of tone generators in use during this interval.                   | ITP Card                 | Digital Signal Statistics : History data           | Maximum simultaneous number of tone generators in use | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneGenReq                   | Unsigned32 | Counts only for last 15 min | The number of tone generator requests during this interval.                                       | ITP Card                 | Digital Signal Statistics : History data           | Number of tone generator requests                     | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneGenReqFail               | Unsigned32 | Counts only for last 15 min | The number of tone generator requests that failed during this interval.                           | ITP Card                 | Digital Signal Statistics : History data           | Number of tone generator requests which failed        | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPmaxSimultCMRmodemInUse          | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of CMR modems in use during this interval.                        | ITP Card                 | Digital Signal Statistics : History data           | Maximum simultaneous number of CMR modems in use      | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Starting with no calls made display all 96 entries and ensure they are all zero. Then make a number of Caller ID calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls. Do this over a number of 15 min intervals, then display all 96 entries. Also ensure the counts have moved to the proper time interval after each 15 interval.         |
| nnMegacoOMDSPnumCMRmodemReq                  | Unsigned32 | Counts only for last 15 min | The number of CMR modem requests during this interval.                                            | ITP Card                 | Digital Signal Statistics : History data           | Number of CMR modem requests                          | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumCMRmodemReqFail              | Unsigned32 | Counts only for last 15 min | The number of CMR modem requests that failed during this interval.                                | ITP Card                 | Digital Signal Statistics : History data           | Number of CMR modem requests which failed             | nnMegacoOMDSPIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>nnMegacoOMDSPCurrentDayTotalTable</b>     |            |                             |                                                                                                   |                          |                                                    |                                                       |                                   |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| nnMegacoOMDSPmaxSimultToneRcvrInUseTotCurDay | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of tone receivers in use.                   | ITP Card                 | Digital Signal Day Total Statistics : Current data | Maximum simultaneous number of tone receivers in use  | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with traffic The count for this OM will be higher during traffic. To ensure exact count is collected keep track of the number of calls made.                                                                                                                                                         |
| nnMegacoOMDSPnumToneRcvrReqTotCurDay         | Unsigned32 | Rolling 24 hour total       | The current day's total of the number of tone receiver requests.                                  | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of tone receiver requests                      | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneRcvrReqFailTotCurDay     | Unsigned32 | Rolling 24 hour total       | The current day's total of the number tone receiver requests that failed.                         | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of tone receiver requests which failed         | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPmaxSimultToneGenInUseTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of tone generators in use.                  | ITP Card                 | Digital Signal Day Total Statistics : Current data | Maximum simultaneous number of tone generators in use | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneGenReqTotCurDay          | Unsigned32 | Rolling 24 hour total       | The current day's total of the number of tone generator requests.                                 | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of tone generator requests                     | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumToneGenReqFailTotCurDay      | Unsigned32 | Rolling 24 hour total       | The current day's total of the number tone generator requests that failed.                        | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of tone generator requests which failed        | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPmaxSimultCMRmodemInUseTotCurDay | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of CMR modems in use.                       | ITP Card                 | Digital Signal Day Total Statistics : Current data | Maximum simultaneous number of CMR modems in use      | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Starting with no calls made display the OM and ensure it is zero. Then make a number of Caller ID calls (some at the same time) and then display this OM. The counts will show appropriate results matching the number of calls.                                                                                                                                                                                      |
| nnMegacoOMDSPnumCMRmodemReqTotCurDay         | Unsigned32 | Rolling 24 hour total       | The current day's total of the number of CMR modem requests.                                      | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of CMR modem requests                          | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnMegacoOMDSPnumCMRmodemReqFailTotCurDay     | Unsigned32 | Rolling 24 hour total       | The current day's total of the number CMR modem requests that failed.                             | ITP Card                 | Digital Signal Day Total Statistics : Current data | Number of CMR modem requests which failed             | nnMegacoOMDSPCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>nnMegacoOMCESIntervalTable</b>            |            |                             |                                                                                                   |                          |                                                    |                                                       |                                   |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| nnMegacoOMCESmaxSimultIntraSwitch            | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of channels in use for intra-switched calls during this interval. | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data        | Intra maximum simultaneous number of channels in use  | nnMegacoOMCESIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM under the following conditions. 1.) No traffic 2.) with traffic from/to lines within the same SMA or LGCI. The counts for this OM will be higher during traffic. To ensure exact counts are collected keep track of the number of calls made. Also ensure the counts have moved to the proper time interval after each 15 interval. |

|                                             |            |                             |                                                                                                            |                          |                                                         |                                                            |                                    |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------|------------|-----------------------------|------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------|------------------------------------------------------------|------------------------------------|------------------------|-----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnMegacoOMCESnumChnlAllocIntra              | Unsigned32 | Counts only for last 15 min | The total number of channel allocation requests for intra-switched calls during this interval.             | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data             | Intra total number of channel allocation requests          | nnMegacoOMCESIntervalTable         | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESnumChnlAllocIntraFail          | Unsigned32 | Counts only for last 15 min | The total number of channel allocation requests for intra-switched calls that failed during this interval. | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data             | Intra total number of failed channel allocation request    | nnMegacoOMCESIntervalTable         | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESmaxSimultInterSwitch           | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of channels in use for inter-switched calls during this interval.          | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data             | Inter maximum simultaneous number of channels in use       | nnMegacoOMCESIntervalTable         | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM under the following conditions. 1.) No traffic 2.) with traffic from lines within a SMA or LGCI to lines not on that SAM or LGCI. The counts for this OM will be higher during traffic. To ensure exact counts are collected keep track of the number of calls made. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnMegacoOMCESnumChnlAllocInter              | Unsigned32 | Counts only for last 15 min | The total number of channel allocation requests for inter-switched calls during this interval.             | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data             | Inter total number of channel allocation requests          | nnMegacoOMCESIntervalTable         | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESnumChnlAllocInterFail          | Unsigned32 | Counts only for last 15 min | The total number of channel allocation requests for inter-switched calls that failed during this interval. | ITP, OC3, IMA & ABI Card | Circuit Emulation Statistics : History data             | Inter total number of failed channel allocation requests   | nnMegacoOMCESIntervalTable         | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESCurrentDayTotalTable           |            |                             |                                                                                                            |                          |                                                         |                                                            |                                    |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnMegacoOMCESmaxSimultIntraSwitchTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of channels in use for intra-switched calls.         | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Intra maximum simultaneous number of channels in use       | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with traffic from/to lines within the same SMA or LGCI. The count for this OM will be higher during traffic. To ensure exact count is collected keep track of the number of calls made.                                                                                                                                     |
| nnMegacoOMCESnumChnlAllocIntraTotCurDay     | Unsigned32 | Rolling 24 hour total       | The current day's total number of channel allocation requests for intra-switched calls.                    | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Intra total number of channel allocation requests          | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESnumChnlAllocInterFailTotCurDay | Unsigned32 | Rolling 24 hour total       | The current day's total number of channel allocation requests for intra-switched calls that failed.        | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Intra total number of failed channel allocation request    | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESmaxSimultInterSwitchTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's highest maximum simultaneous number of channels in use for inter-switched calls.         | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Inter maximum simultaneous number of channels in use       | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with traffic from lines within a SMA or LGCI to lines not on that SAM or LGCI. The count for this OM will be higher during traffic. To ensure exact count is collected keep track of the number of calls made.                                                                                                              |
| nnMegacoOMCESnumChnlAllocInterTotCurDay     | Unsigned32 | Rolling 24 hour total       | The current day's total number of channel allocation requests for inter-switched calls.                    | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Inter total number of channel allocation requests          | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMCESnumChnlAllocInterFailTotCurDay | Unsigned32 | Rolling 24 hour total       | The current day's total number of channel allocation requests for inter-switched calls that failed.        | ITP, OC3, IMA & ABI Card | Circuit Emulation Day Total Statistics : Current data   | Inter total number of failed channel allocation requests   | nnMegacoOMCESCurrentDayTotalTable  | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMECANIntervalTable                 |            |                             |                                                                                                            |                          |                                                         |                                                            |                                    |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnMegacoOMECANmaxSimultResrcInUse           | Unsigned32 | Counts only for last 15 min | The maximum simultaneous number of ECAN resources in use during this interval.                             | ITP Card                 | Echo Cancellation Statistics : History data             | Maximum simultaneous number of ECAN resources in use       | nnMegacoOMECANIntervalTable        | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect all 96 intervals of this particular OM under the following conditions. 1.) No traffic 2.) with traffic The counts for this OM will be higher during traffic. To ensure exact counts are collected keep track of the exact number of calls made. There will be a count for each end of a call. Also ensure the counts have moved to the proper time interval after each 15 interval.               |
| nnMegacoOMECANnumResrcReq                   | Unsigned32 | Counts only for last 15 min | The total number of ECAN resource request attempts during this interval.                                   | ITP Card                 | Echo Cancellation Statistics : History data             | Total number of ECAN resource request attempts             | nnMegacoOMECANIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMECANnumResrcReqFail               | Unsigned32 | Counts only for last 15 min | The total number of ECAN resource request attempts that failed during this interval.                       | ITP Card                 | Echo Cancellation Statistics : History data             | Total number of ECAN resource request attempts that failed | nnMegacoOMECANIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMECANCurrentDayTotalTable          |            |                             |                                                                                                            |                          |                                                         |                                                            |                                    |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnMegacoOMECANmaxSimultResrcInUseTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's maximum simultaneous number of ECAN resources in use.                                    | ITP Card                 | Echo Cancellation Day Total Statistics : Current data   | Maximum simultaneous number of ECAN resources in use       | nnMegacoOMECANCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with traffic The count for this OM will be higher during traffic. To ensure exact count is collected keep track of the exact number of calls made. There will be a count for each end of a call.                                                                                                                            |
| nnMegacoOMECANnumResrcReqTotCurDay          | Unsigned32 | Rolling 24 hour total       | The current day's total number of ECAN resource requests.                                                  | ITP Card                 | Echo Cancellation Day Total Statistics : Current data   | Total number of ECAN resource request attempts             | nnMegacoOMECANCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoOMECANnumResrcReqFailTotCurDay      | Unsigned32 | Rolling 24 hour total       | The current day's total number of ECAN resource requests that failed.                                      | ITP Card                 | Echo Cancellation Day Total Statistics : Current data   | Total number of ECAN resource request attempts that failed | nnMegacoOMECANCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                |
| nnMegacoQoSIntervalTable                    |            |                             |                                                                                                            |                          |                                                         |                                                            |                                    |                        |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnMegacoQoSIntervalCalls                    | Unsigned32 | Counts only for this 15 min | total number of calls (in this 15-min interval).*                                                          | VMG                      | VMG QoS Interval Statistics : Current Interval QoS data | Number of Calls                                            | nnMegacoQoSIntervalTable           | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnMegacoQoSIntervalBadCalls                 | Unsigned32 | Counts only for this 15 min | total number of bad calls (in this 15-min interval).*                                                      | VMG                      | VMG QoS Interval Statistics : Current Interval QoS data | Number of bad calls                                        | nnMegacoQoSIntervalTable           | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                         |            |                             |                                                                                               |     |                                                         |                                               |                                      |                        |     |      |  |
|-----------------------------------------|------------|-----------------------------|-----------------------------------------------------------------------------------------------|-----|---------------------------------------------------------|-----------------------------------------------|--------------------------------------|------------------------|-----|------|--|
| nnMegacoQoSIntervalPktsSent             | Unsigned32 | Counts only for this 15 min | number of packets sent (in this 15-min interval).*                                            | VMG | VMG QoS Interval Statistics : Current Interval QoS data | Number of packets sent                        | nnMegacoQoSIntervalTable             | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoQoSIntervalPktsLost             | Unsigned32 | Counts only for this 15 min | number of packets lost (in this 15-min interval).*                                            | VMG | VMG QoS Interval Statistics : Current Interval QoS data | Number of packets lost                        | nnMegacoQoSIntervalTable             | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoQoSIntervalPktLossPct           | Integer    | Counts only for this 15 min | % of packets lost (in this 15-min interval).*                                                 | VMG | VMG QoS Interval Statistics : Current Interval QoS data | Percentage of packets lost                    | nnMegacoQoSIntervalTable             | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoQoSIntervalJitter               | Unsigned32 | Counts only for this 15 min | average jitter (in a 15-min interval).*                                                       | VMG | VMG QoS Interval Statistics : Current Interval QoS data | Average jitter                                | nnMegacoQoSIntervalTable             | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoQoSIntervalLatency              | Unsigned32 | Counts only for this 15 min | average latency (in a 15-min interval).*                                                      | VMG | VMG QoS Interval Statistics : Current Interval QoS data | Average Latency                               | nnMegacoQoSIntervalTable             | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoQoSCurrDayTable                 |            |                             |                                                                                               |     |                                                         |                                               |                                      |                        |     |      |  |
| nnMegacoQoSCurrDayCalls                 | Unsigned32 | Rolling 24 hour total       | total number of calls (in current day).*                                                      | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Number of Calls                               | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayBadCalls              | Unsigned32 | Rolling 24 hour total       | total number of bad calls (in current day).*                                                  | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Number of bad calls                           | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayPktsSent              | Unsigned32 | Rolling 24 hour total       | number of packets sent (in current day).*                                                     | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Number of packets sent                        | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayPktsLost              | Unsigned32 | Rolling 24 hour total       | number of packets lost (in this 15-min interval).*                                            | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Number of packets lost                        | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayPktLossPct            | Integer    | Rolling 24 hour total       | % of packets lost (in current day).*                                                          | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Percentage of packets lost                    | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayJitter                | Unsigned32 | Rolling 24 hour total       | average jitter (in current day).*                                                             | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Average jitter                                | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoQoSCurrDayLatency               | Unsigned32 | Rolling 24 hour total       | average latency (in current day).*                                                            | VMG | VMG Total Day QoS data : Current Day Total QoS data     | Average Latency                               | nnMegacoQoSCurrDayTable              | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoOMMedGwyIntervalTable           |            |                             |                                                                                               |     |                                                         |                                               |                                      |                        |     |      |  |
| nnMegacoOMMedGwyNumInMessages           | Unsigned32 | Counts only for this 15 min | Number of messages received from the Gateway Controller (GWC) during this interval.           | VMG | VMG Statistics : History data                           | Total number of messages received on the link | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyNumInOctets             | Unsigned32 | Counts only for this 15 min | Number of octets received from the Gateway Controller (GWC) during this interval.             | VMG | VMG Statistics : History data                           | Total number of octets received on the link   | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyAvgInMsgRate            | Unsigned32 | Counts only for this 15 min | Average message rate (per minute) for messages received from the GWC during this interval.    | VMG | VMG Statistics : History data                           | Average message rate for received messages    | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyMaxInMsgRate            | Unsigned32 | Counts only for this 15 min | Maximum message rate (per minute) for messages received from the GWC during this interval.    | VMG | VMG Statistics : History data                           | Maximum message rate for received messages    | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyNumOutMessages          | Unsigned32 | Counts only for this 15 min | Number of messages sent to the Gateway Controller (GWC) during this interval.                 | VMG | VMG Statistics : History data                           | Total number of messages sent on the link     | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyNumOutOctets            | Unsigned32 | Counts only for this 15 min | Number of octets sent to the Gateway Controller (GWC) during this interval.                   | VMG | VMG Statistics : History data                           | Total number of octets sent on the link       | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyAvgOutMsgRate           | Unsigned32 | Counts only for this 15 min | Average message rate (per minute) for messages sent to the GWC during this interval.          | VMG | VMG Statistics : History data                           | Average message rate for sent messages        | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyMaxOutMsgRate           | Unsigned32 | Counts only for this 15 min | Maximum message rate (per minute) for messages sent to the GWC during this interval.          | VMG | VMG Statistics : History data                           | Maximum message rate for sent messages        | nnMegacoOMMedGwyIntervalTable        | NORTEL-UEMG-MEGACO-MIB | Yes | SN06 |  |
| nnMegacoOMMedGwyCurrentDayTotalTable    |            |                             |                                                                                               |     |                                                         |                                               |                                      |                        |     |      |  |
| nnMegacoOMMedGwyNumInMessagesTotCurDay  | Unsigned32 | Rolling 24 hour total       | The current day's total Number of messages received from the Gateway Controller (GWC).        | VMG | VMG Day Total Statistics : Current data                 | Total number of messages received on the link | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoOMMedGwyNumInOctetsTotCurDay    | Unsigned32 | Rolling 24 hour total       | The current day's total Number of octets received from the Gateway Controller (GWC).          | VMG | VMG Day Total Statistics : Current data                 | Total number of octets received on the link   | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoOMMedGwyAvgInMsgRateTotCurDay   | Unsigned32 | Rolling 24 hour total       | The current day's total Average message rate (per minute) for messages received from the GWC. | VMG | VMG Day Total Statistics : Current data                 | Average message rate for received messages    | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoOMMedGwyMaxInMsgRateTotCurDay   | Unsigned32 | Rolling 24 hour total       | The current day's total Maximum message rate (per minute) for messages received from the GWC. | VMG | VMG Day Total Statistics : Current data                 | Maximum message rate for received messages    | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |
| nnMegacoOMMedGwyNumOutMessagesTotCurDay | Unsigned32 | Rolling 24 hour total       | The current day's total Number of messages sent to the Gateway Controller (GWC).              | VMG | VMG Day Total Statistics : Current data                 | Total number of messages sent on the link     | nnMegacoOMMedGwyCurrentDayTotalTable | NORTEL-UEMG-MEGACO-MIB | No  | SN06 |  |

|                                               |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-----------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------|-----------------------------------------|---------------------------------------|---------------------------|-----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| egacoOMMedGwyNumOutOctetsTotCur               | Unsigned32      | Rolling 24 hour total                     | The current day's total Number of octets sent to the Gateway Controller (GWC).                                                                               | VMG                  | VMG Day Total Statistics : Current data                  | Total number of octets sent on the link | egacoOMMedGwyCurrentDayTo             | NORTEL-UEMG-MEGACO-MIB    | No  | SN06 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| egacoOMMedGwyAvgOutMsgRateTotCur              | Unsigned32      | Rolling 24 hour total                     | The current day's total Average message rate (per minute) for messages sent to the GWC.                                                                      | VMG                  | VMG Day Total Statistics : Current data                  | Average message rate for sent messages  | egacoOMMedGwyCurrentDayTo             | NORTEL-UEMG-MEGACO-MIB    | No  | SN06 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| egacoOMMedGwyMaxOutMsgRateTotCur              | Unsigned32      | Rolling 24 hour total                     | The current day's total Maximum message rate (per minute) for messages sent to the GWC.                                                                      | VMG                  | VMG Day Total Statistics : Current data                  | Maximum message rate for sent messages  | egacoOMMedGwyCurrentDayTo             | NORTEL-UEMG-MEGACO-MIB    | No  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>NORTEL-UEMG-BANDWIDTH-MIB</b>              |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>nnBwShellCurrentSloaBandwResrvd Table</b>  |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnBwShellCurrentSloaBandwReserved             | NnBwCellsPerSec | count goes up and down, does not rollover | Current amount of reserved bandwidth currently allocated for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf.                            | MG9K Shelf           | Bandwidth Reserved Statistics : Current data             | Current bandwidth reserved              | nnBwShellCurrentSloaBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active calls (from a line on this shelf to a line not on this shelf). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call).                                                                                                                                                                                                                |
| nnBwShellCapacitySloaBandwReserved            | NnBwCellsPerSec | count goes up and down, does not rollover | Current amount of reserved bandwidth Capacity for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf.                                       | MG9K Shelf           | Bandwidth Reserved Statistics : Current data             | Capacity bandwidth reserved             | nnBwShellCurrentSloaBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | This is just the opposite of the OM above. It starts at max (or close to max) and decreases per call. So collect this OM and add the OM above and the two should equal the max value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>nnBwNetIfBwResIntervalTable</b>            |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnBwNetIfBwResIntervalTotal                   | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the amount of reserved bandwidth currently allocated to VCs on the network interface.                                               | MG9K Network Element | Interval Bandwidth Reserved Statistics : History data    | Total bandwidth reserved                | nnBwNetIfBwResIntervalTable           | NORTEL-UEMG-BANDWIDTH-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active calls (from a line on this MG9000 to a line not on this MG9000). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call). Collect this for all 96 intervals. Repeat this for PLoA (single DSO) connections and DSL data services (sending data). Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnBwNetIfBwResIntervalSloa                    | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the amount of reserved bandwidth currently allocated for the aggregate of all Switched Lines over ATM VCs on the network interface. | MG9K Network Element | Interval Bandwidth Reserved Statistics : History data    | Sloa bandwidth reserved                 | nnBwNetIfBwResIntervalTable           | NORTEL-UEMG-BANDWIDTH-MIB | No  | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active calls (from a line on this MG9000 to a line not on this MG9000). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call).                                                                                                                                                                                                              |
| <b>nnBwShellIntervalSloaBandwResrvd Table</b> |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnBwShellIntervalSloaBandwReserved            | NnBwCellsPerSec | count goes up and down, does not rollover | ith 15-minute measure amount of reserved band width allocated for the aggregate of all Switched Lines over ATM VCs on This UEMG shelf. "                     | MG9K Shelf           | Interval Bandwidth Reserved Statistics : History data    | Amount of bandwidth reserved            | nnBwShellIntervalSloaBandwResrvdTable | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active calls (from a line on this shelf to a line not on this shelf). The counts should be close to 0 for no traffic and higher with active calls. To ensure exact counts are collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call). Collect this for all 96 intervals.                                                                                                                                                                          |
| <b>nnBwIntervalBandwUtilTable</b>             |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnBwBandwUtilIntervalInCellRate               | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the inbound bandwidth utilization.                                                                                                  | MG9K Network Element | Interval Bandwidth Utilization Statistics : History data | Cell rate in                            | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active calls (from a line on this MG9000 to a line not on this MG9000). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call).                                                                                                                                                                                                              |
| nnBwBandwUtilIntervalOutCellRate              | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the outbound bandwidth utilization.                                                                                                 | MG9K Network Element | Interval Bandwidth Utilization Statistics : History data | Cell rate out                           | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| nnBwBandwUtilIntervalInDslCellRate            | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the inbound dsl band width utilization.                                                                                             | MG9K Network Element | Interval Bandwidth Utilization Statistics : History data | Dsl cell rate in                        | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No data traffic 2.) with active DSL data being sent (from a line on this MG9000 to a line not on this MG9000). The count should be close to 0 for no data and higher with data. To ensure exact count is collected keep track of the actual data rates (added together). Collect this for all 96 intervals. Also ensure the counts have moved to the proper time interval after each 15 interval.                                                                                                                                                     |
| nnBwBandwUtilIntervalOutDslCellRate           | NnBwCellsPerSec | count goes up and down, does not rollover | The ith 15min measure of the outbound dsl band width utilization.                                                                                            | MG9K Network Element | Interval Bandwidth Utilization Statistics : History data | Dsl cell rate out                       | nnBwIntervalBandwUtilTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>nnBwIntervalQueueFillTable</b>             |                 |                                           |                                                                                                                                                              |                      |                                                          |                                         |                                       |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| nnBwQueueFillIntervalTotal                    | NnBwPercent     | count goes up and down, does not rollover | ith 15-minute value % fill of the entire input cell queue associated with the central switching fabric.                                                      | MG9K Network Element | Switch Fabric Congestion Statistics : History data       | Fill percentage of the input cell queue | nnBwIntervalQueueFillTable            | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with a large number of active calls (from a line on this MG9000 to a line not on this MG9000). The count should be 0 for no traffic and higher with active calls (warning: % may not change). To ensure exact count is collected keep track of the exact number of calls made. Collect this for all 96 intervals. Also ensure the counts have moved to the proper time interval after each 15 interval.                                                                                                                                |

|                                 |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|-----------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------|------------------------------------------------|---------------------------------|---------------------------|-----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnBwQueueFillIntervalCbr        | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all CBR VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of the CBR VCs input queue     | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No PLoA traffic 2.) with very high number of active PLoA calls (from a line on this MG9000 to a line not on this MG9000). The counts should be 0 for no traffic and higher with active calls (warning: % may not change. To ensure exact counts are collected keep track of the exact number of calls made. Collect this for all 96 intervals.                                                                             |
| nnBwQueueFillIntervalRtVbr      | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all rt-VBR VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of the rt-VBR VCs input queue  | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No rt-VBR DSL Data 2.) with a very high rate of active rt-VBR DSL data (from a line on this MG9000 to a line not on this MG9000). The count should be 0 for no data and higher with data (warning: % may not change. To ensure exact count is collected keep track of the exact number data rate. Collect this for all 96 intervals. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnBwQueueFillIntervalNrtVbr     | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all nrt-VBR VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of the nrt-VBR VCs input queue | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Same as above but for nrt-VBR DSL data service                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| nnBwQueueFillIntervalUbr        | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all UBR VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of the UBR VCs input queue     | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Same as above but for UBR DSL data service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| nnBwQueueFillIntervalUbrPlus    | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all UBR+ VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of the UBR+ VCs input queue    | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Same as above but for UBR+ DSL data service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nnBwQueueFillIntervalControl    | NnBwPercent     | count goes up and down, does not rollover                        | ith 15-minute value % fill of the entire input queue associated with the aggregate of all Control VCs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MG9K Network Element | Switch Fabric Congestion Statistics : History data            | Fill percentage of all Control VCs input queue | nnBwIntervalQueueFillTable      | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN04 | Collect this OM with no traffic and no OAM&P activity. The % should be low or 0. Run very high traffic and very high OAM&P traffic and the number may rise. Collect this for all 96 intervals. Also ensure the counts have moved to the proper time interval after each 15 interval.                                                                                                                                                                                                                                         |
| nnBwAbiCurrentBandwResrvdTable  |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnBwAbiCurrentBandwReserved     | NnBwCellsPerSec | count goes up and down, does not rollover                        | Current amount of reserved bandwidth currently allocated for the aggregate of all ABI VCs on this UEMG ABI interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ABI Card             | ABI card Bandwidth Reserved Statistics: Current data          | Current bandwidth reserved                     | nnBwAbiCurrentBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | No  | SN06 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active ABI calls (from a line on ABI to a line not on this MG9000). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call).                                                                                       |
| nnBwAbiCapacityBandwReserved    | NnBwCellsPerSec | count goes up and down, does not rollover                        | Current amount of reserved bandwidth Capacity for the aggregate of all VCs on this ABI interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ABI Card             | ABI card Bandwidth Reserved Statistics: Current data          | Capacity bandwidth reserved                    | nnBwAbiCurrentBandwResrvdTable  | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN06 | This is just the opposite of the OM above. It starts at max (or close to max) and decreases per call. So collect this OM and add the OM above and the two should equal the max value.                                                                                                                                                                                                                                                                                                                                        |
| nnBwAbiIntervalBandwResrvdEntry |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| nnBwAbiIntervalBandwReserved    | NnBwCellsPerSec | count goes up and down, does not rollover                        | ith 15-minute measure amount of reserved bandwidth allocated for the aggregate of all VCs on this ABI interface."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ABI Card             | ABI card Interval Bandwidth Reserved Statistics: History data | Amount of bandwidth reserved                   | nnBwAbiIntervalBandwResrvdTable | NORTEL-UEMG-BANDWIDTH-MIB | Yes | SN06 | On the MG9K EM Performance Browser collect this particular OM under the following conditions. 1.) No traffic 2.) with active ABI calls (from a line on ABI to a line not on this MG9000). The count should be close to 0 for no traffic and higher with active calls. To ensure exact count is collected keep track of the exact number of calls made. There will be a set usage for each active call (171 cells/sec per active call). Collect for all 96 intervals                                                          |
| SNMP-MPD-MIB<br>SNMP Table      |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| snmplnInvalidMsgs               | Counter32       | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The total number of packets received by the SNMP engine which were dropped because there were invalid or inconsistent components in the SNMP message.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Not supported        |                                                               |                                                | SNMP Table                      | SNMP-MPD-MIB              | Yes | SN04 | This is an error condition that cannot be tested under normal conditions. To test a special test tool or test box would be required to sent invalid SNMP messages.                                                                                                                                                                                                                                                                                                                                                           |
| SNMPv2-MIB                      |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| snmplnBadCommunityNames         | Counter32       | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The total number of community-based SNMP messages (for example, SNMPv1) delivered to the SNMP entity which used an SNMP community name not known to said entity. Also, implementations which authenticate community-based SNMP messages using check(s) in addition to matching the community name (for example, by also checking whether the message originated from a transport address allowed to use a specified community name) MAY include in this value the number of messages which failed the additional check(s). It is to authenticate community-based SNMP messages specify the precise conditions that contribute to this value. | Not supported        |                                                               |                                                |                                 | SNMPv2-MIB                | Yes | SN05 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| snmplnPkts                      | Counter32       | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The total number of messages delivered to the SNMP entity from the transport service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Not supported        |                                                               |                                                |                                 | SNMPv2-MIB                | Yes | SN05 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| NORTEL-UEMG-CLKSYNC-MIB         |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| NnClkSyncRefTable               |                 |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                               |                                                |                                 |                           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                     |                   |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                                                                                                                                                                                                                            |                                                  |                      |                         |     |      |                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|-------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------|-------------------------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnClkSyncRefId                      | integer           | Fixed value                                            | Reference Identification... Identifies the six possible clock synchronization references on the ITP card. This field along with entPhysicalIndex defines a unique row in the nnClkSyncRefTable.<br>itx0 (1), -- reference coming from the left ITX (ITX 0)<br>itx1 (2), -- reference coming from the right ITX (ITX 1)<br>dcc0 (3), -- reference coming from the left DCC (DCC-0)<br>dcc1 (4), -- reference coming from the right DCC (DCC-1)<br>host0 (5), -- reference cabled into the ITP ATM25 phy0<br>host1 (6) -- reference cabled into the ITP ATM25 phy1 *                                                                                                                                           | Not supported      |                                                                                                                                                                                                                                            |                                                  | NnClkSyncRefTable    | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN04 | See Below                                                                                                                                                                                                                                                                                                                                              |
| nnClkSyncRefLossOfSignalCount       | Unsigned32        | Count From Last Init up to 255 then it rolls over to 0 | Contains the count of the number of onsets of timing reference signal loss. Range is from 0 - 255                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ITP Card           | Clock Sync Left ITX Reference Statistics : Current data<br>Clock Sync Right ITX Reference Statistics : Current data<br>Clock Sync Left OC3 Reference Statistics : Current data<br>Clock Sync Right OC3 Reference Statistics : Current data | Number of onsets of timing reference signal loss | NnClkSyncRefTable    | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN05 | Remove ITX cables to the ITP cards. This OM count will increase for each removal.                                                                                                                                                                                                                                                                      |
| nnClkSyncRefLossOfFrameCount (SN05) | Unsigned32        | Count From Last Init up to 255 then it rolls over to 0 | Contains the count of the number of loss of frames. Range is from 0 - 255.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ITP Card           | Clock Sync Left ITX Reference Statistics : Current data<br>Clock Sync Right ITX Reference Statistics : Current data<br>Clock Sync Left OC3 Reference Statistics : Current data<br>Clock Sync Right OC3 Reference Statistics : Current data | Number of loss of frames                         | NnClkSyncRefTable    | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN05 | Remove all BITS and Network timing signals, individually (remove cables). This OM count will increase each time the signal is removed                                                                                                                                                                                                                  |
| NnClkSyncSignalTable                |                   |                                                        | This table provides status information on each of the six timing signals coming into the UE9KMG host shelf. There is one entry for each network timing signal (total of two), and one entry for each BITS signal (total of 4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                                                                                                                                                                                                            |                                                  |                      |                         |     |      |                                                                                                                                                                                                                                                                                                                                                        |
| nnClkSyncSignalId                   | integer           | Fixed value                                            | Signal Identification... Identifies the six possible timing source signals which eventually are seen as references into the ITP card. This field defines a unique row in the nnClkSyncSignalTable.<br>bitsA-0 (1), -- BITS A signal coming into the left ITX of -- the BITS ITX connected pair.<br>bitsB-0 (2), -- BITS B signal coming into the left ITX of -- the BITS ITX connected pair.<br>bitsA-1 (3), -- BITS A signal coming into the right ITX of -- the BITS ITX connected pair.<br>bitsB-1 (4), -- BITS B signal coming into the right ITX of -- the BITS ITX connected pair.<br>dcc-0 (5), -- Network Traffic signal coming into DCC-0<br>dcc-1 (6) -- Network Traffic signal coming into DCC-1* | Not Supported      |                                                                                                                                                                                                                                            |                                                  | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN05 | See Below                                                                                                                                                                                                                                                                                                                                              |
| nnClkSyncSignalLossOfFrameCount     | Unsigned32        | Count From Last Init up to 255 then it rolls over to 0 | Contains the count of the number of loss of frames.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Not supported      |                                                                                                                                                                                                                                            |                                                  | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN05 | Remove all BITS and Network timing signals, individually (remove cables). This OM count will increase each time the signal is removed                                                                                                                                                                                                                  |
| nnClkSyncSignalLossOfSignalCount    | Unsigned32        | Count From Last Init up to 255 then it rolls over to 0 | Contains the count of the number of onsets of timing source signal loss.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Not supported      |                                                                                                                                                                                                                                            |                                                  | NnClkSyncSignalTable | NORTEL-UEMG-CLKSYNC-MIB | Yes | SN05 | Remove all BITS and Network timing signals, individually (remove cables). This OM count will increase each time the signal is removed                                                                                                                                                                                                                  |
| DS1-MIB<br>dsx1CurrentTable         |                   |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                                                                                                                                                                                                                            |                                                  |                      |                         |     |      |                                                                                                                                                                                                                                                                                                                                                        |
| dsx1CurrentESs                      | PerfCurrent Count | Counts only for last 15 min                            | The number of Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DS1 Port, IMA Port | Near-end Statistics : Current data                                                                                                                                                                                                         | Number of errored seconds                        | dsx1CurrentTable     | DS1-MIB                 | No  | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). Without injecting any errors collect the OM and it should be 0. Inject toward the near-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. |
| dsx1CurrentSEs                      | PerfCurrent Count | Counts only for last 15 min                            | The number of Severely Errored Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DS1 Port, IMA Port | Near-end Statistics : Current data                                                                                                                                                                                                         | Number of severely errored seconds               | dsx1CurrentTable     | DS1-MIB                 | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                          |
| dsx1CurrentSEFs                     | PerfCurrent Count | Counts only for last 15 min                            | The number of Severely Errored Framing Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DS1 Port, IMA Port | Near-end Statistics : Current data                                                                                                                                                                                                         | Number of severely errored framing seconds       | dsx1CurrentTable     | DS1-MIB                 | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                          |
| dsx1CurrentUASs                     | PerfCurrent Count | Counts only for last 15 min                            | The number of Unavailable Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DS1 Port, IMA Port | Near-end Statistics : Current data                                                                                                                                                                                                         | Number of unavailable seconds                    | dsx1CurrentTable     | DS1-MIB                 | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                          |
| dsx1CurrentCSSs                     | PerfCurrent Count | Counts only for last 15 min                            | The number of Controlled Slip Seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DS1 Port, IMA Port | Near-end Statistics : Current data                                                                                                                                                                                                         | Number of controlled slip seconds                | dsx1CurrentTable     | DS1-MIB                 | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                          |

|                               |                    |                             |                                                                                                                                                         |                    |                                            |                                            |                        |         |    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------|--------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------|--------------------------------------------|------------------------|---------|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dsx1CurrentPCVs               | PerfCurrent Count  | Counts only for last 15 min | The number of Path Coding Violations.                                                                                                                   | DS1 Port, IMA Port | Near-end Statistics : Current data         | Number of path coding violations           | dsx1CurrentTable       | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLEs                | PerfCurrent Count  | Counts only for last 15 min | The number of Line Errored Seconds.                                                                                                                     | DS1 Port, IMA Port | Near-end Statistics : Current data         | Number of line errored seconds             | dsx1CurrentTable       | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentBESs               | PerfCurrent Count  | Counts only for last 15 min | The number of Bursty Errored Seconds                                                                                                                    | DS1 Port, IMA Port | Near-end Statistics : Current data         | Number of bursty errored seconds           | dsx1CurrentTable       | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentDMs                | PerfCurrent Count  | Counts only for last 15 min | The number of Degraded Minutes                                                                                                                          | DS1 Port, IMA Port | Near-end Statistics : Current data         | Number of degraded minutes                 | dsx1CurrentTable       | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLCVs               | PerfCurrent Count  | Counts only for last 15 min | The number of Line Code Violations (LCVs).                                                                                                              | DS1 Port, IMA Port | Near-end Statistics : Current data         | Number of line code violations             | dsx1CurrentTable       | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>dsx1IntervalTable</b>      |                    |                             |                                                                                                                                                         |                    |                                            |                                            |                        |         |    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx1CurrentESs                | PerfInterval Count | Counts only for last 15 min | The number of Errored Seconds.                                                                                                                          | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of errored seconds                  | dsx1IntervalTable      | DS1-MIB | No | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| dsx1CurrentSEs                | PerfInterval Count | Counts only for last 15 min | The number of Severely Errored Seconds.                                                                                                                 | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of severely errored seconds         | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentSEFSs              | PerfInterval Count | Counts only for last 15 min | The number of Severely Errored Framing Seconds.                                                                                                         | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of severely errored framing seconds | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentUASs               | PerfInterval Count | Counts only for last 15 min | The number of Unavailable Seconds. This object may decrease if the occurrence of unavailable seconds occurs across an interval boundary.                | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of unavailable seconds              | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentCSSs               | PerfInterval Count | Counts only for last 15 min | The number of Controlled Slip Seconds.                                                                                                                  | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of controlled slip seconds          | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentPCVs               | PerfInterval Count | Counts only for last 15 min | The number of Path Coding Violations.                                                                                                                   | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of path coding violations           | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLEs                | PerfInterval Count | Counts only for last 15 min | The number of Line Errored Seconds.                                                                                                                     | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of line errored seconds             | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentBESs               | PerfCurrent Count  | Counts only for last 15 min | The number of Bursty Errored Seconds                                                                                                                    | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of bursty errored seconds           | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentDMs                | PerfCurrent Count  | Counts only for last 15 min | The number of Degraded Minutes                                                                                                                          | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of degraded minutes                 | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLCVs               | PerfInterval Count | Counts only for last 15 min | The number of Line Code Violations.                                                                                                                     | DS1 Port, IMA Port | Near-end Statistics : History data         | Number of line code violations             | dsx1IntervalTable      | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>dsx1TotalTable</b>         |                    |                             |                                                                                                                                                         |                    |                                            |                                            |                        |         |    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx1CurrentESs                | PerfTotalCount     | Rolling 24 hour total       | The sum of Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                     | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of errored seconds                  | dsx1TotalTable         | DS1-MIB | No | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count across 24 hours. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. This test can be done utilizing the current and interval tests.                                         |
| dsx1CurrentSEs                | PerfTotalCount     | Rolling 24 hour total       | The number of Severely Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.         | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of severely errored seconds         | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentSEFSs              | PerfTotalCount     | Rolling 24 hour total       | The number of Severely Errored Framing Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0. | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of severely errored framing seconds | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentUASs               | PerfTotalCount     | Rolling 24 hour total       | The number of Unavailable Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.              | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of unavailable seconds              | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentCSSs               | PerfTotalCount     | Rolling 24 hour total       | The number of Controlled Slip Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.          | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of controlled slip seconds          | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentPCVs               | PerfTotalCount     | Rolling 24 hour total       | The number of Path Coding Violations encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.           | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of path coding violations           | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLEs                | PerfTotalCount     | Rolling 24 hour total       | The number of Line Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.             | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of line errored seconds             | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentBESs               | PerfCurrent Count  | Rolling 24 hour total       | The number of Bursty Errored Seconds                                                                                                                    | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of bursty errored seconds           | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentDMs                | PerfCurrent Count  | Rolling 24 hour total       | The number of Degraded Minutes                                                                                                                          | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of degraded minutes                 | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| dsx1CurrentLCVs               | PerfTotalCount     | Rolling 24 hour total       | The number of Line Code Violations (LCVs) encountered by a DS1 interface in the current 15 minute interval. Invalid 15 minute intervals count as 0.     | DS1 Port, IMA Port | Near-end Statistics : 24-hour current data | Number of line code violations             | dsx1TotalTable         | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>dsx1FarEndCurrentTable</b> |                    |                             |                                                                                                                                                         |                    |                                            |                                            |                        |         |    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx1CurrentESs                | PerfCurrent Count  | Counts only for last 15 min | The number of Far End Errored Seconds.                                                                                                                  | DS1 Port, IMA Port | Far-end Statistics : Current data          | Number of errored seconds                  | dsx1FarEndCurrentTable | DS1-MIB | No | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count                                                                                                                                                                                                    |
| dsx1CurrentSEs                | PerfCurrent Count  | Counts only for last 15 min | The number of Far End Severely Errored Seconds.                                                                                                         | DS1 Port, IMA Port | Far-end Statistics : Current data          | Number of severely errored seconds         | dsx1FarEndCurrentTable | DS1-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                           |                    |                                   |                                                                                                                                                                                                  |                    |                                           |                                            |                          |           |    |      |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------|--------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------|--------------------------------------------|--------------------------|-----------|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dsx1CurrentSEFSs                          | PerfCurrent Count  | Counts only for last 15 min       | The number of Far End Severely Errored Framing Seconds.                                                                                                                                          | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of severely errored framing seconds | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentUASs                           | PerfCurrent Count  | Counts only for last 15 min       | The number of Unavailable Seconds.                                                                                                                                                               | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of unavailable seconds              | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentCSSs                           | PerfCurrent Count  | Counts only for last 15 min       | The number of Far End Controlled Slip Seconds.                                                                                                                                                   | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of controlled slip seconds          | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentLEs                            | PerfCurrent Count  | Counts only for last 15 min       | The number of Far End Line Errored Seconds.                                                                                                                                                      | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of path coding violations           | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentPCVs                           | PerfCurrent Count  | Counts only for last 15 min       | The number of Far End Path Coding Violations.                                                                                                                                                    | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of line errored seconds             | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentBESs                           | PerfCurrent Count  | Counts only for last 15 min       | The number of Bursty Errored Seconds                                                                                                                                                             | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of bursty errored seconds           | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentDMs                            | PerfCurrent Count  | Counts only for last 15 min       | The number of Degraded Minutes                                                                                                                                                                   | DS1 Port, IMA Port | Far-end Statistics : Current data         | Number of degraded minutes                 | dsx1FarEndCurrentTable   | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>dsx1FarEndIntervalTable</b>            |                    |                                   |                                                                                                                                                                                                  |                    |                                           |                                            |                          |           |    |      |                                                                                                                                                                                                                                                                                                                                                                                                       |
| dsx1CurrentESs                            | PerfInterval Count | Counts only for last 15 min       | The number of Far End Errored Seconds.                                                                                                                                                           | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of errored seconds                  | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| dsx1CurrentSESs                           | PerfInterval Count | Counts only for last 15 min       | The number of Far End Severely Errored Seconds.                                                                                                                                                  | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of severely errored seconds         | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentSEFSs                          | PerfInterval Count | Counts only for last 15 min       | The number of Far End Severely Errored Framing Seconds.                                                                                                                                          | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of severely errored framing seconds | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentUASs                           | PerfInterval Count | Counts only for last 15 min       | The number of Unavailable Seconds.                                                                                                                                                               | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of unavailable seconds              | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentCSSs                           | PerfInterval Count | Counts only for last 15 min       | The number of Far End Controlled Slip Seconds.                                                                                                                                                   | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of controlled slip seconds          | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentLEs                            | PerfInterval Count | Counts only for last 15 min       | The number of Far End Line Errored Seconds.                                                                                                                                                      | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of path coding violations           | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentPCVs                           | PerfInterval Count | Counts only for last 15 min       | The number of Far End Path Coding Violations.                                                                                                                                                    | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of line errored seconds             | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentBESs                           | PerfCurrent Count  | Counts only for last 15 min       | The number of Bursty Errored Seconds                                                                                                                                                             | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of bursty errored seconds           | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentDMs                            | PerfCurrent Count  | Counts only for last 15 min       | The number of Degraded Minutes                                                                                                                                                                   | DS1 Port, IMA Port | Far-end Statistics : History data         | Number of degraded minutes                 | dsx1FarEndIntervalTable  | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>dsx1FarEndTotalTable</b>               |                    |                                   |                                                                                                                                                                                                  |                    |                                           |                                            |                          |           |    |      |                                                                                                                                                                                                                                                                                                                                                                                                       |
| dsx1CurrentESs                            | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                   | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of errored seconds                  | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | On a PLoA DS1 channel connect a test box that has the ability to inject errors (e.g. TBERD). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end DS1 (DS0) the error and collect the OM and it should reflect the correct error count across 24 hours. This test can be done utilizing the current and interval tests.                                         |
| dsx1CurrentSESs                           | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Severely Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                          | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of severely errored seconds         | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentSEFSs                          | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Severely Errored Framing Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                  | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of severely errored framing seconds | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentUASs                           | PerfTotal Count    | Rolling 24 hour total             | The number of Unavailable Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                       | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of unavailable seconds              | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentCSSs                           | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Controlled Slip Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                           | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of controlled slip seconds          | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentLEs                            | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Line Errored Seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                              | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of path coding violations           | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentPCVs                           | PerfTotal Count    | Rolling 24 hour total             | The number of Far End Path Coding Violations reported via the far end block error count encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0. | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of line errored seconds             | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentBESs                           | PerfCurrent Count  | Rolling 24 hour total             | The number of Bursty Errored Seconds                                                                                                                                                             | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of bursty errored seconds           | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| dsx1CurrentDMs                            | PerfCurrent Count  | Rolling 24 hour total             | The number of Degraded Minutes                                                                                                                                                                   | DS1 Port, IMA Port | Far-end Statistics : 24-hour current data | Number of degraded minutes                 | dsx1FarEndTotalTable     | DS1-MIB   | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>SONET-MIB sonetSectionCurrentTable</b> |                    |                                   |                                                                                                                                                                                                  |                    |                                           |                                            |                          |           |    |      |                                                                                                                                                                                                                                                                                                                                                                                                       |
| sonetSectionCurrentESs                    | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                                  | OC3 Port, STS1     | Sonet Section Statistics : Current data   | Number of errored seconds                  | sonetSectionCurrentTable | SONET-MIB | No | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable.                                                               |
| sonetSectionCurrentSESs                   | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                         | OC3 Port, STS1     | Sonet Section Statistics : Current data   | Number of severely errored seconds         | sonetSectionCurrentTable | SONET-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                         |



|                                     |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|--------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------------------|-----------------------------|-----------|-----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sonetSectionCurrentSEFSs            | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET/SDH Section in the current 15 minute interval.                                                           | OC3 Port, STS1 | Sonet Section Statistics : Current data      | Number of severely errored framing seconds | sonetSectionCurrentTable    | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetSectionCurrentCVs              | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Coding Violations encountered by a SONET/SDH Section in the current 15 minute interval.                                                                          | OC3 Port, STS1 | Sonet Section Statistics : Current data      | Number of coding violations                | sonetSectionCurrentTable    | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>sonetSectionIntervalTable</b>    |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetSectionIntervalESs             | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                             | OC3 Port, STS1 | Sonet Section Statistics : History data      | Number of errored seconds                  | sonetSectionIntervalTable   | SONET-MIB | Yes | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| sonetSectionIntervalSESSs           | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                             | OC3 Port, STS1 | Sonet Section Statistics : History data      | Number of severely errored seconds         | sonetSectionIntervalTable   | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetSectionIntervalSEFSs           | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET/SDH Section in a particular 15- minute interval in the past 24 hours.                                    | OC3 Port, STS1 | Sonet Section Statistics : History data      | Number of severely errored framing seconds | sonetSectionIntervalTable   | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetSectionIntervalCVs             | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Coding Violations encountered by a SONET/SDH Section in a particular 15-minute interval in the past 24 hours.                                                    | OC3 Port, STS1 | Sonet Section Statistics : History data      | Number of coding violations                | sonetSectionIntervalTable   | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>sonetLineCurrentTable</b>        |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetLineCurrentESs                 | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Line in the current 15 minute interval.                                                                               | OC3 Port, STS1 | Sonet Line Statistics : Current data         | Number of errored seconds                  | sonetLineCurrentTable       | SONET-MIB | No  | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable.                                                                                                                         |
| sonetLineCurrentSESSs               | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Line in the current 15 minute interval.                                                                      | OC3 Port, STS1 | Sonet Line Statistics : Current data         | Number of severely errored seconds         | sonetLineCurrentTable       | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetLineCurrentCVs                 | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Coding Violations encountered by a SONET/SDH Line in the current 15 minute interval.                                                                             | OC3 Port, STS1 | Sonet Line Statistics : Current data         | Number of coding violations                | sonetLineCurrentTable       | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetLineCurrentUASs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Unavailable Seconds encountered by a SONET/SDH Line in the current 15 minute interval.                                                                           | OC3 Port, STS1 | Sonet Line Statistics : Current data         | Number of unavailable seconds              | sonetLineCurrentTable       | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>sonetLineIntervalTable</b>       |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetLineIntervalESs                | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                         | OC3 Port, STS1 | Sonet Line Statistics : History data         | Number of errored seconds                  | sonetLineIntervalTable      | SONET-MIB | Yes | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| sonetLineIntervalSESSs              | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Line in a particular 15 minute interval in the past 24 hours.                                                | OC3 Port, STS1 | Sonet Line Statistics : History data         | Number of severely errored seconds         | sonetLineIntervalTable      | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetLineIntervalCVs                | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Coding Violations encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                       | OC3 Port, STS1 | Sonet Line Statistics : History data         | Number of coding violations                | sonetLineIntervalTable      | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetLineIntervalUASs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Unavailable Seconds encountered by a SONET/SDH Line in a particular 15-minute interval in the past 24 hours.                                                     | OC3 Port, STS1 | Sonet Line Statistics : History data         | Number of unavailable seconds              | sonetLineIntervalTable      | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>sonetFarEndLineCurrentTable</b>  |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetFarEndLineCurrentESs           | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH interface in the current 15 minute interval.                                                                  | OC3 Port, STS1 | Sonet Far End Line Statistics : Current data | Number of errored seconds                  | sonetFarEndLineCurrentTable | SONET-MIB | No  | SN04 | On the OC3 channel connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end OC3 the error and collect the OM and it should reflect the correct error count                                                                                                                                                                                            |
| sonetFarEndLineCurrentSESSs         | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Medium/Section/Line interface in the current 15 minute interval.                                     | OC3 Port, STS1 | Sonet Far End Line Statistics : Current data | Number of severely errored seconds         | sonetFarEndLineCurrentTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndLineCurrentCVs           | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Coding Violations reported via the far and block error count encountered by a SONET/SDH Medium/Section/Line interface in the current 15 minute interval. | OC3 Port, STS1 | Sonet Far End Line Statistics : Current data | Number of coding violations                | sonetFarEndLineCurrentTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndLineCurrentUASs          | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Medium/Section/Line interface in the current 15 minute interval.                                          | OC3 Port, STS1 | Sonet Far End Line Statistics : Current data | Number of unavailable seconds              | sonetFarEndLineCurrentTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>sonetFarEndLineIntervalTable</b> |                    |                                   |                                                                                                                                                                                                            |                |                                              |                                            |                             |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                              |                   |                                   |                                                                                                                                                                                                                   |                |                                              |                                    |                              |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| sonetFarEndLineIntervalESs   | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours.                                              | OC3 Port, STS1 | Sonet Far End Line Statistics : History data | Number of errored seconds          | sonetFarEndLineIntervalTable | SONET-MIB | No  | SN04 | On the OC3 channel connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end OC3 the error and collect the OM and it should reflect the correct error count. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes.                                                                   |
| sonetFarEndLineIntervalSEs   | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours.                                     | OC3 Port, STS1 | Sonet Far End Line Statistics : History data | Number of severely errored seconds | sonetFarEndLineIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndLineIntervalCVs   | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours. | OC3 Port, STS1 | Sonet Far End Line Statistics : History data | Number of coding violations        | sonetFarEndLineIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndLineIntervalUASs  | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Line interface in a particular 15-minute interval in the past 24 hours.                                          | OC3 Port, STS1 | Sonet Far End Line Statistics : History data | Number of unavailable seconds      | sonetFarEndLineIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathCurrentTable        |                   |                                   |                                                                                                                                                                                                                   |                |                                              |                                    |                              |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetPathCurrentESs          | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Path in the current 15 minute interval.                                                                                      | OC3 Port, STS1 | Sonet Path Statistics : Current data         | Number of errored seconds          | sonetPathCurrentTable        | SONET-MIB | No  | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable.                                                                                                                         |
| sonetPathCurrentSEs          | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Path in the current 15 minute interval.                                                                             | OC3 Port, STS1 | Sonet Path Statistics : Current data         | Number of severely errored seconds | sonetPathCurrentTable        | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathCurrentCVs          | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Coding Violations encountered by a SONET/SDH Path in the current 15 minute interval.                                                                                    | OC3 Port, STS1 | Sonet Path Statistics : Current data         | Number of coding violations        | sonetPathCurrentTable        | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathCurrentUASs         | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Unavailable Seconds encountered by a Path in the current 15 minute interval.                                                                                            | OC3 Port, STS1 | Sonet Path Statistics : Current data         | Number of unavailable seconds      | sonetPathCurrentTable        | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathIntervalTable       |                   |                                   |                                                                                                                                                                                                                   |                |                                              |                                    |                              |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetPathIntervalESs         | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Errored Seconds encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                                | OC3 Port, STS1 | Sonet Path Statistics : History data         | Number of errored seconds          | sonetPathIntervalTable       | SONET-MIB | Yes | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| sonetPathIntervalSEs         | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Seconds encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                       | OC3 Port, STS1 | Sonet Path Statistics : History data         | Number of severely errored seconds | sonetPathIntervalTable       | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathIntervalCVs         | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Coding Violations encountered by a SONET/SDH Path in a particular 15-minute interval in the past 24 hours.                                                              | OC3 Port, STS1 | Sonet Path Statistics : History data         | Number of coding violations        | sonetPathIntervalTable       | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetPathIntervalUASs        | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Unavailable Seconds encountered by a Path in a particular 15-minute interval in the past 24 hours.                                                                      | OC3 Port, STS1 | Sonet Path Statistics : History data         | Number of unavailable seconds      | sonetPathIntervalTable       | SONET-MIB | Yes | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndPathCurrentTable  |                   |                                   |                                                                                                                                                                                                                   |                |                                              |                                    |                              |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetFarEndPathCurrentESs    | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH interface in the current 15 minute interval.                                                                         | OC3 Port, STS1 | Sonet Far End Path Statistics : Current data | Number of errored seconds          | sonetFarEndPathCurrentTable  | SONET-MIB | No  | SN04 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end OC3 the error and collect the OM and it should reflect the correct error count. Many of the NearEnd counts will be pegged just by pulling the DS1 cable.                                                                                                                          |
| sonetFarEndPathCurrentSEs    | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Path interface in the current 15 minute interval.                                                           | OC3 Port, STS1 | Sonet Far End Path Statistics : Current data | Number of severely errored seconds | sonetFarEndPathCurrentTable  | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndPathCurrentCVs    | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Path interface in the current 15 minute interval.                       | OC3 Port, STS1 | Sonet Far End Path Statistics : Current data | Number of coding violations        | sonetFarEndPathCurrentTable  | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndPathCurrentUASs   | PerCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Path interface in the current 15 minute interval.                                                                | OC3 Port, STS1 | Sonet Far End Path Statistics : Current data | Number of unavailable seconds      | sonetFarEndPathCurrentTable  | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| sonetFarEndPathIntervalTable |                   |                                   |                                                                                                                                                                                                                   |                |                                              |                                    |                              |           |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| sonetFarEndPathIntervalESs   | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Errored Seconds encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                              | OC3 Port, STS1 | Sonet Far End Path Statistics : History data | Number of errored seconds          | sonetFarEndPathIntervalTable | SONET-MIB | No  | SN04 | On the OC3 channel connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end OC3 the error and collect the OM and it should reflect the correct error count. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes.                                                                   |
| sonetFarEndPathIntervalSEs   | PerInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                     | OC3 Port, STS1 | Sonet Far End Path Statistics : History data | Number of severely errored seconds | sonetFarEndPathIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                            |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
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| sonetFarEndPathIntervalCVs | PerInterval Count | Counts only for last 15 min                                      | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                                                                                                      | OC3 Port, STS1        | Sonet Far End Path Statistics : History data                                                                 | Number of coding violations                                      | sonetFarEndPathIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                    |
| sonetFarEndPathIntervalUAs | PerInterval Count | Counts only for last 15 min                                      | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET/SDH Path interface in a particular 15-minute interval in the past 24 hours.                                                                                                                                                               | OC3 Port, STS1        | Sonet Far End Path Statistics : History data                                                                 | Number of unavailable seconds                                    | sonetFarEndPathIntervalTable | SONET-MIB | No  | SN04 | Same as above                                                                                                                                                    |
| <b>APS-MIB</b>             |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| <b>apsStatusTable</b>      |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| apsStatusModeMismatches    | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | A count of Mode Mismatch conditions. Modes other than 1+1 unidirectional monitor protection line K2 bit 5, which indicates the architecture and K2 bits 6-8, which indicate if the mode is unidirectional or bidirectional. A conflict between the current local mode and the received K2 mode information constitutes a mode mismatch | OC3 Protection Switch | APS Status Statistics : Current data                                                                         | Number of Mode Mismatch conditions                               | apsStatusTable               | APS-MIB   | No  | SN04 | Connect the OC3 (fiber) to an ATM switch that does not support UNI Directional Non-revertive signaling (like the Bay switch).                                    |
| <b>apsChanStatusTable</b>  |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| apsChanSignalDegrades      | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | A count of Signal Degrade conditions. This condition occurs when the line Bit Error Rate exceeds the currently configured threshold.                                                                                                                                                                                                   | OC3 Protection Switch | Active APS Channel Status Statistics : Current data<br>Inactive APS Channel Status Statistics : Current data | Number of Signal Degrade conditions                              | apsChanStatusTable           | APS-MIB   | Yes | SN04 | Inject bit error rates up to 10-5 on the active OC3 fiber using a test set (WNG ANT20).                                                                          |
| apsChanSignalFailures      | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | A count of Signal Failure conditions that have been detected on the incoming signal. This condition occurs when a loss of signal, loss of frame, AIS-L or a Line bit error rate exceeding 10 <sup>-3</sup> is detected on an incoming line.                                                                                            | OC3 Protection Switch | Active APS Channel Status Statistics : Current data<br>Inactive APS Channel Status Statistics : Current data | Number of Signal Failure conditions                              | apsChanStatusTable           | APS-MIB   | Yes | SN04 | Pull the active OC3 fiber or Inject bit error rates up to 10-3 on the active OC3 fiber using a test set (WNG ANT20).                                             |
| apsChanSwitchovers         | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The number of times this channel has switched to the protection line. When queried with index value apsChanNumber set to 0, which is the protection line, this object will return 0.                                                                                                                                                   | OC3 Protection Switch | Active APS Channel Status Statistics : Current data<br>Inactive APS Channel Status Statistics : Current data | Number of times this channel was switched to the protection line | apsChanStatusTable           | APS-MIB   | Yes | SN04 | Display this OM count, Cause a link (OC3) failure (remove cable) on the active fiber. Display this OM count again and it should be increased by one.             |
| <b>ATM-MIB</b>             |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| <b>atmInterfaceTCTable</b> |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| atmInterfaceOCDEvents      | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The number of times the Out of Cell Delineation (OCD) events occur. If seven consecutive ATM cells have Header Error Control (HEC) violations, an OCD event occurs. A high number of OCD events may indicate a problem with the TC Sublayer.                                                                                           | ATM Interface         | Interface Statistics : Current data                                                                          | Cumulative OCD anomalies                                         | atmInterfaceTCTable          | ATM-MIB   | No  | SN04 | Display this OM. Using a test set on the OC3 interface, create HEC violations. Display this OM again, it should have increased by the number of injected faults. |
| <b>ATM2-MIB</b>            |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| <b>atmSigStatTable</b>     |                   |                                                                  |                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                              |                                                                  |                              |           |     |      |                                                                                                                                                                  |
| atmSigSSCOPConEvents       | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | SSCOP Connection Events Counter.                                                                                                                                                                                                                                                                                                       | ATM Interface         | Signaling statistics : Current data                                                                          | SSCOP connection errors                                          | atmSigStatTable              | ATM2-MIB  | No  | SN04 | SWACT the MG9000 DCC card. Increment will appear on newly active DCC as result of receiving BGN pdu                                                              |
| atmSigSSCOPErrdPds         | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | SSCOP Errored PDUs Counter.                                                                                                                                                                                                                                                                                                            | ATM Interface         | Signaling statistics : Current data                                                                          | SSCOP errored PDUs                                               | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer to inject invalid sscop PDU. Verify counter increments.                                                                             |
| atmSigDetectSetupAttempts  | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Call Setup Attempts Counter. This counter counts the number of call setup attempts (both successful and unsuccessful) detected on this interface.                                                                                                                                                                                      | ATM Interface         | Signaling statistics : Current data                                                                          | Incoming call/connection attempts                                | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Display this OM, make an call to a line on this MG9000 from another MG9000, display count again. It will increase by the number of calls made                    |
| atmSigEmitSetupAttempts    | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Call Setup Attempts Counter. This counter counts the number of call setup attempts (both successful and unsuccessful) transmitted on this interface.                                                                                                                                                                                   | ATM Interface         | Signaling statistics : Current data                                                                          | Outgoing call/connection attempts                                | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Display this OM, make an call from this MG9000 to another MG9000, display count again. It will increase by the number of calls made                              |
| atmSigDetectUnavailRoutes  | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Route Unavailability detected on this interface.                                                                                                                                                                                                                                                                             | ATM Interface         | Signaling statistics : Current data                                                                          | Unavailable outgoing routes                                      | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Display this OM. Setup a PLOA passive endpoint with an invalid destination AESA. Request a PLOA service to this endpoint. OM will increment.                     |
| atmSigEmitUnavailRoutes    | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Route Unavailability transmitted from this interface.                                                                                                                                                                                                                                                                        | ATM Interface         | Signaling statistics : Current data                                                                          | Unavailable incoming routes                                      | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer as a virtual endpoint to send SETUP msg to the MG9K with invalid AESA. Counter will increment.                                      |
| atmSigDetectUnavailResrcs  | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Resource Unavailability detected on this interface.                                                                                                                                                                                                                                                                          | ATM Interface         | Signaling statistics : Current data                                                                          | Resources unavailable messages received                          | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer as a virtual endpoint to respond to MG9K SETUP msg with unavail resource cause code. Counter will increment.                        |
| atmSigEmitUnavailResrcs    | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Resource Unavailability transmitted from this interface.                                                                                                                                                                                                                                                                     | ATM Interface         | Signaling statistics : Current data                                                                          | Resources unavailable messages transmitted                       | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer as a virtual endpoint to send SETUP msg to MG9K with invalid IE bearer capability. Counter will increment.                          |
| atmSigDetectCldPtyEvents   | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Called Party Responsible For Unsuccessful Call detected on this interface.                                                                                                                                                                                                                                                   | ATM Interface         | Signaling statistics : Current data                                                                          | Called Party Events received                                     | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer as a virtual endpoint. Make call from MG9K to virtual endpoint already in use. Counter will increment.                              |
| atmSigEmitCldPtyEvents     | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Called Party Responsible For Unsuccessful Call transmitted from this interface.                                                                                                                                                                                                                                              | ATM Interface         | Signaling statistics : Current data                                                                          | Called Party Events transmitted                                  | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Use Radcom protocol analyzer as a virtual endpoint to send SETUP msg to MG9K to endpoint already in use. Counter will increment.                                 |
| atmSigDetectMsgErrors      | Counter32         | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Incorrect Messages detected on this interface.                                                                                                                                                                                                                                                                               | ATM Interface         | Signaling statistics : Current data                                                                          | Incorrect messages received                                      | atmSigStatTable              | ATM2-MIB  | No  | SN04 | Not possible to force condition without modifying software.                                                                                                      |

|                           |            |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                            |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                               |
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| atmSigEmitMsgErrors       | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Incorrect Messages transmitted on this interface.                                                                                                                                                                                                                                                                                                                                                            | ATM Interface | Signaling statistics : Current data                                        | Incorrect messages transmitted         | atmSigStatTable       | ATM2-MIB            | No | SN04 | Use Radcom protocol analyzer as a virtual endpoint to send SETUP msg to MG9K with missing IE. Counter will increment.                                                                                                                                                         |
| atmSigDetectClgPtyEvents  | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Calling Party Events detected on this interface.                                                                                                                                                                                                                                                                                                                                                             | ATM Interface | Signaling statistics : Current data                                        | Calling Party Events received          | atmSigStatTable       | ATM2-MIB            | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                   |
| atmSigEmitClgPtyEvents    | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Calling Party Events transmitted from this interface.                                                                                                                                                                                                                                                                                                                                                        | ATM Interface | Signaling statistics : Current data                                        | Calling Party Events transmitted       | atmSigStatTable       | ATM2-MIB            | No | SN04 | Use Radcom protocol analyzer as a virtual endpoint to send SETUP msg to MG9K with invalid IE bearer capability. Counter will increment.                                                                                                                                       |
| atmSigDetectTimerExpires  | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Timer Expires detected on this interface.                                                                                                                                                                                                                                                                                                                                                                    | ATM Interface | Signaling statistics : Current data                                        | Timer Expiry events received           | atmSigStatTable       | ATM2-MIB            | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                   |
| atmSigEmitTimerExpires    | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Timer Expires transmitted from this interface.                                                                                                                                                                                                                                                                                                                                                               | ATM Interface | Signaling statistics : Current data                                        | Timer Expiry events transmitted        | atmSigStatTable       | ATM2-MIB            | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                   |
| atmSigDetectRestarts      | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Restart Activity errors detected on this interface.                                                                                                                                                                                                                                                                                                                                                          | ATM Interface | Signaling statistics : Current data                                        | DSS2 Restarts received                 | atmSigStatTable       | ATM2-MIB            | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                   |
| atmSigEmitRestarts        | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of Restart Activity errors transmitted from this interface.                                                                                                                                                                                                                                                                                                                                                     | ATM Interface | Signaling statistics : Current data                                        | DSS2 Restarts transmitted              | atmSigStatTable       | ATM2-MIB            | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                   |
| atmSigInEstabls           | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of SVC VCCs established at this signaling entity for incoming connections.                                                                                                                                                                                                                                                                                                                                      | ATM Interface | Signaling statistics : Current data                                        | InEstabls                              | atmSigStatTable       | ATM2-MIB            | No | SN04 | Display this OM, make an call from a line on this MG9000 to another MG9000, display count again. It will increase by the number of calls made                                                                                                                                 |
| atmSigOutEstabls          | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of SVC VCCs established at this signaling entity for outgoing connections.                                                                                                                                                                                                                                                                                                                                      | ATM Interface | Signaling statistics : Current data                                        | OutEstabls                             | atmSigStatTable       | ATM2-MIB            | No | SN04 | Display this OM, make an call to a line on this MG9000 from another MG9000, display count again. It will increase by the number of calls made                                                                                                                                 |
| ATMF-CES-MIB              |            |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                            |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                               |
| atmCESStatsTable          |            |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                            |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                               |
| atmCESHdrErrors           | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | The count of the number of AAL1 header errors detected, including those corrected. Header errors include correctable and uncorrectable CRC, plus bad parity.                                                                                                                                                                                                                                                           | AAL1          | AAL1 Statistics: Current data                                              | Number of header errors                | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | On a PLoA (SVC) VPI & VCI, using a test set (e.g. Adtech), Inject this error into AAL1 cell stream. The before and after counts should show a increase. For more accurate measurements keep track on the number (or duration) of the errors and check to see that they match. |
| atmCESPointerReframes     | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | This records the count of the number of events in which the AAL1 reassembler found that an SDT pointer is not where it is expected, and the pointer must be reacquired. This count is only meaningful for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.                                                               | AAL1          | AAL1 Statistics: Current data                                              | Number of SDT pointer errors           | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| atmCESPointerParityErrors | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | This records the count of the number of events in which the AAL1 reassembler detects a parity check failure at the point where a structured data pointer is expected. This count is only meaningful for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.                                                                 | AAL1          | AAL1 Statistics: Current data                                              | Number of parity check failures        | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| atmCESLostCells           | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of lost cells, as detected by the AAL1 sequence number processing, for example. This records the count of the number of cells detected as lost in the network prior to the destination CES IWF AAL1 layer processing.                                                                                                                                                                                           | AAL1          | AAL1 Statistics: Current data                                              | Number of lost cells                   | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| atmCESMisinsertedCells    | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of AAL1 sequence violations which the AAL Convergence sublayer interprets as a misinserted cell, as defined by ITU-T I.363.1.                                                                                                                                                                                                                                                                                   | AAL1          | AAL1 Statistics: Current data                                              | Number of misinserted cells            | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| atmCESBufUnderflows       | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of buffer underflows. This records the count of the number of times the CES reassembly buffer underflows. In the case of a continuous underflow caused by a loss of ATM cell flow, a single buffer underflow should be counted. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer), then either buffer underflow will cause this count to be incremented. | AAL1          | AAL1 Statistics: Current data                                              | Number of reassembly buffer underflows | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| atmCESBufOverflows        | Counter32  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Number of buffer overflows. This records the count of the number of times the CES reassembly buffer overflows. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer), then either buffer overflow will cause this count to be incremented                                                                                                                           | AAL1          | AAL1 Statistics: Current data                                              | Number of reassembly buffer overflows  | atmCESStatsTable      | ATMF-CES-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                 |
| NORTEL-UEMG-ATM-MIB       |            |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                            |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                               |
| nnAtmStatsIfDataTable     |            |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                                                            |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                               |
| nnAtmStatsIfInOctets      | Unsigned32 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total octets received on this interface                                                                                                                                                                                                                                                                                                                                                                                | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data | incoming total cells X 53              | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Display the current and all 96 intervals entries. This counter should always be increasing (over time). Using a PLoA or DSL Data line send data down that connection. Display these counters, with data traffic on the line the counts will increase a greater pace.          |

|                             |                |                                                                  |                                                      |               |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                   |
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| nnAtmStatsIfInErrors        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total inbound errors                                 | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | uncorrectable HEC Errors               | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | On the OC3 interface, using a test set, inject this error. The before and after counts should show a increase. For more accurate measurements keep track on the number (or duration) of the errors and check to see that they match.                                              |
| nnAtmStatsIfInProtoError    | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming unknown/unsupported Protocol discards | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | invalid cell headers                   | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |
| nnAtmStatsIfInOam           | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming OAM cells.                            | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | incoming OAM cells                     | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Activate Continuity Check on an active PLoA service. Display the current and all 96 intervals entries. This counter should always be increasing (over time)                                                                                                                       |
| nnAtmStatsIfOutOctets       | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total octets sent on this interface                  | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | outgoing total cells X 53              | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Display the current and all 96 intervals entries. This counter should always be increasing (over time). Using a PLoA or DSL Data line send data down that connection. Display these counters, with data traffic on the line the counts will increase a greater pace.              |
| nnAtmStatsIfOutDiscards     | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total outbound errors                                | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | outbound discarded                     | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                       |
| nnAtmStatsIfOutOam          | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total outgoing OAM cells.                            | ATM Interface | Interface Statistics : Current data<br>Interface Statistics : History data                                         | outgoing OAM cells                     | nnAtmStatsIfDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Activate Continuity Check on an active PLoA service. Display the current and all 96 intervals entries. This counter should always be increasing (over time)                                                                                                                       |
| nnAtmStatsVcDataTable       |                |                                                                  |                                                      |               |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                   |
| nnAtmStatsVcInTotal         | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming cells (CLP = 011).                    | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | incoming total cells                   | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Display the current and all 96 intervals entries. This counter should always be increasing (over time). Using a PLoA or DSL Data line send data down that connection. Display these counters, with data traffic on the line the counts will increase a greater rate than without. |
| nnAtmStatsVcInTotalCip0     | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming cells (CLP = 0)                       | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | incoming cip0 cells                    | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |
| nnAtmStatsVcInDiscarded     | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming cells discarded (CLP = 011).          | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | incoming discard cells                 | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                       |
| nnAtmStatsVcInDiscardedCip0 | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total incoming cells discarded (CLP = 0)             | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | incoming cip0 discards                 | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Display the current and all 96 intervals entries. This counter should always be increasing (over time). Using a PLoA or DSL Data line send data down that connection. Display these counters, with data traffic on the line the counts will increase a greater rate than without. |
| nnAtmStatsVcOutTotal        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total outgoing cells (CLP = 011).                    | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | outgoing total cells                   | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |
| nnAtmStatsVcOutTotalCip0    | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total outgoing cells (CLP = 0)                       | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | outgoing cip0 cells                    | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |
| nnAtmStatsVcOutTagged       | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Total outgoing cells tagged (CLP = 0 -> CLP = 1).    | AAL1          | ATM VCL Statistics: Current Data<br>ATM VCL Statistics: History Data                                               | outgoing tagged cells                  | nnAtmStatsVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Not possible to force condition without modifying software.                                                                                                                                                                                                                       |
| nnAtmPmVcDataTable          |                |                                                                  |                                                      |               |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                   |
| nnAtmPmVcFwImpBlk           | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | forward impaired block.                              | AAL1          | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | FW impaired blocks                     | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | On a PLoA (SVC) activate Performance Monitoring. Using a test set (e.g. Adtech) , inject this error. The before and after counts should show a increase. For more accurate measurements keep track on the number (or duration) of the errors and check to see that they match.    |
| nnAtmPmVcFwSeCblkImp        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | forward lost/misinserted impaired block.             | AAL1          | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | FW lost or misinserted impaired blocks | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |
| nnAtmPmVcFwSeCblkLst        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | forward severely errored cell block (lost).          | AAL1          | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | FW lost severely errored cell blocks   | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                     |

|                             |                |                                                                              |                                                              |      |                                                                                                                                      |                                                        |                    |                         |    |      |               |
|-----------------------------|----------------|------------------------------------------------------------------------------|--------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------|-------------------------|----|------|---------------|
| nnAtmPmVcFwSeCblkMist       | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward severely errored cell block<br>(misinserted).        | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW misinserted<br>severely errored<br>cell blocks      | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwSeCblkBvlt       | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward severely errored cell block -<br>(BIP-16violations). | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW BIP-16<br>violation severely<br>errored cell blocks | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwSeCblkComb       | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward severely errored cell block<br>combined.             | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW combined<br>severely errored<br>cell blocks         | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcLFwstClp01Cnt      | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward lost CLP0+1 cell count.                              | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW lost CLP0 & 1<br>cell blocks                        | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwLstClp0Cnt       | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward lost CLP0 cell count.                                | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW lost CLP0 cell<br>blocks                            | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwMistClp01Cnt     | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward misinserted CLP0+1 cell<br>count.                    | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW misinserted<br>CLP0 & 1 cell<br>blocks              | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwErrCnt           | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward errored cell count.                                  |      | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW errored cell<br>blocks                              | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwTotalLstClp01Cnt | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward total lost CLP0+1 cell<br>count.                     | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW total lost<br>CLP0 & 1 cell<br>blocks               | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcFwTotalLstClp0Cnt  | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | forward total lost CLP0 cell count.                          | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | FW total lost<br>CLP0 cell blocks                      | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |
| nnAtmPmVcBwImpBlk           | Unsigned3<br>2 | Count From<br>Last Init up to<br>4,294,967,296<br>then it rolls<br>over to 0 | backward impaired block.                                     | AAL1 | End-to-end<br>PM: Current<br>data<br>End-to-end<br>PM: History<br>data<br>Segment PM:<br>Current data<br>Segment PM:<br>History data | BW impaired<br>blocks                                  | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-<br>MIB | No | SN04 | Same as above |

|                             |                |                                                                  |                                                                |      |                                                                                                                    |                                                  |                    |                     |    |      |               |
|-----------------------------|----------------|------------------------------------------------------------------|----------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|---------------------|----|------|---------------|
| nnAtmPmVcBwSeCblkImp        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward lost/misinserted impaired block.                      | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW lost or misinserted impaired blocks           | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwSeCblkLst        | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward severely errored cell block (lost).                   | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW lost severely errored cell blocks             | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwSeCblkMist       | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward severely errored cell block (misinserted).            | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW misinserted severely errored cell blocks      | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwSeCblkBvlt       | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward severely errored cell block - (BIP-16 violations).    | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW BIP-16 violation severely errored cell blocks | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwSeCblkCombNsat   | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward severely errored cell block combined(non-saturating). | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW non-saturating severely errored cell blocks   | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwLstClp01Cnt      | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward lost CLP0+1 cell count.                               | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW lost CLP0 & 1 cell blocks                     | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwLstClp0Cnt       | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward lost CLP0 cell count.                                 | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW lost CLP0 cell blocks                         | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwMistClp01Cnt     | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward misinserted CLP0+1 cell count.                        | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW misinserted CLP0 & 1 cell blocks              | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwErrCnt           | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward errored cell count.                                   | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW errored cell blocks                           | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |
| nnAtmPmVcBwTotalLstClp01Cnt | Unsigned3<br>2 | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward total lost CLP01 cell count.                          | AAL1 | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW total lost CLP0 & 1 cell blocks               | nnAtmPmVcDataTable | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above |

|                              |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
|------------------------------|---------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------|---------------------|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnAtmPmVcBwTotalLstClp0Cnt   | Unsigned32          | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | backward total lost CLP0 cell count.                                                                                                                                                                 | AAL1      | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | BW total lost CLP0 cell blocks         | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnAtmPmVcTotalTransClp01Cnt  | Unsigned32          | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | total transmitted CLP0+1 cell count.                                                                                                                                                                 | AAL1      | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | Total transmitted CLP0 & 1 cell blocks | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnAtmPmVcTotalTransClp0Cnt   | Unsigned32          | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | total transmitted CLP0 cell count.                                                                                                                                                                   | AAL1      | End-to-end PM: Current data<br>End-to-end PM: History data<br>Segment PM: Current data<br>Segment PM: History data | Total transmitted CLP0 cell blocks     | nnAtmPmVcDataTable    | NORTEL-UEMG-ATM-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>ADSL-LINE-MIB</b>         |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
| <b>adslAtucPerfDataTable</b> |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
| adslAtucPerfCurr15MinLofs    | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Framing.                                                                                                                   | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds Lost of frame        | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Display this OM. Using a test set on the DSL Data interface, inject this error. Display this OM again, it should have increased by the number of injected faults.                                                                                                                     |
| adslAtucPerfCurr15MinLoss    | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Signal.                                                                                                                    | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds Lost of signal       | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfCurr15MinLols    | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Link.                                                                                                                      | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds LOLS                 | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfCurr15MinLprs    | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Power.                                                                                                                     | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds LPRs                 | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfCurr15MinESs     | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of Errored Seconds in the current 15 minute interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies or one or more los or sef defects.  | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds Ess                  | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfCurr15MinInits   | PerfCurrent Count   | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of the line initialization attempts in the current 15 minute interval. Includes both successful and failed attempts.                                                                           | XDSL Card | ATUC Performance: Current data                                                                                     | Number of seconds Inits                | adslAtucPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>adslAturPerfDataTable</b> |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
| adslAturPerfCurr15MinLofs    | PerfCurrent Count,  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Framing.                                                                                                                   | XDSL Card | ATUR Performance: Current data                                                                                     | Number of seconds Lost of frame        | adslAturPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Display this OM. Using a test set on the DSL Data interface, inject this error. Display this OM again, it should have increased by the number of injected faults.                                                                                                                     |
| adslAturPerfCurr15MinLoss    | PerfCurrent Count,  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Signal.                                                                                                                    | XDSL Card | ATUR Performance: Current data                                                                                     | Number of seconds Lost of signal       | adslAturPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAturPerfCurr15MinLprs    | PerfCurrent Count,  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of seconds in the current 15 minute interval when there was Loss of Power.                                                                                                                     | XDSL Card | ATUR Performance: Current data                                                                                     | Number of seconds LPRs                 | adslAturPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAturPerfCurr15MinESs     | PerfCurrent Count,  | Count From Last Init up to 4,294,967,296 then it rolls over to 0 | Count of Errored Seconds in the current 15 minute interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies, or one or more los or sef defects. | XDSL Card | ATUR Performance: Current data                                                                                     | Number of seconds Ess                  | adslAturPerfDataTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>adslAtucIntervalTable</b> |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
| adslAtucPerfLofs             | PerfInterval Count  | Counts only for last 15 min                                      | Count of seconds in the interval when there was Loss of Framing.                                                                                                                                     | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds Lost of frame        | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Display all 96 OM entries. Using a test set on the DSL Data interface, inject this error over each interval. Display this OMs again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| adslAtucPerfLoss             | PerfInterval Count  | Counts only for last 15 min                                      | Count of seconds in the interval when there was Loss of Signal.                                                                                                                                      | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds Lost of signal       | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfLols             | PerfInterval Count  | Counts only for last 15 min                                      | Count of seconds in the interval when there was Loss of Link.                                                                                                                                        | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds LOLS                 | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfLprs             | PerfInterval Count  | Counts only for last 15 min                                      | Count of seconds in the interval when there was Loss of Power.                                                                                                                                       | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds LPRs                 | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfESs              | PerfInterval Count  | Counts only for last 15 min                                      | Count of Errored Seconds in the interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies or one or more los or sef defects.                    | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds Ess                  | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| adslAtucPerfInits            | PerfInterval Count  | Counts only for last 15 min                                      | Count of the line initialization attempts during the interval. Includes both successful and failed attempts                                                                                          | XDSL Card | ATUC Interval: History data                                                                                        | Number of seconds Inits                | adslAtucIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>adslAturIntervalTable</b> |                     |                                                                  |                                                                                                                                                                                                      |           |                                                                                                                    |                                        |                       |                     |    |      |                                                                                                                                                                                                                                                                                       |
| adslAturPerfLofs             | PerfInterval Count, | Counts only for last 15 min                                      | Count of seconds in the interval when there was Loss of Framing.                                                                                                                                     | XDSL Card | ATUR Interval: History data                                                                                        | Number of seconds Lost of frame        | adslAturIntervalTable | ADSL-LINE-MIB       | No | SN04 | Same as above                                                                                                                                                                                                                                                                         |



|                                          |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
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| adslAtucPerfLoss                         | PerInterval Count, | Counts only for last 15 min       | Count of seconds in the interval when there was Loss of Signal.                                                                                                                     | XDSL Card | ATUR Interval: History data            | Number of seconds Lost of signal     | adslAtucIntervalTable     | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucPerfLprs                         | PerInterval Count, | Counts only for last 15 min       | Count of seconds in the interval when there was Loss of Power.                                                                                                                      | XDSL Card | ATUR Interval: History data            | Number of seconds LPRs               | adslAtucIntervalTable     | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucPerfESs                          | PerInterval Count, | Counts only for last 15 min       | Count of Errored Seconds in the Interval. The errored second parameter is a count of one-second intervals containing one or more CRC anomalies, or one or more los or self defects. | XDSL Card | ATUR Interval: History data            | Number of seconds Ess                | adslAtucIntervalTable     | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanPerfDataTable                |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| adslAtucChanPerfCurr15MinReceivedBlks    | PerCurrent Count   | Counts since last 15 min interval | Count of all encoded blocks received on this channel within the current 15 minute interval.                                                                                         | XDSL Card | ATUC Channel Performance: Current Data | Number of encoded blocks received    | adslAtucChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Display all 96 OM entries, Using a test set on the DSL Data interface, inject this error over each interval. Display this OMs again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval.                               |
| adslAtucChanPerfCurr15MinTransmittedBlks | PerCurrent Count   | Counts since last 15 min interval | Count of all encoded blocks transmitted on this channel within the current 15 minute interval.                                                                                      | XDSL Card | ATUC Channel Performance: Current Data | Number of encoded blocks transmitted | adslAtucChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanPerfCurr15MinCorrectedBlks   | PerCurrent Count   | Counts since last 15 min interval | Count of all blocks received with errors that were corrected on this channel within the current 15 minute interval.                                                                 | XDSL Card | ATUC Channel Performance: Current Data | Number of corrected blocks           | adslAtucChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanPerfCurr15MinUncorrectBlks   | PerCurrent Count   | Counts since last 15 min interval | Count of all blocks received with uncorrectable errors on this channel within the current 15 minute interval.                                                                       | XDSL Card | ATUC Channel Performance: Current Data | Number of uncorrected blocks         | adslAtucChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanPerfDataTable                |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| adslAturChanPerfCurr15MinReceivedBlks    | PerCurrent Count   | Counts since last 15 min interval | Count of all encoded blocks received on this channel within the current 15 minute interval.                                                                                         | XDSL Card | ATUR Channel Performance: Current Data | Number of encoded blocks received    | adslAturChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Display this OM, Using a test set on the DSL Data interface, inject an error that would cause this condition. Display this OM again, it should have increased by the number of injected faults.                                                                                                                     |
| adslAturChanPerfCurr15MinTransmittedBlks | PerCurrent Count   | Counts since last 15 min interval | Count of all encoded blocks transmitted on this channel within the current 15 minute interval.                                                                                      | XDSL Card | ATUR Channel Performance: Current Data | Number of encoded blocks transmitted | adslAturChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanPerfCurr15MinCorrectedBlks   | PerCurrent Count   | Counts since last 15 min interval | Count of all blocks received with errors that were corrected on this channel within the current 15 minute interval.                                                                 | XDSL Card | ATUR Channel Performance: Current Data | Number of corrected blocks           | adslAturChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanPerfCurr15MinUncorrectBlks   | PerCurrent Count   | Counts since last 15 min interval | Count of all blocks received with uncorrectable errors on this channel within the current 15 minute interval.                                                                       | XDSL Card | ATUR Channel Performance: Current Data | Number of uncorrected blocks         | adslAturChanPerfDataTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanIntervalTable                |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| adslAtucChanReceivedBlks                 | PerInterval Count  | Counts only for last 15 min       | Count of all encoded blocks received on this channel during this interval.                                                                                                          | XDSL Card | ATUC Channel Interval: History Data    | Number of encoded blocks received    | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Display all 96 OM entries , Using a test set on the DSL Data interface, inject an error that would cause this condition over all intervals. Display this OM again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| adslAtucChanTransmittedBlks              | PerInterval Count  | Counts only for last 15 min       | Count of all encoded blocks transmitted on this channel during this interval.                                                                                                       | XDSL Card | ATUC Channel Interval: History Data    | Number of encoded blocks transmitted | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanCorrectedBlks                | PerInterval Count  | Counts only for last 15 min       | Count of all blocks received with errors that were corrected on this channel during this interval.                                                                                  | XDSL Card | ATUC Channel Interval: History Data    | Number of corrected blocks           | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAtucChanUncorrectBlks                | PerInterval Count  | Counts only for last 15 min       | Count of all blocks received with uncorrectable errors on this channel during this interval.                                                                                        | XDSL Card | ATUC Channel Interval: History Data    | Number of uncorrected blocks         | adslAtucChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanIntervalTable                |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| adslAturChanReceivedBlks                 | PerInterval Count  | Counts only for last 15 min       | Count of all encoded blocks received on this channel during this interval.                                                                                                          | XDSL Card | ATUR Channel Interval: History Data    | Number of encoded blocks received    | adslAturChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Display all 96 OM entries , Using a test set on the DSL Data interface, inject an error that would cause this condition over all intervals. Display this OM again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| adslAturChanTransmittedBlks              | PerInterval Count  | Counts only for last 15 min       | Count of all encoded blocks transmitted on this channel during this interval.                                                                                                       | XDSL Card | ATUR Channel Interval: History Data    | Number of encoded blocks transmitted | adslAturChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanCorrectedBlks                | PerInterval Count  | Counts only for last 15 min       | Count of all blocks received with errors that were corrected on this channel during this interval.                                                                                  | XDSL Card | ATUR Channel Interval: History Data    | Number of corrected blocks           | adslAturChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| adslAturChanUncorrectBlks                | PerInterval Count  | Counts only for last 15 min       | Count of all blocks received with uncorrectable errors on this channel during this interval.                                                                                        | XDSL Card | ATUR Channel Interval: History Data    | Number of uncorrected blocks         | adslAturChanIntervalTable | ADSL-LINE-MIB        | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| NORTEL-UEMG-ADSL-MIB                     |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| nnUemgDslAtucPerfTable                   |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| nnUemgDslAtucPerfCurr15MinFec            | Integer32          | Counts since last 15 min interval | Number of Forward Error Correction anomalies on the Atuc Channel in the current 15min interval.                                                                                     | XDSL Card | nnATUC Performance: Current data       | Number of Forward Error Corrections  | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Display this OM, Using a test set on the DSL Data interface, inject this error. Display this OM again, it should have increased by the number of injected faults.                                                                                                                                                   |
| nnUemgDslAtucPerfCurr15MinCrc            | Integer32          | Counts since last 15 min interval | Number of Cyclical Redundancy Check anomalies on the Atuc Channel in the current 15min interval.                                                                                    | XDSL Card | nnATUC Performance: Current data       | Number of cyclical Redundancy Check  | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| nnUemgDslAtucPerfCurr15MinNcd            | Integer32          | Counts since last 15 min interval | Number of No Cell Delineation anomalies on the Atuc Channel in the current 15min interval.                                                                                          | XDSL Card | nnATUC Performance: Current data       | Number of No Cell Delineation        | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| nnUemgDslAtucPerfCurr15MinOcd            | Integer32          | Counts since last 15 min interval | Number of Out of Cell Delineation anomalies on the Atuc Channel in the current 15min interval.                                                                                      | XDSL Card | nnATUC Performance: Current data       | Number of Out of Cell Delineation    | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| nnUemgDslAtucPerfCurr15MinHec            | Integer32          | Counts since last 15 min interval | Number of Header Error Check anomalies which on the Atuc Channel in the current 15min interval.                                                                                     | XDSL Card | nnATUC Performance: Current data       | Number of Header Error Check         | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| nnUemgDslAtucPerfCurr15MinLcd            | Integer32          | Counts since last 15 min interval | Number of Loss of Cell Delineation anomalies on the Atuc Channel in the current 15min interval.                                                                                     | XDSL Card | nnATUC Performance: Current data       | Number of Loss of Cell Delineation   | nnUemgDslAtucPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Same as above                                                                                                                                                                                                                                                                                                       |
| nnUemgDslAturPerfTable                   |                    |                                   |                                                                                                                                                                                     |           |                                        |                                      |                           |                      |    |      |                                                                                                                                                                                                                                                                                                                     |
| nnUemgDslAturPerfCurr15MinFec            | Integer32          | Counts since last 15 min interval | Number of Forward Error Correction anomalies on the ATUR Channel in the current 15min interval.                                                                                     | XDSL Card | nnATUR Performance: Current data       | Number of Forward Error Corrections  | nnUemgDslAturPerfTable    | NORTEL-UEMG-ADSL-MIB | No | SN04 | Display this OM, Using a test set on the DSL Data interface, inject this error. Display this OM again, it should have increased by the number of injected faults.                                                                                                                                                   |

|                                      |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
|--------------------------------------|-----------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------|-------------------------------------|------------------------|----------------------|-----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnUemgDslAturPerfCurr15MinBlockError | Integer32 | Counts since last 15 min interval | Number of Block Error anomalies which occurred on the ATUR Channel in the current 15min interval.                                                                                                              | XDSL Card   | nnATUR Performance: Current data               | Number of Block Error               | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfCurr15MinNcd        | Integer32 | Counts since last 15 min interval | Number of No Cell Delineation anomalies on the ATUR Channel in the current 15min interval.                                                                                                                     | XDSL Card   | nnATUR Performance: Current data               | Number of No Cell Delineation       | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfCurr15MinOcd        | Integer32 | Counts since last 15 min interval | Number of Out of Cell Delineation anomalies on the ATUR Channel in the current 15min interval.                                                                                                                 | XDSL Card   | nnATUR Performance: Current data               | Number of Out of Cell Delineation   | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfCurr15MinHec        | Integer32 | Counts since last 15 min interval | Number of Header Error Check anomalies which on the ATUR Channel in the current 15min interval.                                                                                                                | XDSL Card   | nnATUR Performance: Current data               | Number of Header Error Check        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfCurr15MinLcd        | Integer32 | Counts since last 15 min interval | Number of Loss of Cell Delineation anomalies on the ATUR Channel in the current 15min interval.                                                                                                                | XDSL Card   | nnATUR Performance: Current data               | Number of Loss of Cell Delineation  | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>nnUemgDslAtucIntervalTable</b>    |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| nnUemgDslAtucPerfFec                 | Integer32 | Counts only for last 15 min       | Number of Forward Error Correction anomalies on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUC Interval: History data                  | Number of Forward Error Corrections | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Display all 96 OM entries, Using a test set on the DSL Data interface, inject this error over each interval. Display this OMs again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnUemgDslAtucPerfCrc                 | Integer32 | Counts only for last 15 min       | Number of Cyclical Redundancy Check anomalies on the ATUC channel during this interval.                                                                                                                        | XDSL Card   | nnATUC Interval: History data                  | Number of cyclical Redundancy Check | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfNcd                 | Integer32 | Counts only for last 15 min       | Number of No Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                        | XDSL Card   | nnATUC Interval: History data                  | Number of No Cell Delineation       | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfOcd                 | Integer32 | Counts only for last 15 min       | Number of Out of Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                    | XDSL Card   | nnATUC Interval: History data                  | Number of Out of Cell Delineation   | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfHec                 | Integer32 | Counts only for last 15 min       | Number of Header Error Check anomalies which on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUC Interval: History data                  | Number of Header Error Check        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAtucPerfLcd                 | Integer32 | Counts only for last 15 min       | Number of Loss of Cell Delineation anomalies on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUC Interval: History data                  | Number of Loss of Cell Delineation  | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>nnUemgDslAturIntervalTable</b>    |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| nnUemgDslAturPerfFec                 | Integer32 | Counts only for last 15 min       | Number of Forward Error Correction anomalies on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUR Interval: History data                  | Number of Forward Error Corrections | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Display all 96 OM entries, Using a test set on the DSL Data interface, inject this error over each interval. Display this OMs again, it should have increased by the number of injected faults. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| nnUemgDslAturPerfBlockError          | Integer32 | Counts only for last 15 min       | Number of Block Error anomalies which occurred on the ATUR channel during this interval.                                                                                                                       | XDSL Card   | nnATUR Interval: History data                  | Number of Block Error               | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAturPerfNcd                 | Integer32 | Counts only for last 15 min       | Number of No Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                        | XDSL Card   | nnATUR Interval: History data                  | Number of No Cell Delineation       | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAturPerfOcd                 | Integer32 | Counts only for last 15 min       | Number of Out of Cell Delineation anomalies which on the ATUC channel during this interval.                                                                                                                    | XDSL Card   | nnATUR Interval: History data                  | Number of Out of Cell Delineation   | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAturPerfHec                 | Integer32 | Counts only for last 15 min       | Number of Header Error Check anomalies which on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUR Interval: History data                  | Number of Header Error Check        | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| nnUemgDslAturPerfLcd                 | Integer32 | Counts only for last 15 min       | Number of Loss of Cell Delineation anomalies on the ATUC channel during this interval.                                                                                                                         | XDSL Card   | nnATUR Interval: History data                  | Number of Loss of Cell Delineation  | nnUemgDslAturPerfTable | NORTEL-UEMG-ADSL-MIB | No  | SN04 | Same as above                                                                                                                                                                                                                                                                         |
| <b>IMA-MIB (new in SN05)</b>         |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| <b>imaGroupCurrentTable</b>          |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| imaGroupCurrentUnavailSecs           | Gauge32   | Counts since last 15 min interval | Count of one second intervals where the IMA Group Traffic State Machine is Down in current 15 minute interval                                                                                                  | DS1IMAGroup | DS1 IMA Group Statistics: Current data         | Group Unavailable Seconds           | imaGroupCurrentTable   | IMA-MIB              | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                                                  |
| imaGroupCurrentNeNumFailures         | Gauge32   | Counts since last 15 min interval | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in current 15 minute interval                                                                              | DS1IMAGroup | DS1 IMA Group Statistics: Current data         | Group Near End Number of Failures   | imaGroupCurrentTable   | IMA-MIB              | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                                                    |
| imaGroupCurrentFeNumFailures         | Gauge32   | Counts since last 15 min interval | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in current 15 minute interval. This is an optional attribute.                             | DS1IMAGroup | DS1 IMA Group Statistics: Current data         | Group Far End Number of Failures    | imaGroupCurrentTable   | IMA-MIB              | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                                                    |
| <b>imaGroupIntervalTable</b>         |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| imaGroupIntervalUnavailSecs          | Gauge32   | Counts since last 15 min interval | Count of one second intervals where the IMA Group Traffic State Machine is Down in one of the previous 96, individual 15 minute, intervals                                                                     | DS1IMAGroup | DS1 IMA Group Statistics: History data         | Group Unavailable Seconds           | imaGroupIntervalTable  | IMA-MIB              | Yes | SN05 | Display all 96 OM entries, on the IMA card pull and replace the DS1 cable, display these count again. The count will be higher for each interval the cable was pulled. Also ensure the counts have moved to the proper time interval after each 15 interval.                          |
| imaGroupIntervalNeNumFailures        | Gauge32   | Counts since last 15 min interval | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in one of the previous 96, individual 15 minute, intervals                                                 | DS1IMAGroup | DS1 IMA Group Statistics: History data         | Group Near End Number of Failures   | imaGroupIntervalTable  | IMA-MIB              | Yes | SN05 | Same as above                                                                                                                                                                                                                                                                         |
| imaGroupIntervalFeNumFailures        | Gauge32   | Counts since last 15 min interval | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in one of the previous 96, individual 15 minute, intervals. This is an optional attribute | DS1IMAGroup | DS1 IMA Group Statistics: History data         | Group Far End Number of Failures    | imaGroupIntervalTable  | IMA-MIB              | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory. Display all 96 OM entries                                          |
| <b>imaGroupTotalTable</b>            |           |                                   |                                                                                                                                                                                                                |             |                                                |                                     |                        |                      |     |      |                                                                                                                                                                                                                                                                                       |
| imaGroupTotalUnavailSecs             | Gauge32   | Rolling 24 hour total             | Count of one second intervals where the IMA Group Traffic State Machine is Down in the previous 24 hour interval. Invalid 15 minute intervals count as 0.                                                      | DS1IMAGroup | DS1 IMA Group Statistics: 24-hour current data | Group Unavailable Seconds           | imaGroupTotalTable     | IMA-MIB              | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                                                  |
| imaGroupTotalNeNumFailures           | Gauge32   | Rolling 24 hour total             | The number of times a near-end group failure (Config-Aborted, Insufficient-Links) has been reported in the previous 24 hour. Invalid 15 minute intervals count as 0.                                           | DS1IMAGroup | DS1 IMA Group Statistics: 24-hour current data | Group Near End Number of Failures   | imaGroupTotalTable     | IMA-MIB              | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                                                    |

|                                 |         |                                   |                                                                                                                                                                                                                                                                                 |              |                                                |                                  |                      |         |     |      |                                                                                                                                                                                                                                                              |
|---------------------------------|---------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------|----------------------------------|----------------------|---------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| imaGroupTotalFeNumFailures      | Gauge32 | Rolling 24 hour total             | The number of times a far-end group failure (Config-Aborted-FE, Insufficient-Links-FE, Blocked-FE) has been reported in the previous 24 hour interval. Invalid 15 minute intervals count as 0. This is an optional attribute.                                                   | DS1IMAGrou p | DS1 IMA Group Statistics: 24-hour current data | Group Far End Number of Failures | imaGroupTotalTable   | IMA-MIB | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                           |
| <b>imaLinkCurrentTable</b>      |         |                                   |                                                                                                                                                                                                                                                                                 |              |                                                |                                  |                      |         |     |      |                                                                                                                                                                                                                                                              |
| imaLinkCurrentImaViolations     | Gauge32 | Counts since last 15 min interval | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in the current 15 minute interval                                                                                                                                  | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ima Violations              | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                         |
| imaLinkCurrentOifAnomalies      | Gauge32 | Counts since last 15 min interval | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in the current 15 minute interval. This is an optional attribute                                                                                                                      | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Oif Anomalies               | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentNeSevErroredSecs  | Gauge32 | Counts since last 15 min interval | Count of one second intervals containing >= 30% of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/ LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in the current 15 minute interval                          | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Sev Errored Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                           |
| imaLinkCurrentFeSevErroredSecs  | Gauge32 | Counts since last 15 min interval | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in the current 15 minute interval                                                                                                                                     | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Sev Errored Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                         |
| imaLinkCurrentNeUnavailSecs     | Gauge32 | Counts since last 15 min interval | Count of unavailable seconds at near-end in the current 15 minute interval: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                                                                          | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Unavail Secs             | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentFeUnavailSecs     | Gauge32 | Counts since last 15 min interval | Count of unavailable seconds at far-end in the current 15 minute interval: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                                                                     | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Unavail Secs             | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                           |
| imaLinkCurrentNeTxUnusableSecs  | Gauge32 | Counts since last 15 min interval | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in the current 15 minute interval                                                                                                                                                                         | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Tx Unusable Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                         |
| imaLinkCurrentNeRxUnusableSecs  | Gauge32 | Counts since last 15 min interval | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in the current 15 minute interval                                                                                                                                                                         | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Rx Unusable Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentFeTxUnusableSecs  | Gauge32 | Counts since last 15 min interval | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in the current 15 minute interval                                                                                                                                         | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Tx Unusable Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentFeRxUnusableSecs  | Gauge32 | Counts since last 15 min interval | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in the current 15 minute interval                                                                                                                                         | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Rx Unusable Secs         | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentNeTxNumFailures   | Gauge32 | Counts since last 15 min interval | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in the current 15 minute interval                                                                                     | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Tx Num Failures          | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentNeRxNumFailures   | Gauge32 | Counts since last 15 min interval | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in the current 15 minute interval                                                 | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Rx Num Failures          | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentFeTxNumFailures   | Gauge32 | Counts since last 15 min interval | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in the current 15 minute interval. This is an optional attribute                                                                                            | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Tx Num Failures          | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentFeRxNumFailures   | Gauge32 | Counts since last 15 min interval | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in the current 15 minute interval. This is an optional attribute                                                                                             | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Fe Rx Num Failures          | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkCurrentTxStuffs          | Gauge32 | Counts since last 15 min interval | Count of stuff events inserted in the transmit direction in the current 15 minute interval. This is an optional attribute                                                                                                                                                       | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Tx Stuffs                   | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Display this OM, it should be non-zero, wait a short time, display count again. This count will be higher. This will not increase if the link is offline and disabled.                                                                                       |
| imaLinkCurrentRxStuffs          | Gauge32 | Counts since last 15 min interval | Count of stuff events detected in the receive direction in the current 15 minute interval. This is an optional attribute                                                                                                                                                        | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Rx Stuffs                   | imaLinkCurrentTable  | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| <b>imaLinkIntervalTable</b>     |         |                                   |                                                                                                                                                                                                                                                                                 |              |                                                |                                  |                      |         |     |      |                                                                                                                                                                                                                                                              |
| imaLinkIntervalImaViolations    | Gauge32 | Counts only for last 15 min       | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in one of the previous 96, individual 15 minute, intervals                                                                                                         | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ima Violations              | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Display all 96 OM entries, on the IMA card pull and replace the DS1 cable, display these count again. The count will be higher for each interval the cable was pulled. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| imaLinkIntervalOifAnomalies     | Gauge32 | Counts only for last 15 min       | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                             | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link OIF Anomalies               | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalNeSevErroredSecs | Gauge32 | Counts only for last 15 min       | Count of one second intervals containing >= 30% of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/ LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in one of the previous 96, individual 15 minute, intervals | DS1IAMLink   | DS1 IMA Link Statistics: Current Data          | Link Ne Sev Errored Secs         | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory. Display all 96 OM entries                 |

|                                 |         |                             |                                                                                                                                                                                                                                                          |            |                                               |                          |                      |         |     |      |                                                                                                                                                                                                                                                              |
|---------------------------------|---------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------|--------------------------|----------------------|---------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| imaLinkIntervalFeSevErroredSecs | Gauge32 | Counts only for last 15 min | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in one of the previous 96, individual 15 minute, intervals                                                                                     | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Sev Errored Secs | imaLinkIntervalTable | IMA-MIB | No  | SN05 | Display all 96 OM entries, on the IMA card pull and replace the DS1 cable, display these count again. The count will be higher for each interval the cable was pulled. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| imaLinkIntervalNeUnavailSecs    | Gauge32 | Counts only for last 15 min | Count of unavailable seconds at near-end in one of the previous 96, individual 15 minute, intervals: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                          | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Ne Unavail Secs     | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalFeUnavailSecs    | Gauge32 | Counts only for last 15 min | Count of unavailable seconds at far-end in one of the previous 96, individual 15 minute, intervals: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                     | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Unavail Secs     | imaLinkIntervalTable | IMA-MIB | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory. Display all 96 OM entries                 |
| imaLinkIntervalNeTxUnusableSecs | Gauge32 | Counts only for last 15 min | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in one of the previous 96, individual 15 minute, intervals                                                                                                                         | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Ne Tx Unusable Secs | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Display all 96 OM entries, on the IMA card pull and replace the DS1 cable, display these count again. The count will be higher for each interval the cable was pulled. Also ensure the counts have moved to the proper time interval after each 15 interval. |
| imaLinkIntervalNeRxUnusableSecs | Gauge32 | Counts only for last 15 min | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in one of the previous 96, individual 15 minute, intervals                                                                                                                         | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Ne Rx Unusable Secs | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalFeTxUnusableSecs | Gauge32 | Counts only for last 15 min | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in one of the previous 96, individual 15 minute, intervals                                                                                         | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Tx Unusable Secs | imaLinkIntervalTable | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalFeRxUnusableSecs | Gauge32 | Counts only for last 15 min | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in one of the previous 96, individual 15 minute, intervals                                                                                         | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Rx Unusable Secs | imaLinkIntervalTable | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalNeTxNumFailures  | Gauge32 | Counts only for last 15 min | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in one of the previous 96, individual 15 minute, intervals                                     | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Ne Tx Num Failures  | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalNeRxNumFailures  | Gauge32 | Counts only for last 15 min | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in one of the previous 96, individual 15 minute, intervals | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Ne Rx Num Failures  | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalFeTxNumFailures  | Gauge32 | Counts only for last 15 min | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                            | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Tx Num Failures  | imaLinkIntervalTable | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalFeRxNumFailures  | Gauge32 | Counts only for last 15 min | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                             | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Fe Rx Num Failures  | imaLinkIntervalTable | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkIntervalTxStuffs         | Gauge32 | Counts only for last 15 min | Count of stuff events inserted in the transmit direction in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                                       | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Tx Stuffs           | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Display all 96 OM entries, it should be non-zero, wait 20 min, display counts again. These count will move up to next interval and current will replace first entry. This will not increase if the link is offline and disabled.                             |
| imaLinkIntervalRxStuffs         | Gauge32 | Counts only for last 15 min | Count of stuff events detected in the receive direction in one of the previous 96, individual 15 minute, intervals. This is an optional attribute                                                                                                        | DS1IAMLink | DS1 IMA Link Statistics: Current Data         | Link Rx Stuffs           | imaLinkIntervalTable | IMA-MIB | Yes | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkTotalTable               |         |                             |                                                                                                                                                                                                                                                          |            |                                               |                          |                      |         |     |      |                                                                                                                                                                                                                                                              |
| imaLinkTotalImaViolations       | Gauge32 | Rolling 24 hour total       | ICP violations: count of errored, invalid or missing ICP cells, except during SES-IMA or UAS-IMA conditions, in the previous 24 hour interval                                                                                                            | DS1IAMLink | DS1 IMA Link Statistics: 24-hour Current Data | Link Ima Violations      | imaLinkTotalTable    | IMA-MIB | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                         |
| imaLinkTotalOifAnomalies        | Gauge32 | Rolling 24 hour total       | The number of OIF anomalies, except during SES-IMA or UAS-IMA conditions, at the near-end in the previous 24 hour interval. This is an optional attribute                                                                                                | DS1IAMLink | DS1 IMA Link Statistics: 24-hour Current Data | Link OIF Anomalies       | imaLinkTotalTable    | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |
| imaLinkTotalNeSevErroredSecs    | Gauge32 | Rolling 24 hour total       | Count of one second intervals containing >= 30% of the ICP cells counted as IV-IMAs, or one or more link defects (e. g., LOS, OOF/LOF, AIS, or LCD), LIF defects, or LODS defects, except during UAS-IMA condition, in the previous 24 hour interval     | DS1IAMLink | DS1 IMA Link Statistics: 24-hour Current Data | Link Ne Sev Errored Secs | imaLinkTotalTable    | IMA-MIB | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /hal/ima MG9K Dshell directory.                                           |
| imaLinkTotalFeSevErroredSecs    | Gauge32 | Rolling 24 hour total       | Count of one second intervals containing one or more RDI-IMA defects, except during UAS-IMA-FE condition, in the previous 24 hour interval                                                                                                               | DS1IAMLink | DS1 IMA Link Statistics: 24-hour Current Data | Link Fe Sev Errored Secs | imaLinkTotalTable    | IMA-MIB | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                         |
| imaLinkTotalNeUnavailSecs       | Gauge32 | Rolling 24 hour total       | Count of unavailable seconds at near-end in the previous 24 hour interval: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA                                                    | DS1IAMLink | DS1 IMA Link Statistics: 24-hour Current Data | Link Ne Unavail Secs     | imaLinkTotalTable    | IMA-MIB | No  | SN05 | Same as above                                                                                                                                                                                                                                                |

|                              |         |                                |                                                                                                                                                                                                                                |                                       |                                                  |                          |                       |                  |     |      |                                                                                                                                                                                                                                                                                                                                            |
|------------------------------|---------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------|--------------------------|-----------------------|------------------|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| imaLinkTotalFeUnavailSecs    | Gauge32 | Rolling 24 hour total          | Count of unavailable seconds at far end in the previous 24 hour interval: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE                     | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Fe Unavail Secs     | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | This OM cannot be externally invoked by a manual action. It will only occur if there is some HW or SW errors. The easiest way to generate is using the "fakelgrppm" command in the /na/ima MG9K Dshell directory.                                                                                                                          |
| imaLinkTotalNeTxUnusableSecs | Gauge32 | Rolling 24 hour total          | Tx Unusable seconds: count of Unusable seconds at the near-end Tx LSM in the previous 24 hour interval                                                                                                                         | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Ne Tx Unusable Secs | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Display this OM, on the IMA card pull and replace the DS1 cable, display this count again. The count will be higher.                                                                                                                                                                                                                       |
| imaLinkTotalNeRxUnusableSecs | Gauge32 | Rolling 24 hour total          | Rx Unusable seconds: count of Unusable seconds at the near-end Rx LSM in the previous 24 hour interval                                                                                                                         | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Ne Rx Unusable Secs | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalFeTxUnusableSecs | Gauge32 | Rolling 24 hour total          | Tx Unusable seconds at far-end: count of seconds with Tx Unusable indications from the far-end Tx LSM in the previous 24 hour interval                                                                                         | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Fe Tx Unusable Secs | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalFeRxUnusableSecs | Gauge32 | Rolling 24 hour total          | Rx Unusable seconds at far-end: count of seconds with Rx Unusable indications from the far-end Rx LSM in the previous 24 hour interval                                                                                         | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Fe Rx Unusable Secs | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalNeTxNumFailures  | Gauge32 | Rolling 24 hour total          | The number of times a near-end transmit failure alarm condition has been entered on this link (i.e., some form of implementation specific transmit fault) in the previous 24 hour interval                                     | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Ne Tx Num Failures  | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalNeRxNumFailures  | Gauge32 | Rolling 24 hour total          | The number of times a near-end receive failure alarm condition has been entered on this link (i.e., LIF, LODS, RFI-IMA, Mis-Connected, or some form of implementation specific receive fault) in the previous 24 hour interval | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Ne Rx Num Failures  | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalFeTxNumFailures  | Gauge32 | Rolling 24 hour total          | The number of times a far-end transmit failure alarm condition has been entered on this link (i.e., Tx-Unusable-FE) in the previous 24 hour interval. This is an optional attribute                                            | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Fe Tx Num Failures  | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalFeRxNumFailures  | Gauge32 | Rolling 24 hour total          | The number of times a far-end receive failure alarm condition has been entered on this link (i.e., Rx-Unusable-FE) in the previous 24 hour interval. This is an optional attribute                                             | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Fe Rx Num Failures  | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| imaLinkTotalTxStuffs         | Gauge32 | Rolling 24 hour total          | Count of stuff events inserted in the transmit direction in the previous 24 hour interval. This is an optional attribute                                                                                                       | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Tx Stuffs           | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Display this OM, it should be non-zero, wait a short time, display count again. This count will be higher. This will not increase if the link is offline and disabled.                                                                                                                                                                     |
| imaLinkTotalRxStuffs         | Gauge32 | Rolling 24 hour total          | Count of stuff events detected in the receive direction in the previous 24 hour interval. This is an optional attribute                                                                                                        | DS1IAMLink                            | DS1 IMA Link Statistics: 24-hour Current Data    | Link Rx Stuffs           | imaLinkTotalTable     | IMA-MIB          | No  | SN05 | Same as above                                                                                                                                                                                                                                                                                                                              |
| UEMG-PERFMON-MIB             |         |                                |                                                                                                                                                                                                                                |                                       |                                                  |                          |                       |                  |     |      |                                                                                                                                                                                                                                                                                                                                            |
| nnPmUtilOmRecentTable        |         |                                | This table contains measurements of CPU, Ram, Flash and Channel Usage. Measurements in this table are rolling (peak and average values) on the most recent 15 minutes.                                                         |                                       |                                                  |                          |                       |                  |     |      |                                                                                                                                                                                                                                                                                                                                            |
| nnPmUtilRecentCpuPeak        | Integer | Counts only for current 15 min | Peak CPU Occupancy (as a percentage of usage)                                                                                                                                                                                  | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Peak CPU Occupancy       | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Since these are usage measurements they will always change over time. Collect a measurement when the system is quite. Generate different levels of CallIP traffic. Collect measurements on each card (every 15 min) and insure the values increase as usage increases.                                                                     |
| nnPmUtilRecentCpuAvg         | Integer | Counts only for current 15 min | Average CPU Occupancy (as a percentage of usage)                                                                                                                                                                               | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Average CPU Occupancy    | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentRamPeak        | Integer | Counts only for current 15 min | Peak RAM Usage (as a percentage of usage)                                                                                                                                                                                      | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Peak RAM Usage           | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentRamAvg         | Integer | Counts only for current 15 min | Average RAM Usage (as a percentage of usage)                                                                                                                                                                                   | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Average RAM Usage        | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentFlashPeak      | Integer | Counts only for current 15 min | Peak Flash Memory Usage (as a percentage of usage)                                                                                                                                                                             | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Peak Flash Usage         | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentFlashAvg       | Integer | Counts only for current 15 min | Average Flash Memory Usage (as a percentage of usage)                                                                                                                                                                          | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Average Flash Usage      | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentChanPeak       | Integer | Counts only for current 15 min | Peak Channel Usage (as a percentage of usage)                                                                                                                                                                                  | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Peak Channel Usage       | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilRecentChanAvg        | Integer | Counts only for current 15 min | Average Channel Usage (as a percentage of usage)                                                                                                                                                                               | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: Current data | Average Channel Usage    | nnPmUtilOmRecentTable | UEMG-PERFMON-MIB | No  | SN06 | Same as above                                                                                                                                                                                                                                                                                                                              |
| nnPmUtilOmIntervTable        |         |                                | This table contains history measurements of CPU, Ram, Flash and Channel Usage. Measurements in this table are rolling (peak and average values) of each 15 minute interval up to 24 hours old.                                 |                                       |                                                  |                          |                       |                  |     |      |                                                                                                                                                                                                                                                                                                                                            |
| nnPmUtilIntervCpuPeak        | Integer | Counts only for last 15 min    | Peak CPU Occupancy (as a percentage of usage)                                                                                                                                                                                  | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Peak CPU Occupancy       | nnPmUtilOmIntervTable | UEMG-PERFMON-MIB | Yes | SN06 | Since these are usage measurements they will always change over time. Collect a measurement when the system is quite. Generate different levels of CallIP traffic. Collect measurements on each card (every 15 min) and insure the values increase as usage increases. Also insure that the counts move to the next interval every 15 min. |

|                                  |                      |                                |                                                                                                                                                                                                                 |                                       |                                                  |                                                                 |                           |                  |     |        |                                                                                                                                                                                                                                                                                                                              |
|----------------------------------|----------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------|-----------------------------------------------------------------|---------------------------|------------------|-----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnPmUtilIntervCpuAvg             | Integer              | Counts only for last 15 min    | Average CPU Occupancy (as a percentage of usage)                                                                                                                                                                | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Average CPU Occupancy                                           | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilIntervRamPeak            | Integer              | Counts only for last 15 min    | Peak RAM Usage (as a percentage of usage)                                                                                                                                                                       | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Peak RAM Usage                                                  | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilIntervRamAvg             | Integer              | Counts only for last 15 min    | Average RAM Usage (as a percentage of usage)                                                                                                                                                                    | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Average RAM Usage                                               | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilRecentFlashPeak          | Integer              | Counts only for last 15 min    | Peak Flash Memory Usage (as a percentage of usage)                                                                                                                                                              | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Peak Flash Usage                                                | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilRecentFlashAvg           | Integer              | Counts only for last 15 min    | Average Flash Memory Usage (as a percentage of usage)                                                                                                                                                           | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Average Flash Usage                                             | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilRecentChanPeak           | Integer              | Counts only for last 15 min    | Peak Channel Usage (as a percentage of usage)                                                                                                                                                                   | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Peak Channel Usage                                              | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmUtilRecentChanAvg            | Integer              | Counts only for last 15 min    | Average Channel Usage (as a percentage of usage)                                                                                                                                                                | ITP, OC3, IMA, ITX, DS1, and ABI Card | Performance Utilization Statistics: History data | Average Channel Usage                                           | nnPmUtilOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpRecentRequestsPeak       | Integer32            | Counts only for current 15 min | The Peak number of SNMP Requests/PDUs in the most recent 15 minutes. These are accumulated on 1-minute cycles.                                                                                                  | OC3 and IMA Card                      | SNMP Messaging Current Data                      | Peak number of SNMP Requests                                    | N/A                       | UEMG-PERFMON-MIB | No  | SN06   | Since these are usage measurements they will always change over time. Collect a measurement when the system is quite. Generate different levels of OAM&P traffic. Collect measurements (every 15 min) and insure the values increase as usage increases.                                                                     |
| nnPmSnmpRecentRequestsAvg        | Integer32            | Counts only for current 15 min | The average number of SNMP Requests/PDUs in the most recent 15 minutes. These are accumulated on 1-minute cycles. Thus, the average is the average of the last 15 x 1-minute cycles.                            | OC3 and IMA Card                      | SNMP Messaging Current Data                      | Average number of SNMP Requests                                 | N/A                       | UEMG-PERFMON-MIB | No  | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpRecentNotifsPeak         | Integer32            | Counts only for current 15 min | The Peak number of SNMP Notifications sent in the most recent 15 minutes. These are accumulated on 1-minute cycles.                                                                                             | OC3 and IMA Card                      | SNMP Messaging Current Data                      | Peak number of SNMP Notifications                               | N/A                       | UEMG-PERFMON-MIB | No  | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpRecentNotifsAvg          | Integer32            | Counts only for current 15 min | The average number of SNMP Notifications sent in the most recent 15 minutes. These are accumulated on 1-minute cycles. Thus, the average is the average of the last 15 x 1-minute cycles.                       | OC3 and IMA Card                      | SNMP Messaging Current Data                      | Average number of SNMP Notifications                            | N/A                       | UEMG-PERFMON-MIB | No  | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpOmIntervTable            |                      |                                | This table contains measurements of SNMP requests and events. Measurements in this table are rolling (peak and average values) of each 15 minute interval up to 24 hours old.                                   |                                       |                                                  |                                                                 |                           |                  |     |        |                                                                                                                                                                                                                                                                                                                              |
| nnPmSnmpIntervReqPeak            | Integer32            | Counts only for last 15 min    | The Peak number of SNMP Requests/PDUs in the most Recent 15 mins. These are accumulated on 1-minute cycles.                                                                                                     | OC3 and IMA Card                      | SNMP Messaging History Data                      | Peak number of SNMP Requests                                    | nnPmSnmpOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Since these are usage measurements they will always change over time. Collect a measurement when the system is quite. Generate different levels of OAM&P traffic. Collect measurements (every 15 min) and insure the values increase as usage increases. Also insure that the counts move to the next interval every 15 min. |
| nnPmSnmpIntervReqAvg             | Integer32            | Counts only for last 15 min    | The Avg number of SNMP Requests/PDUs in the most Recent 15 mins. These are accumulated on 1-minute cycles. Thus, the avg is the avg of the last 15x 1-minute cycles. Precision is tenths, thus 816 is 81.6      | OC3 and IMA Card                      | SNMP Messaging History Data                      | Average number of SNMP Requests                                 | nnPmSnmpOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpIntervNotifPeak          | Integer32            | Counts only for last 15 min    | The Peak number of SNMP Notifications in the most Recent 15 mins. These are accumulated on 1-minute cycles.                                                                                                     | OC3 and IMA Card                      | SNMP Messaging History Data                      | Peak number of SNMP Notifications                               | nnPmSnmpOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmSnmpIntervNotifAvg           | Integer32            | Counts only for last 15 min    | The Avg number of SNMP Notifications sent in the most Recent 15 mins. These are accumulated on 1-minute cycles. Thus, the avg is the avg of the last 15x 1-minute cycles. Precision is tenths, thus 816 is 81.6 | OC3 and IMA Card                      | SNMP Messaging History Data                      | Average number of SNMP Notifications                            | nnPmSnmpOmIntervTable     | UEMG-PERFMON-MIB | Yes | SN06   | Same as above                                                                                                                                                                                                                                                                                                                |
| nnPmOvidRscDccIntervTable        |                      |                                |                                                                                                                                                                                                                 |                                       |                                                  |                                                                 |                           | UEMG-PERFMON-MIB |     |        |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervPduRatePeak  | Integer32            | Counts only for last 15 min    | Peak # received AAL5 PDUs per sec for this 15 minute interval                                                                                                                                                   | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Peak number of received AAL5 PDUs per second                    | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervPduRateAvg   | Integer32            | Counts only for last 15 min    | Avg num recvd AAL5 PDUs per sec for this 15 minute interval                                                                                                                                                     | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Average number of recvd AAL5 PDUs per second                    | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervCvbMsgRPeak  | NnPerfMon Hundredths | Counts only for last 15 min    | Peak recvd conn request msgs per sec for this 15 minute interval                                                                                                                                                | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Peak received conn request msgs per second                      | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervCvbMsgRAvg   | NnPerfMon Hundredths | Counts only for last 15 min    | Avg conn request msgs per sec for this 15 minute interval                                                                                                                                                       | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Average connection request messages per second                  | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervConnQDelPeak | NnPerfMon Hundredths | Counts only for last 15 min    | Milliseconds...peak time a connRequest is pending in its queue for this 15 minute interval                                                                                                                      | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Peak time in milliseconds a connRequest is pending in its queue | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervConnQDelAvg  | NnPerfMon Hundredths | Counts only for last 15 min    | Milliseconds...Avg time a connRequest is pending in its queue for this 15 minute interval                                                                                                                       | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Ave time in milliseconds a connRequest is pending in its queue  | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |
| nnPmOvidRscDccIntervCpuUtilPeak  | NnPerfMon Percent    | Counts only for last 15 min    | Peak cpu occupancy for this 15 minute interval                                                                                                                                                                  | OC3 and IMA Card                      | DCC Overload Interval Statistics: History Data   | Peak CPU Occupancy                                              | nnPmOvidRscDccIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                              |

|                                |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|--------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------|------------------------------------------|-----------------------------|------------------|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nnPmOvidRscDccIntervCpuUtilAvg | NnPerfMon Percent  | Counts only for last 15 min       | Avg cpu occupancy this 15 minute interval                                                                                                                                                           | OC3 and IMA Card | DCC Overload Interval Statistics: History Data  | Average CPU Occupancy                    | nnPmOvidRscDccIntervTable   | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                        |
| nnPmOvidConnDenyIntervTable    |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |
| nnPmOvidConnDenyIntervCount    | Integer32          | Counts only for last 15 min       | Count of the number of Connection requests Denied for this 15 minute interval                                                                                                                       | OC3 and IMA Card | DCC Overload Conn Deny Statistics: History Data | Number of Connection requests Denied     | nnPmOvidConnDenyIntervTable | UEMG-PERFMON-MIB | Yes | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>DS3-MIB</b>                 |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>dsx3CurrentTable</b>        |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |
| dsx3CurrentPESs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of P - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                               | STS1             | DS3 Path Statistics : Current Data              | P -bit Number of errored seconds         | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count.                                                                                                                         |
| dsx3CurrentPSEs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of P - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                      | STS1             | DS3 Path Statistics : Current Data              | P-bit Number of severely errored seconds | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentSEFSs               | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                      | STS1             | DS3 Path Statistics : Current Data              | Number of severely errored seconds       | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentUASs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Unavailable Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                                   | STS1             | DS3 Path Statistics : Current Data              | Number of unavailable seconds            | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentPCVs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of P - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                             | STS1             | DS3 Path Statistics : Current Data              | P-bit Number of coding violations        | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentCCVs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of C - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                             | STS1             | DS3 Path Statistics : Current Data              | C -bit Number of coding violations       | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentCESs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of C - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                               | STS1             | DS3 Path Statistics : Current Data              | C-bit Number of errored seconds          | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3CurrentCSEs                | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of C - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                      | STS1             | DS3 Path Statistics : Current Data              | C-bit Number of severely errored seconds | dsx3CurrentTable            | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| <b>dsx3IntervalTable</b>       |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |
| dsx3IntervalPESs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of P - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                               | STS1             | DS3 Path Statistics : History Data              | P -bit Number of errored seconds         | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the near-end OC3 the error and collect the OM and it should reflect the correct error count. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| dsx3IntervalPSEs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of P - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours. | STS1             | DS3 Path Statistics : History Data              | P-bit Number of severely errored seconds | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalSEFSs              | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Severely Errored Framing Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours. | STS1             | DS3 Path Statistics : History Data              | Number of severely errored seconds       | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalUASs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Unavailable Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.              | STS1             | DS3 Path Statistics : History Data              | Number of unavailable seconds            | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalPCVs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of P - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.        | STS1             | DS3 Path Statistics : History Data              | P-bit Number of coding violations        | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalCCVs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of C - bit Coding Violations encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours.        | STS1             | DS3 Path Statistics : History Data              | C-bit Number of coding violations        | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalCESs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of C - bit Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval.                               | STS1             | DS3 Path Statistics : History Data              | C-bit Number of errored seconds          | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| dsx3IntervalCSEs               | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of C - bit Severely Errored Seconds encountered by a SONET ( STS1 with DS3 payload selected) Section in the current 15 minute interval in the past 24 hours. | STS1             | DS3 Path Statistics : History Data              | C-bit Number of severely errored seconds | dsx3IntervalTable           | DS3 - MIB        | No  | SN07   | Same as above                                                                                                                                                                                                                                                                                                                                                                          |
| <b>dsx3FarEndCurrentTable</b>  |                    |                                   |                                                                                                                                                                                                     |                  |                                                 |                                          |                             |                  |     |        |                                                                                                                                                                                                                                                                                                                                                                                        |

|                                  |                    |                                   |                                                                                                                                                                                                                                                |      |                                              |                                    |                                |                            |     |      |                                                                                                                                                                                                                                                                                                                                                                                               |
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| dsx3FarEndCurrentCESs            | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of FarEnd Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) interface in the current 15 minute interval.                                                                          | STS1 | DS3 FarEndPath Statistics : Current Data     | Number of errored seconds          | dsx3FarEndCurrentTable         | DS3 - MIB                  | No  | SN07 | On the OC3 connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the far-end OC3 the error and collect the OM and it should reflect the correct error count.                                                                                                                                 |
| dsx3FarEndCurrentCSEss           | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in the current 15 minute interval.                                                           | STS1 | DS3 FarEndPath Statistics : Current Data     | Number of severely errored seconds | dsx3FarEndCurrentTable         | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx3FarEndCurrentCCVs            | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET (STS1 with DS3 payload selected)) Path interface in the current 15 minute interval.                      | STS1 | DS3 FarEndPath Statistics : Current Data     | Number of coding violations        | dsx3FarEndCurrentTable         | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx3FarEndCurrentUASs            | PerfCurrent Count  | Counts since last 15 min interval | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in the current 15 minute interval.                                                                | STS1 | DS3 FarEndPath Statistics : Current Data     | Number of unavailable seconds      | dsx3FarEndCurrentTable         | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx3FarEndIntervalTable          |                    |                                   |                                                                                                                                                                                                                                                |      |                                              |                                    |                                |                            |     |      |                                                                                                                                                                                                                                                                                                                                                                                               |
| dsx3FarEndIntervalCESs           | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15-minute interval in the past 24 hours.                                              | STS1 | Sonet Far End Path Statistics : History data | Number of errored seconds          | dsx3FarEndIntervalTable        | DS3 - MIB                  | No  | SN07 | On the OC3 channel connect a test box that has the ability to inject errors (e.g. ADTECH). With out injecting any errors collect the OM and it should be 0. Inject toward the Far-end OC3 the error and collect the OM and it should reflect the correct error count. Collect all 96 intervals, waiting 15+ minutes between tests, the counts will move to a higher interval each 15 minutes. |
| dsx3FarEndIntervalCSEss          | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Severely Errored Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15-minute interval in the past 24 hours.                                     | STS1 | Sonet Far End Path Statistics : History data | Number of severely errored seconds | dsx3FarEndIntervalTable        | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx3FarEndIntervalCCVs           | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Coding Violations reported via the far end block error count encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15-minute interval in the past 24 hours. | STS1 | Sonet Far End Path Statistics : History data | Number of coding violations        | dsx3FarEndIntervalTable        | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| dsx3FarEndIntervalUASs           | PerfInterval Count | Counts only for last 15 min       | The counter associated with the number of Far End Unavailable Seconds encountered by a SONET (STS1 with DS3 payload selected) Path interface in a particular 15-minute interval in the past 24 hours.                                          | STS1 | Sonet Far End Path Statistics : History data | Number of unavailable seconds      | dsx3FarEndIntervalTable        | DS3 - MIB                  | No  | SN07 | Same as above                                                                                                                                                                                                                                                                                                                                                                                 |
| NORTEL-UEMG-RELMMSGING-MIB       |                    |                                   |                                                                                                                                                                                                                                                |      |                                              |                                    |                                |                            |     |      |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAssocOmCurrTable     |                    |                                   |                                                                                                                                                                                                                                                |      |                                              |                                    |                                |                            |     |      |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrClosed        | Unsigned32         | Counts only for last 15 min       | number of times that this association closed (both aborts and shutdowns)                                                                                                                                                                       |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrAbort         | Unsigned32         | Counts only for last 15 min       | number of times that this association aborted.                                                                                                                                                                                                 |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrOutPacks      | Unsigned32         | Counts only for last 15 min       | number of packets transmitted                                                                                                                                                                                                                  |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrInPacks       | Unsigned32         | Counts only for last 15 min       | number of packets received, this association                                                                                                                                                                                                   |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrDiscPacks     | Unsigned32         | Counts only for last 15 min       | number of packets discarded by this association.                                                                                                                                                                                               |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrRetranPacks   | Unsigned32         | Counts only for last 15 min       | number of packets retransmitted by this association, this interval                                                                                                                                                                             |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrT1expires     | Unsigned32         | Counts only for last 15 min       | number of T1 Expires                                                                                                                                                                                                                           |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrT2expires     | Unsigned32         | Counts only for last 15 min       | number of T2 expires.                                                                                                                                                                                                                          |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrT3expires     | Unsigned32         | Counts only for last 15 min       | number of T3 expires                                                                                                                                                                                                                           |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrCongCount     | Unsigned32         | Counts only for last 15 min       | number of times this assoc entered congestion.                                                                                                                                                                                                 |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscCurrCongCleared   | Unsigned32         | Counts only for last 15 min       | number of times congestion cleared by audit.                                                                                                                                                                                                   |      |                                              |                                    | nnRelMsgSctpAssocOmCurrTable   | NORTEL-UEMG-RELMMSGING-MIB | Yes | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAssocOmIntervTable   |                    |                                   |                                                                                                                                                                                                                                                |      |                                              |                                    |                                |                            |     |      |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervClosed      | Unsigned32         | Counts only for last 15 min       | number of times that this association closed (both aborts and shutdowns)                                                                                                                                                                       |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervAbort       | Unsigned32         | Counts only for last 15 min       | number of times that this association aborted.                                                                                                                                                                                                 |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervOutPacks    | Unsigned32         | Counts only for last 15 min       | number of packets transmitted                                                                                                                                                                                                                  |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervInPacks     | Unsigned32         | Counts only for last 15 min       | number of packets received, this association                                                                                                                                                                                                   |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervDiscPacks   | Unsigned32         | Counts only for last 15 min       | number of packets discarded by this association.                                                                                                                                                                                               |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervRetranPacks | Unsigned32         | Counts only for last 15 min       | number of packets retransmitted by this association, this interval                                                                                                                                                                             |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervT1expires   | Unsigned32         | Counts only for last 15 min       | number of T1 Expires                                                                                                                                                                                                                           |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervT2expires   | Unsigned32         | Counts only for last 15 min       | number of T2 expires.                                                                                                                                                                                                                          |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |
| nnRelMsgSctpAscIntervT3expires   | Unsigned32         | Counts only for last 15 min       | number of T3 expires                                                                                                                                                                                                                           |      |                                              |                                    | nnRelMsgSctpAssocOmIntervTable | NORTEL-UEMG-RELMMSGING-MIB | No  | SN07 |                                                                                                                                                                                                                                                                                                                                                                                               |



|                                  |                |                                |                                                   |  |  |  |                                    |                               |    |      |  |
|----------------------------------|----------------|--------------------------------|---------------------------------------------------|--|--|--|------------------------------------|-------------------------------|----|------|--|
| nnRelMsgSctpAscIntervCongCount   | Unsigned3<br>2 | Counts only<br>for last 15 min | number of times this assoc entered<br>congestion. |  |  |  | nnRelMsgSctpAssocOmInt<br>ervTable | NORTEL-UEMG-<br>RELMSGING-MIB | No | SN07 |  |
| nnRelMsgSctpAscIntervCongCleared | Unsigned3<br>2 | Counts only<br>for last 15 min | number of times congestion<br>cleared by audit.   |  |  |  | nnRelMsgSctpAssocOmInt<br>ervTable | NORTEL-UEMG-<br>RELMSGING-MIB | No | SN07 |  |

## Appendix C: USP OMs

| OM TYPE         | OM TITLE                                                | OM DESCRIPTION                                                                                                                                                                                                                              |
|-----------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ATM Driver Messaging, Plane 1 CRC Error Count           | This OM measures the number of Plane 1 CRC errors.                                                                                                                                                                                          |
| Accumulation OM | ASP Path Management, Application Server became Active   | This OM measures the total number of times per measurement period that an Application Server became active either by a controlled or a forced change of activity.                                                                           |
| Accumulation OM | ASP Path Management, Application Server became Inactive | This OM measures the total number of times per measurement period that an Application Server became inactive either by a controlled or a forced change of activity.                                                                         |
| Accumulation OM | ASP Path Management, Path Active Time                   | This OM measures the total time that a Path was inactive and in the Restoring state.                                                                                                                                                        |
| Accumulation OM | ASP Path Management, Path entered Active state          | This OM measures the total number of times per measurement period that a Path entered the Active state.                                                                                                                                     |
| Accumulation OM | ASP Path Management, Path entered Down state            | This OM measures the total number of times per measurement period that a Path entered the Down state.                                                                                                                                       |
| Accumulation OM | ASP Path Management, Path entered Restoring state       | This OM measures the total number of times per measurement period that a Path entered the Restoring state.                                                                                                                                  |
| Accumulation OM | ASP Path Management, Path Inactive Time                 | This OM measures the total time that a Path was inactive and in the Restoring state.                                                                                                                                                        |
| Accumulation OM | ASP Path Traffic, Discarded MSUs Count                  | This OM measures the total number of received MSUs on an ASP Path which were discarded because the Network Appearance (or System Identity) associated with the incoming message was not found on the USP.                                   |
| Accumulation OM | ASP Path Traffic, Originated MSUs Count                 | This OM measures the number of originated MSUs (MSUs that contain the PC or capability code for the USP in the OPC field) that are successfully passed to the ASP Path for transmission (for example, network management messages).         |
| Accumulation OM | ASP Path Traffic, Received MSUs Count                   | This OM measures the total number of received MSUs on an ASP Path.                                                                                                                                                                          |
| Accumulation OM | ASP Path Traffic, Terminated MSUs Count                 | This OM measures the number of terminated MSUs (acknowledged, incoming MSUs that contain the PC or capability code of the USP in the DPC field) received.                                                                                   |
| Accumulation OM | ASP Path Traffic, Through-Switched MSUs Count           | This OM measures the number of through-switched MSUs (MSUs that do not contain the PC or capability code for the USP in either the OPC or DPC) that are acknowledged, translated, and successfully passed to the ASP Path for transmission. |
| Accumulation OM | ASP Path Utilization, DAUD Received Count               | This OM measures the number of destination audit (DAUD) messages transmitted.                                                                                                                                                               |
| Accumulation OM | ASP Path Utilization, DAVA Transmitted Count            | This OM measures the number of destination available (DAVA) messages transmitted.                                                                                                                                                           |
| Accumulation OM | ASP Path Utilization, DUNA Transmitted Count            | This OM measures the number of destination unavailable messages transmitted.                                                                                                                                                                |
| Accumulation OM | ASP Path Utilization, SCON Transmitted Count            | This OM measures the number of Signaling Congestion (SCON) messages transmitted.                                                                                                                                                            |
| Accumulation OM | ATM Driver Messaging, Duplicate Messages Count          | This OM measures the number of duplicate messages.                                                                                                                                                                                          |
| Accumulation OM | ATM Driver Messaging, IP Message Count                  | This OM measures the number of incoming IP messages.                                                                                                                                                                                        |
| Accumulation OM | ATM Driver Messaging, Plane 1 Messages Count            | This OM measures the number of incoming Plane 1 messages.                                                                                                                                                                                   |
| Accumulation OM | ATM Driver Messaging, Plane 2 CRC Error Count           | This OM measures the number of Plane 2 CRC errors.                                                                                                                                                                                          |
| Accumulation OM | ATM Driver Messaging, Plane 2 Messages Count            | This OM measures the number of incoming Plane 2 messages.                                                                                                                                                                                   |
| Accumulation OM | ATM Driver Messaging, Raw Cell Count                    | This OM measures the number of raw cells. Raw cells are typically bad cells or OAM cells.                                                                                                                                                   |

|                 |                                                          |                                                                                                                                                      |
|-----------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ATM Driver Messaging, Raw Message Count                  | This OM measures the number of ATM raw messages. Raw messages are messages not assigned to a protocol.                                               |
| Accumulation OM | ATM Driver Messaging, Sequence Number Reset Count        | This OM measures the number of times the sequence numbers are reset due to the receipt of five consecutive duplicate cells.                          |
| Accumulation OM | ATM Driver Messaging, SSCOP Message Count                | This OM measures the number of incoming SSCOP messages.                                                                                              |
| Accumulation OM | ATM Link Traffic, Discarded cells with HEC Viol.         | This OM measures the number of ATM cells discarded due to Header Error Control (HEC) violations.                                                     |
| Accumulation OM | ATM Link Traffic, Discarded cells with Prot. Errs        | This OM measures the number of cells discarded due to Protocol (ATM-Layer Header) Errors.                                                            |
| Accumulation OM | ATM Link Traffic, In NDC-valid cells on HSL VCL          | This OM measures the number of incoming Network Data Collection (NDC) valid cells on the High Speed Links (HSL) VCL.                                 |
| Accumulation OM | ATM Link Traffic, Incoming ATM UI cells                  | This OM measures the number of incoming ATM User Information (UI) cells.                                                                             |
| Accumulation OM | ATM Link Traffic, OCD Anomalies                          | This OM measures the number of Out of Cell Delineation (OCD) anomalies.                                                                              |
| Accumulation OM | ATM Link Traffic, Out NDC-valid cells on HSL VCL         | This OM measures the number of outgoing Network Data Collection (NDC) valid cells on the High Speed Links (HSL) VCL.                                 |
| Accumulation OM | ATM Link Traffic, Outgoing ATM UI cells                  | This OM measures the number of outgoing ATM User Information (UI) cells.                                                                             |
| Accumulation OM | BICC Received Message Counts, BICC Call P Received Count | This OM measures the number of BICC call processing messages received from the SS7 Network.                                                          |
| Accumulation OM | BICC Received Message Counts, BICC Error No OPC Route    | This OM measures the number of BICC messages discarded as a result of not being able to find the associated OPC route for the received BICC message. |
| Accumulation OM | BICC Received Message Counts, BICC Error No Path         | This OM measures the number of BICC messages discarded as a result of not being able to find an inservice path to a given AS.                        |
| Accumulation OM | BICC Received Message Counts, BICC Error No Route        | This OM measures the number of BICC messages discarded as a result of not being able to find a route to a given AS.                                  |
| Accumulation OM | BICC Received Message Counts, BICC Maint Received Count  | This OM measures the number of BICC maintenance messages received from the SS7 Network.                                                              |
| Accumulation OM | BICC Received Message Counts, Wrong NE Received Count    | This OM measures the number of BICC messages discarded as a result of not receiving the message for a SG Network Element.                            |
| Accumulation OM | Carrier, Far End Line - Errored Seconds                  | This OM measures the Far End Performance data: Far End Errored Seconds - Line.                                                                       |
| Accumulation OM | Carrier, Far End P - Sev Err Frm/AIS Sec                 | This OM measures the Far End Performance data: Far End Severely Errored Frame/AIS Seconds - Path.                                                    |
| Accumulation OM | Carrier, Far End P - Severely Err Secs                   | This OM measures the Far End Performance data: Far End Severely Errored Seconds - Path.                                                              |
| Accumulation OM | Carrier, Far End P - Unavailable Seconds                 | This OM measures the Far End Performance data: Far End Unavailable Seconds - Path.                                                                   |
| Accumulation OM | Carrier, Far End Path - Code Violations                  | This OM measures the Far End Performance data: Far End Code Violations - Path.                                                                       |
| Accumulation OM | Carrier, Far End Path - Controlled Slips                 | This OM measures the Far End Performance data: Far End Controlled Slips - Path.                                                                      |
| Accumulation OM | Carrier, Far End Path - Errored Seconds                  | This OM measures the Far End Performance data: Far End Errored Seconds - Path.                                                                       |
| Accumulation OM | Carrier, Far End Path - Failure Count                    | This OM measures the Far End Performance data: Far End Failure Count - Path.                                                                         |
| Accumulation OM | Carrier, Line - Code Violations                          | This OM measures the Near End Performance data: Code Violations - Line.                                                                              |
| Accumulation OM | Carrier, Line - Errored Seconds                          | This OM measures the Near End Performance data: Errored Seconds -Line.                                                                               |

|                 |                                                            |                                                                                                                                                                                                                                                                                                                      |
|-----------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Carrier, Line - Loss of Signal Seconds                     | This OM measures the Near End Performance data: Loss of Signal Seconds - Line. All performance parameters including this parameter are defined in ANSI T1.231-1997 'Digital Hierarchy - Layer 1 in-Service Digital Transmission Performance Monitoring'.                                                             |
| Accumulation OM | Carrier, Line - Severely Errored Seconds                   | This OM measures the Near End Performance data: Severely Errored Seconds - Line.                                                                                                                                                                                                                                     |
| Accumulation OM | Carrier, P - Severely Err Frame/AIS Secs                   | This OM measures the Near End Performance data: Severely Errored Frame/AIS Seconds - Path.                                                                                                                                                                                                                           |
| Accumulation OM | Carrier, Path - AIS Seconds                                | This OM measures the Near End Performance data: AIS Seconds - Path.                                                                                                                                                                                                                                                  |
| Accumulation OM | Carrier, Path - Code Violations                            | This OM measures the Near End Performance data: Code Violations - Path.                                                                                                                                                                                                                                              |
| Accumulation OM | Carrier, Path - Errored Seconds                            | This OM measures the Near End Performance data: Errored Seconds - Path.                                                                                                                                                                                                                                              |
| Accumulation OM | Carrier, Path - Failure Count                              | This OM measures the Near End Performance data: Failure Count - Path.                                                                                                                                                                                                                                                |
| Accumulation OM | Carrier, Path - Severely Errored Seconds                   | This OM measures the Near End Performance data: Severely Errored Seconds - Path.                                                                                                                                                                                                                                     |
| Accumulation OM | Carrier, Path - Unavailable Seconds                        | This OM measures the Near End Performance data: Unavailable Seconds - Path.                                                                                                                                                                                                                                          |
| Accumulation OM | Gateway Screening Results, Disallowed Cld Party Addr Count | This OM measures the number of MSUs rejected on a particular link, because of disallowed SCCP Called Party Addresses.                                                                                                                                                                                                |
| Accumulation OM | Gateway Screening Results, Disallowed ISUP Count           | This OM measures the number of MSUs rejected on a particular link, because of a disallowed ISDN User Part message type.                                                                                                                                                                                              |
| Accumulation OM | Gateway Screening Results, Disallowed Trans Type Count     | This OM measures the number of MSUs rejected on a particular link, because of a disallowed SCCP GTT type.                                                                                                                                                                                                            |
| Accumulation OM | Gateway Screening Results, Invalid Affct Destination Count | This OM measures the number of MSUs rejected on a particular link, because the destination fields in signaling-routeset-test, TFX/TCx, or TFC messages from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                    |
| Accumulation OM | Gateway Screening Results, Invalid Affct PC-SSN Count      | This OM measures the number of MSUs rejected on a particular link, because the affected PCs in SCCP subsystem-prohibited (SSP) and subsystem-allowed (SSA) messages and an invalid PC or SSN in SCCP subsystem-status-test (SST) messages from the MSUs did not pass GWS checking based on the provisioned criteria. |
| Accumulation OM | Gateway Screening Results, Invalid Cng Party Addr Count    | This OM measures the number of MSUs rejected on a particular link, because the Calling Party Addresses (PC or SSN) from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                        |
| Accumulation OM | Gateway Screening Results, Invalid DPC Count               | This OM measures the number of MSUs rejected on a particular link, because the DPCs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | Gateway Screening Results, Invalid OPC Count               | This OM measures the number of MSUs rejected on a particular link, because the OPCs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | Gateway Screening Results, Invalid SIO Count               | This OM measures the number of MSUs rejected on a particular link, because the SIOs from the MSUs did not pass GWS checking based on the provisioned criteria.                                                                                                                                                       |
| Accumulation OM | GTT Type, GTTs Not Performed Count                         | This OM measures the total number of GTTs that could not be performed for a particular translation type (all reasons).                                                                                                                                                                                               |
| Accumulation OM | GTT Type, GTTs Performed Count                             | This OM measures the total number of MSUs that successfully completed GTT (that is, a match was found for the global title) for a particular translation type.                                                                                                                                                       |

|                 |                                                   |                                                                                                                                                                                               |
|-----------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | GTT Type, No Translation for Addr Count           | This OM measures the number of times the Address Not Found error was encountered for a particular translation type (that is, there was no match found for the global title in the GTT table). |
| Accumulation OM | ISUP Received Message Counts, ACM Received Count  | This OM measures the number of ISUP Address Complete Messages (ACM) received from the SS7 Network.                                                                                            |
| Accumulation OM | ISUP Received Message Counts, ALT Received Count  | This OM measures the number of ISUP Altering Messages (ALT) received from the SS7 Network.                                                                                                    |
| Accumulation OM | ISUP Received Message Counts, ANM Received Count  | This OM measures the number of ISUP Answer Messages (ANM) received from the SS7 Network.                                                                                                      |
| Accumulation OM | ISUP Received Message Counts, BLA Received Count  | This OM measures the number of ISUP Blocking Acknowledgement (BLA) received from the SS7 Network.                                                                                             |
| Accumulation OM | ISUP Received Message Counts, BLO Received Count  | This OM measures the number of ISUP Blocking Messages (BLO) received from the SS7 Network.                                                                                                    |
| Accumulation OM | ISUP Received Message Counts, CCR Received Count  | This OM measures the number of ISUP Continuity Check Request Messages (CCR) received from the SS7 Network.                                                                                    |
| Accumulation OM | ISUP Received Message Counts, CFN Received Count  | This OM measures the number of ISUP Confusion Messages (CFN) received from the SS7 Network.                                                                                                   |
| Accumulation OM | ISUP Received Message Counts, CGB Received Count  | This OM measures the number of ISUP Circuit Group Blocking Messages (CGB) received from the SS7 Network.                                                                                      |
| Accumulation OM | ISUP Received Message Counts, CGBA Received Count | This OM measures the number of ISUP Circuit Group Blocking Acknowledgement Messages (CGBA) received from the SS7 Network.                                                                     |
| Accumulation OM | ISUP Received Message Counts, CGU Received Count  | This OM measures the number of ISUP Circuit Group Unblocking Messages (CGU) received from the SS7 Network.                                                                                    |
| Accumulation OM | ISUP Received Message Counts, CGUA Received Count | This OM measures the number of ISUP Circuit Group Unblocking Acknowledgement Messages (CGUA) received from the SS7 Network.                                                                   |
| Accumulation OM | ISUP Received Message Counts, CMC Received Count  | This OM measures the number of ISUP Call Modification Completed Messages (CMC) received from the SS7 Network.                                                                                 |
| Accumulation OM | ISUP Received Message Counts, CMR Received Count  | This OM measures the number of ISUP Call Modification Request Messages (CMR) received from the SS7 Network.                                                                                   |
| Accumulation OM | ISUP Received Message Counts, CMRJ Received Count | This OM measures the number of ISUP Call Modification Rejected Messages (CMRJ) received from the SS7 Network.                                                                                 |
| Accumulation OM | ISUP Received Message Counts, CON Received Count  | This OM measures the number of ISUP Connect Messages (CON) received from the SS7 Network.                                                                                                     |
| Accumulation OM | ISUP Received Message Counts, COT Received Count  | This OM measures the number of ISUP Continuity Test Messages (COT) received from the SS7 Network.                                                                                             |
| Accumulation OM | ISUP Received Message Counts, CPG Received Count  | This OM measures the number of ISUP Call Progress Messages (CPG) received from the SS7 Network.                                                                                               |
| Accumulation OM | ISUP Received Message Counts, CQM Received Count  | This OM measures the number of ISUP Circuit Query Messages (CQM) received from the SS7 Network.                                                                                               |
| Accumulation OM | ISUP Received Message Counts, CQR Received Count  | This OM measures the number of ISUP Circuit Query Response Messages (CQR) received from the SS7 Network.                                                                                      |
| Accumulation OM | ISUP Received Message Counts, CRA Received Count  | This OM measures the number of ISUP Circuit Reservation Acknowledgement Messages (CRA) received from the SS7 Network.                                                                         |
| Accumulation OM | ISUP Received Message Counts, CRG Received Count  | This OM measures the number of ISUP Charge Information Messages (CRG) received from the SS7 Network.                                                                                          |
| Accumulation OM | ISUP Received Message Counts, CRM Received Count  | This OM measures the number of ISUP Circuit Reservation Messages (CRM) received from the SS7 Network.                                                                                         |
| Accumulation OM | ISUP Received Message Counts, CSV Received Count  | This OM measures the number of ISUP Closed User Group Selection and Validation Request Messages (CSV) received from the SS7 Network.                                                          |

|                 |                                                            |                                                                                                                                        |
|-----------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | ISUP Received Message Counts, CSVS Received Count          | This OM measures the number of ISUP Closed User Group Selection and Validation Response Messages (CSVs) received from the SS7 Network. |
| Accumulation OM | ISUP Received Message Counts, CVR Received Count           | This OM measures the number of ISUP Circuit Validation Response Messages (CVR) received from the SS7 Network.                          |
| Accumulation OM | ISUP Received Message Counts, CVT Received Count           | This OM measures the number of ISUP Circuit Validation Test Messages (CVT) received from the SS7 Network.                              |
| Accumulation OM | ISUP Received Message Counts, DRS Received Count           | This OM measures the number of ISUP Delayed Release Messages (DRS) received from the SS7 Network.                                      |
| Accumulation OM | ISUP Received Message Counts, EXM Received Count           | This OM measures the number of ISUP Exit Messages (EXM) received from the SS7 Network.                                                 |
| Accumulation OM | ISUP Received Message Counts, FAA Received Count           | This OM measures the number of ISUP Facility Accepted Messages (FAA) received from the SS7 Network.                                    |
| Accumulation OM | ISUP Received Message Counts, FAC Received Count           | This OM measures the number of ISUP Facility Messages (FAC) received from the SS7 Network.                                             |
| Accumulation OM | ISUP Received Message Counts, FAD Received Count           | This OM measures the number of ISUP Facility Deactivated Messages (FAD) received from the SS7 Network.                                 |
| Accumulation OM | ISUP Received Message Counts, FAI Received Count           | This OM measures the number of ISUP Facility Information Messages (FAM) received from the SS7 Network.                                 |
| Accumulation OM | ISUP Received Message Counts, FAR Received Count           | This OM measures the number of ISUP Facility Request Messages (FAR) received from the SS7 Network.                                     |
| Accumulation OM | ISUP Received Message Counts, FOT Received Count           | This OM measures the number of ISUP Forward Transfer Messages (FOT) received from the SS7 Network.                                     |
| Accumulation OM | ISUP Received Message Counts, FRJ Received Count           | This OM measures the number of ISUP Facility Rejected Messages (FRJ) received from the SS7 Network.                                    |
| Accumulation OM | ISUP Received Message Counts, GRA Received Count           | This OM measures the number of ISUP Circuit Group Reset Acknowledgement Messages (GRA) received from the SS7 Network.                  |
| Accumulation OM | ISUP Received Message Counts, GRS Received Count           | This OM measures the number of ISUP Circuit Group Reset Messages (GRS) received from the SS7 Network.                                  |
| Accumulation OM | ISUP Received Message Counts, IAM Received Count           | This OM measures the number of ISUP Initial Address Message Messages (IAM) received from the SS7 Network.                              |
| Accumulation OM | ISUP Received Message Counts, IAMN1 Received Count         | This OM measures the number of ISUP Initial Address Message Not Priority One Messages (IAMN1) received from the SS7 Network.           |
| Accumulation OM | ISUP Received Message Counts, IDR Received Count           | This OM measures the number of ISUP Identification Request Messages (IDR) received from the SS7 Network.                               |
| Accumulation OM | ISUP Received Message Counts, INF Received Count           | This OM measures the number of ISUP Information Messages (INF) received from the SS7 Network.                                          |
| Accumulation OM | ISUP Received Message Counts, INR Received Count           | This OM measures the number of ISUP Information Request Messages (INR) received from the SS7 Network.                                  |
| Accumulation OM | ISUP Received Message Counts, IRS Received Count           | This OM measures the number of ISUP Identification Response Messages (IRS) received from the SS7 Network.                              |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No AS for OPC/CIC | This OM measures the number of ISUP messages discarded as a result of not being able to find a valid AS for a given OPC/CIC.           |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No OPC/CIC Data   | This OM measures the number of ISUP messages discarded as a result of missing database entry for a given OPC/CIC.                      |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No Path           | This OM measures the number of ISUP messages discarded as a result of not being able to find a path to a given AS.                     |
| Accumulation OM | ISUP Received Message Counts, ISUP Error No Route          | This OM measures the number of ISUP messages discarded as a result of not being able to find a route to a given AS.                    |
| Accumulation OM | ISUP Received Message Counts, ISUP Error Unknown Message   | This OM measures the number of unrecognized ISUP Messages received from the SS7 Network.                                               |
| Accumulation OM | ISUP Received Message Counts, LOP Received Count           | This OM measures the number of ISUP Loop Prevention Messages (LOP) received from the SS7 Network.                                      |

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| Accumulation OM | ISUP Received Message Counts, LPA Received Count             | This OM measures the number of ISUP Loop Back Acknowledgement Messages (LPA) received from the SS7 Network.                                                                   |
| Accumulation OM | ISUP Received Message Counts, NRM Received Count             | This OM measures the number of ISUP Network Resource Management Messages (NRM) received from the SS7 Network.                                                                 |
| Accumulation OM | ISUP Received Message Counts, PAM Received Count             | This OM measures the number of ISUP Pass Along Message Messages (PAM) received from the SS7 Network.                                                                          |
| Accumulation OM | ISUP Received Message Counts, PRG Received Count             | This OM measures the number of ISUP Progress Messages (PRG) received from the SS7 Network.                                                                                    |
| Accumulation OM | ISUP Received Message Counts, REL Received Count             | This OM measures the number of ISUP Release Messages (RLC) received from the SS7 Network.                                                                                     |
| Accumulation OM | ISUP Received Message Counts, RES Received Count             | This OM measures the number of ISUP Resume Messages (RES) received from the SS7 Network.                                                                                      |
| Accumulation OM | ISUP Received Message Counts, RLC Received Count             | This OM measures the number of ISUP Release Complete Messages (RLC) received from the SS7 Network.                                                                            |
| Accumulation OM | ISUP Received Message Counts, RPM Received Count             | This OM measures the number of ISUP Reconfiguration Progress Message Messages (ACM) received from the SS7 Network.                                                            |
| Accumulation OM | ISUP Received Message Counts, RSC Received Count             | This OM measures the number of ISUP Reset Circuit Messages (RSC) received from the SS7 Network.                                                                               |
| Accumulation OM | ISUP Received Message Counts, SAM Received Count             | This OM measures the number of ISUP Subsequent Address Message Messages (SAM) received from the SS7 Network.                                                                  |
| Accumulation OM | ISUP Received Message Counts, SGM Received Count             | This OM measures the number of ISUP Segmentation Messages (SGM) received from the SS7 Network.                                                                                |
| Accumulation OM | ISUP Received Message Counts, SUS Received Count             | This OM measures the number of ISUP Suspend Messages (SUS) received from the SS7 Network.                                                                                     |
| Accumulation OM | ISUP Received Message Counts, UBA Received Count             | This OM measures the number of ISUP Unblocking Acknowledgement Messages (UBA) received from the SS7 Network.                                                                  |
| Accumulation OM | ISUP Received Message Counts, UBL Received Count             | This OM measures the number of ISUP Unblocking Messages (UBL) received from the SS7 Network.                                                                                  |
| Accumulation OM | ISUP Received Message Counts, UCIC Received Count            | This OM measures the number of ISUP Unequipped Circuit Identification Code Messages (UCIC) received from the SS7 Network.                                                     |
| Accumulation OM | ISUP Received Message Counts, UPA Received Count             | This OM measures the number of ISUP User Part Available Messages (UPA) received from the SS7 Network.                                                                         |
| Accumulation OM | ISUP Received Message Counts, UPT Received Count             | This OM measures the number of ISUP User Part Test Messages (UPT) received from the SS7 Network.                                                                              |
| Accumulation OM | ISUP Received Message Counts, USR Received Count             | This OM measures the number of ISUP User-to-User Information Messages (USR) received from the SS7 Network.                                                                    |
| Accumulation OM | ISUP Received Message Counts, Wrong NE Received Count        | This OM measures the number of ISUP messages discarded as a result of not receiving the message from at a SG Network Element                                                  |
| Accumulation OM | Link Faults and Performance, Number of negative ack received | 1.9 of Q.752 This OM measures number of negative acknowledgements received on the link indicating that the far end did not receive the message correctly.                     |
| Accumulation OM | Link Faults and Performance, Number of SUs received in error | 1.8 of Q.752 This OM measures signaling units on a link, received in error.                                                                                                   |
| Accumulation OM | Link Faults and Performance, Octets Retransmitted            | 3.2 of Q.752 This OM counts number of bytes that are retransmitted. This count includes SIO, SIF, opening flags and check bits.                                               |
| Accumulation OM | Link Faults and Performance, SL alignment or proving failure | 1.7 of Q.752 This OM measures link synchronization failures during alignment or proving and indicates a signaling data link fault which prevents the SdL moving into service. |

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| Accumulation OM | Link Faults and Performance, SL failure-Abnormal FIBR/BSNR     | 1.3 of Q.752 This OM measures link synchronization failures and indicates complex failures in transmission or an intermittent hardware fault or even designer error.                                |
| Accumulation OM | Link Faults and Performance, SL failure-All reasons            | 1.2 of Q.752 This OM measures in_service link failures due to any reason. It does not count link activation failures.                                                                               |
| Accumulation OM | Link Faults and Performance, SL failure-Exc. delay of ack      | 1.4 of Q.752 This OM measures link synchronization failures and indicates serious disturbances or an interruption of signaling data link.                                                           |
| Accumulation OM | Link Faults and Performance, SL failure-Exc. duration of cong. | 1.6 of Q.752 This OM measures link synchronization failures caused by prolonged congestion on the link.                                                                                             |
| Accumulation OM | Link Faults and Performance, SL failure-Excessive error rate   | 1.5 of Q.752 This OM measures link synchronization failures and indicates noisy link.                                                                                                               |
| Accumulation OM | Link Faults and Performance, SL failure-Other reasons          | This OM measures link synchronization failures due to reasons other than Abnormal FIBR/BSNR, Excessive delay of ack, Excessive error rate or Excessive duration of congestion .                     |
| Accumulation OM | Link Management, Changeover Procedure Count                    | This OM measures the number of times the changeover procedure is used to move traffic from a link taken out of service to one or more alternate in-service links.                                   |
| Accumulation OM | Link Management, Far End Mgmt Inhibit Count                    | This OM measures the number of times a link was successfully inhibited from the far end.                                                                                                            |
| Accumulation OM | Link Management, Level 1 Congestion Count                      | This OM measures the number of times a link entered Level 1 congestion from no congestion.                                                                                                          |
| Accumulation OM | Link Management, Level 1 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 1 congestion.                                                                                                                      |
| Accumulation OM | Link Management, Level 2 Congestion Count                      | This OM measures the number of times a link entered Level 2 congestion from Level 1 or no congestion.                                                                                               |
| Accumulation OM | Link Management, Level 2 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 2 congestion.                                                                                                                      |
| Accumulation OM | Link Management, Level 3 Congestion Count                      | This OM measures the number of times a link entered Level 3 congestion from Level 1, Level 2, or no congestion.                                                                                     |
| Accumulation OM | Link Management, Level 3 Congestion Duration                   | This OM measures the total time, in seconds, a link was in Level 3 congestion.                                                                                                                      |
| Accumulation OM | Link Management, Link Available Duration                       | This OM measures the total time, in seconds, a link was available to MTP Level 3.                                                                                                                   |
| Accumulation OM | Link Management, Link Deactivated Duration                     | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by deactivation.                                                                                   |
| Accumulation OM | Link Management, Link Local Inhibit Duration                   | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by local inhibition.                                                                               |
| Accumulation OM | Link Management, Link Remote Inhibit Duration                  | This OM measures the total time, in seconds, a link was manually made unavailable to MTP Level 3 by remote inhibition.                                                                              |
| Accumulation OM | Link Management, Near End Forced Unavailable Count             | This OM measures the number of times a link was manually made unavailable to MTP Level 3.                                                                                                           |
| Accumulation OM | Link Management, RPO Count                                     | This OM measures the number of times a link became unavailable to MTP Level 3 after the system received SIPO from the far end. This OM is not applicable for SAAL-based High Speed Links.           |
| Accumulation OM | Link Management, RPO Cumulative Duration                       | This OM measures the total time, in seconds, that a link was unavailable to MTP Level 3 after the system received SIPO from the far end. This OM is not applicable for SAAL-based High Speed Links. |
| Accumulation OM | Link Management, Unavailable Duration                          | This OM measures the total time, in seconds, a link was unavailable (automatically or manually made unavailable) to MTP Level 3.                                                                    |



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| Accumulation OM | Link Traffic, MSUs Received Count             | This OM measures the number of MSUs received on a link, including those MSUs for which retransmission was requested in the SS7 network. For the SAAL-based High Speed Links, the above description applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                               |
| Accumulation OM | Link Traffic, MSUs Requiring GTT Count        | This OM measures the number of incoming MSUs that require GTT, regardless of the outcome of any GWS operation. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                   |
| Accumulation OM | Link Traffic, MSUs Transmitted Count          | This OM measures the number of MSUs transmitted to the far end, including those MSUs that were retransmitted in the SS7 network. For the SAAL-based High Speed Links, the above description applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                      |
| Accumulation OM | Link Traffic, Network Indicator Discard Count | This OM measures the number of received MSUs which were discarded due to a mismatch between the MSU's network indicator (NI) and the NI provisioned in this system. The NI may be provisioned on a network appearance basis. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                     |
| Accumulation OM | Link Traffic, Octets Received Count           | This OM measures the total number of octets actually received for all MSUs counted in the MSUs Received Count OM, before the octets are removed in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                              |
| Accumulation OM | Link Traffic, Octets Requiring GTT Count      | This OM measures the total number of MSU octets received for MSUs requiring GTT, including octets removed in MTP Level 2 processing. For the MTP2-based links, this count applies to MSU octets (MTP User Data + MTP L3 Data + MTP L2 Data octets). For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                                                                             |
| Accumulation OM | Link Traffic, Octets Transmitted Count        | This OM measures the total number of octets actually transmitted for all MSUs counted in the MSUs Transmitted Count OM, including octets added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).                                               |
| Accumulation OM | Link Traffic, Originated MSU Octets Count     | This OM measures the total number of originated MSU octets (MSU that contains the PC or capability code of this system in the OPC field) transmitted, including those octets that were added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |

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| Accumulation OM | Link Traffic, Originated MSUs Count         | This OM measures the number of originated MSUs (MSUs that contain the PC or capability code of this system in the OPC field) that are successfully passed to Level 2 for transmission (for example, network management messages and MSUs completing GTT) in the SS7 network. For the MTP2-based links, this count applies to MSU octets (MTP User Data + MTP L3 Data + MTP L2 Data octets). For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |
| Accumulation OM | Link Traffic, Pri 0 MSU Inbd Discard Count  | This OM measures the number of priority 0 MSUs discarded by the inbound link due to congestion at levels 1, 2, or 3 in the transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                        |
| Accumulation OM | Link Traffic, Pri 0 MSU Outbd Discard Count | This OM measures the number of priority 0 MSUs discarded due to congestion at levels 1, 2, or 3 in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                                          |
| Accumulation OM | Link Traffic, Pri 1 MSU Inbd Discard Count  | This OM measures the number of priority 1 MSUs discarded by the inbound link due to congestion at levels 2 or 3 in the transmit buffers in the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                             |
| Accumulation OM | Link Traffic, Pri 1 MSU Outbd Discard Count | This OM measures the number of priority 1 MSUs discarded due to congestion at levels 2 or 3 in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                                              |
| Accumulation OM | Link Traffic, Pri 2 MSU Inbd Discard Count  | This OM measures the number of priority 2 MSUs discarded by the inbound link due to congestion at level 3 in the transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                  |
| Accumulation OM | Link Traffic, Pri 2 MSU Outbd Discard Count | This OM measures the number of priority 2 MSUs discarded due to level 3 congestion in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                                                       |
| Accumulation OM | Link Traffic, Pri 3 MSU Inbd Discard Count  | This OM measures the number of priority 3 MSUs discarded by the inbound link due to full transmit buffers for the outbound link in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                          |
| Accumulation OM | Link Traffic, Pri 3 MSU Outbd Discard Count | This OM measures the number of priority 3 MSUs discarded due to a full transmit buffer in the SS7 network. For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data) instead of MSUs (MTP User Data + MTP L3 Data + MTP L2 Data).                                                                                                                                                                                                                                   |

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| Accumulation OM | Link Traffic, Terminated MSU Octets Count          | This OM measures the total number of terminated MSU octets (acknowledged, incoming MSU that contains the PC or capability code of this system in the DPC field) received, including octets removed in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets).              |
| Accumulation OM | Link Traffic, Terminated MSUs Count                | This OM measures the number of terminated MSUs (acknowledged, incoming MSUs that contain the PC or capability code of this system in the DPC field) received from the SS7 network. For the MTP2-based links, this count applies to MSUs (MTP User Data + MTP L3 Data + MTP L2 Data). For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data).                                                                                            |
| Accumulation OM | Link Traffic, Through-Switched MSUs Count          | This OM measures the number of through-switched MSUs (MSUs that do not contain the PC or capability code of this system in either the OPC or DPC) that are acknowledged, translated, and successfully passed to MTP Level 2 for transmission in the SS7 network. For the MTP2-based links, this count applies to MSUs (MTP User Data + MTP L3 Data + MTP L2 Data). For the SAAL-based High Speed Links, this count applies to Messages (MTP User Data + MTP L3 Data).              |
| Accumulation OM | Link Traffic, Thru-Switched MSU Octets Count       | This OM measures the total number of through-switched MSU octets (MSU that does not contain the PC or capability code of this system in either the OPC or DPC) received, including those octets that were added in MTP Level 2 processing for the SS7 network. For the MTP2-based links, this count accounts for MTP User Data + MTP L3 Data + MTP L2 Data octets. For the SAAL-based High Speed Links, this count applies to Message octets (MTP User Data + MTP L3 Data octets). |
| Accumulation OM | Linkset Utilization, Linkset Inactivity Duration   | This OM measures the total time, in seconds, that all links in the linkset were unavailable (automatically or manually made unavailable) to MTP Level 3.                                                                                                                                                                                                                                                                                                                           |
| Accumulation OM | Linkset Utilization, RST Received Count            | This OM measures the number of restart (RST) messages received.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Accumulation OM | Linkset Utilization, RST Transmitted Count         | This OM measures the number of restart (RST) messages transmitted.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Accumulation OM | Linkset Utilization, TFA and TCA Received Count    | This OM measures the number of transfer-allowed (TFA) and transfer-cluster-allowed (TCA) messages received.                                                                                                                                                                                                                                                                                                                                                                        |
| Accumulation OM | Linkset Utilization, TFA and TCA Transmitted Count | This OM measures the number of transfer-allowed (TFA) and transfer-cluster-allowed (TCA) messages transmitted.                                                                                                                                                                                                                                                                                                                                                                     |
| Accumulation OM | Linkset Utilization, TFC Received Count            | This OM measures the number of transfer-controlled (TFC) messages received by the gateway, listed by the originating network.                                                                                                                                                                                                                                                                                                                                                      |
| Accumulation OM | Linkset Utilization, TFC Transmitted Count         | This OM measures the number of transfer-controlled (TFC) messages transmitted by the gateway, listed by the destination network.                                                                                                                                                                                                                                                                                                                                                   |
| Accumulation OM | Linkset Utilization, TFP and TCP Received Count    | This OM measures the number of transfer-prohibited (TFP) and transfer-cluster-prohibited (TCP) messages received.                                                                                                                                                                                                                                                                                                                                                                  |
| Accumulation OM | Linkset Utilization, TFP and TCP Transmitted Count | This OM measures the number of transfer-prohibited (TFP) and transfer-cluster-prohibited (TCP) messages transmitted.                                                                                                                                                                                                                                                                                                                                                               |
| Accumulation OM | Linkset Utilization, TFR and TCR Received Count    | This OM measures the number of transfer-restricted (TFR) and transfer-cluster-restricted (TCR) messages received.                                                                                                                                                                                                                                                                                                                                                                  |
| Accumulation OM | Linkset Utilization, TFR and TCR Transmitted Count | This OM measures the number of transfer-restricted (TFR) and transfer-cluster-restricted (TCR) messages transmitted.                                                                                                                                                                                                                                                                                                                                                               |

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| Accumulation OM | Log Server, Critical Alarms Ack Count        | This OM measures the number of critical alarms acknowledged by the Log server.                                                                                                                                                |
| Accumulation OM | Log Server, Critical Alarms Cleared Count    | This OM measures the number of critical alarms cleared by the Log server.                                                                                                                                                     |
| Accumulation OM | Log Server, Critical Alarms Received Count   | This OM measures the number of critical alarms received by the Log server.                                                                                                                                                    |
| Accumulation OM | Log Server, Major Alarms Ack Count           | This OM measures the number of major alarms acknowledged by the Log server.                                                                                                                                                   |
| Accumulation OM | Log Server, Major Alarms Cleared Count       | This OM measures the number of major alarms cleared by the Log server.                                                                                                                                                        |
| Accumulation OM | Log Server, Major Alarms Received Count      | This OM measures the number of major alarms received by the Log server.                                                                                                                                                       |
| Accumulation OM | Log Server, Minor Alarms Ack Count           | This OM measures the number of minor alarms acknowledged by the Log server.                                                                                                                                                   |
| Accumulation OM | Log Server, Minor Alarms Cleared Count       | This OM measures the number of minor alarms cleared by the Log server.                                                                                                                                                        |
| Accumulation OM | Log Server, Minor Alarms Received Count      | This OM measures the number of minor alarms received by the Log server.                                                                                                                                                       |
| Accumulation OM | NP Database Totals, Add/Change Updates       | This OM measures the total number of add/change updates received from the LSMS.                                                                                                                                               |
| Accumulation OM | NP Database Totals, Delete Updates           | This OM measures the total number of delete updates received from the LSMS.                                                                                                                                                   |
| Accumulation OM | NP Database Totals, Emergency Updates        | This OM measures the total number of application database updates received from the USP debug facility and can only be displayed from the debug facility Note: Debug is only accessible by Nortel Networks Support Personnel. |
| Accumulation OM | NP Database Totals, Operational Time         | This OM measures the total time within the OM interval that the NPDB was operational.                                                                                                                                         |
| Accumulation OM | NP Database Totals, Retransmitted Updates    | This OM measures the total number of updates retransmitted within the BroadBand STP.                                                                                                                                          |
| Accumulation OM | NP INAP Totals, INAP CdPN Normalize Failures | This OM measures the number of called party number normalization failures.                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Indeterminate Queries   | This OM measures the number of INAP indeterminate queries.                                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Invalid Context         | This OM measures the number of INAP queries with invalid application context.                                                                                                                                                 |
| Accumulation OM | NP INAP Totals, INAP Queries Non-Ported      | This OM measures the number of INAP non ported number queries received.                                                                                                                                                       |
| Accumulation OM | NP INAP Totals, INAP Queries Ported          | This OM measures the number of INAP ported number queries received.                                                                                                                                                           |
| Accumulation OM | NP INAP Totals, INAP Queries Ported Across   | This OM measures the number of INAP ported across number queries received.                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Queries Ported In       | This OM measures the number of INAP ported in number queries received.                                                                                                                                                        |
| Accumulation OM | NP INAP Totals, INAP Queries Ported Out      | This OM measures the number of INAP ported out number queries received.                                                                                                                                                       |
| Accumulation OM | NP INAP Totals, INAP Queries Unknown         | This OM measures the number of INAP queries received for numbers with unknown ported status.                                                                                                                                  |
| Accumulation OM | NP INAP Totals, INAP Query Failures          | This OM measures the number of INAP query failures.                                                                                                                                                                           |
| Accumulation OM | NP INAP Totals, INAP Query Time Outs         | This OM measures the total number of INAP query time outs.                                                                                                                                                                    |
| Accumulation OM | NP INAP Totals, INAP Total Queries           | This OM measures the total number of INAP queries received.                                                                                                                                                                   |
| Accumulation OM | NP LSSI Totals, MR Query Received            | This OM measures the total number of MR queries received by an NPC or NPS system node.                                                                                                                                        |
| Accumulation OM | NP LSSI Totals, NP Query Received            | This OM measures the total number of NP queries received by an NPC or an NPS system node.                                                                                                                                     |
| Accumulation OM | NP NETID Totals, MR Failures                 | This OM measures the total number of MR query failures identified. The MR Failures value is based upon the Network ID of a received SCCP message.                                                                             |

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| Accumulation OM | NP NETID Totals, MR GTT Overrides             | This OM measures the total number of MR queries receiving GTT override. The MR GTT Overrides value is based upon the Network ID of a received SCCP message.                                                                                 |
| Accumulation OM | NP NETID Totals, MR Loop Detection            | This OM measures the total number of potential looping detections. The MR Loop Detection value is based upon the Network ID of a received SCCP message.                                                                                     |
| Accumulation OM | NP NETID Totals, MR Non-Ported                | This OM measures the total number of MR queries received for non-porting numbers. The MR Non-Ported value is based upon the Network ID of a received SCCP message.                                                                          |
| Accumulation OM | NP NETID Totals, MR Ported                    | This OM measures the total number of MR queries received for ported numbers. The MR Ported value is based upon the Network ID of a received SCCP message.                                                                                   |
| Accumulation OM | NP NETID Totals, MR Total                     | This OM measures the total number of MR queries received. The MR Total value is based upon the Network ID of a received SCCP message.                                                                                                       |
| Accumulation OM | NP NETID Totals, NP Failures                  | This OM measures the total number of NP query failures. The NP Failures value is based upon the Network ID of a received TCAP message.                                                                                                      |
| Accumulation OM | NP NETID Totals, NP Non-Ported                | This OM measures the total number of NP queries received for non-porting numbers. The NP Non-Ported value is based upon the Network ID in the TCAP message.                                                                                 |
| Accumulation OM | NP NETID Totals, NP Ported                    | This OM measures the total number of NP queries received for ported numbers. The NP Ported value is based upon the Network ID contained in the NETID of a received TCAP message.                                                            |
| Accumulation OM | NP NETID Totals, NP Total                     | This OM measures the total number of NP queries received. The NP Total value is based upon the Network ID of a received TCAP message.                                                                                                       |
| Accumulation OM | NP Service Rule Totals, Service Rule Match    | This OM measures the total number of matches for the Service Rule.                                                                                                                                                                          |
| Accumulation OM | NP Service Rule Totals, Service Rule Mismatch | This OM measures the total number of mismatches for all the Service Rules.                                                                                                                                                                  |
| Accumulation OM | NP Service Totals, Database Mismatches        | This OM measures the total number of Database mismatches. This OM is collected by Service ID.                                                                                                                                               |
| Accumulation OM | NP Service Totals, GTA Normalization Failures | This OM measures the total number of GTA number normalization failures. This OM is collected by Service ID.                                                                                                                                 |
| Accumulation OM | NP Service Totals, GTA Replacement            | This OM measures the total number of service queries receiving GTA replacement. This OM is collected by Service ID.                                                                                                                         |
| Accumulation OM | NP Service Totals, GTT Overrides              | This OM measures the total number of service queries receiving GTT override. This OM is collected by Service ID.                                                                                                                            |
| Accumulation OM | NP Service Totals, RN Check Failures          | This OM measures the total number of RN check failures on incoming messages using the NoA/RN table. This OM is collected by Service ID.                                                                                                     |
| Accumulation OM | NP Service Totals, Service Failures           | This OM measures the total number of Service query failures identified. Service query failures occur when the query logic is unable to process the Service query. This OM is collected by Service ID.                                       |
| Accumulation OM | NP Service Totals, Service Non-Ported         | This OM measures the total number of Service queries received for non-porting numbers. This OM is collected by Service ID.                                                                                                                  |
| Accumulation OM | NP Service Totals, Service Ported             | This OM measures the total number of Service queries received for ported numbers. The Service Ported value is the total of OMR_SERVICE_PORTED_IN, OMR_SERVICE_PORTED_OUT, and OMR_SERVICE_PORTED_ACROSS This OM is collected by Service ID. |
| Accumulation OM | NP Service Totals, Service Total              | This OM measures the total number of Service queries received. This OM is collected by Service ID.                                                                                                                                          |

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| Accumulation OM | NP Service Totals, TT Replacement              | This OM measures the total number of service queries receiving TT replacement. This OM is collected by Service ID.                               |
| Accumulation OM | NP SMI Totals, High Congestion                 | This OM measures the total number of times that the high level congestion state was entered.                                                     |
| Accumulation OM | NP SMI Totals, Login Failures                  | This OM measures the total number of failed LSMS login attempts.                                                                                 |
| Accumulation OM | NP SMI Totals, Low Congestion                  | This OM measures the total number of times that the low level congestion state was entered.                                                      |
| Accumulation OM | NP SMI Totals, Medium Congestion               | This OM measures the total number of times that the medium level congestion state was entered.                                                   |
| Accumulation OM | NP SMI Totals, Messages Invalid                | This OM measures the total number of invalid messages received from the LSMS.                                                                    |
| Accumulation OM | NP SMI Totals, Messages Received               | This OM measures the total number of messages received from the LSMS.                                                                            |
| Accumulation OM | NP SMI Totals, Messages Rejected               | This OM measures the total number of received messages from the LSMS that were rejected.                                                         |
| Accumulation OM | NP SRF Totals, SRF Ind. Routing with Ref. Sub. | This OM measures the number of SRF messages relayed to the subscription network via indirect routing with reference to the subscription network. |
| Accumulation OM | NP SRF Totals, SRF No NP DB Record Found       | This OM measures the number of SRF queries received when no record is found in the NP DB.                                                        |
| Accumulation OM | NP SRF Totals, SRF Queries Non-Ported          | This OM measures the number of SRF non ported number queries received.                                                                           |
| Accumulation OM | NP SRF Totals, SRF Queries Ported Across       | This OM measures the number of SRF ported across number queries received.                                                                        |
| Accumulation OM | NP SRF Totals, SRF Queries Ported In           | This OM measures the number of SRF ported in number queries received.                                                                            |
| Accumulation OM | NP SRF Totals, SRF Queries Ported Out          | This OM measures the number of SRF ported out number queries received.                                                                           |
| Accumulation OM | NP SRF Totals, SRF Queries Unknown             | This OM measures the number of SRF queries received for numbers with unknown ported status.                                                      |
| Accumulation OM | NP SRF Totals, SRF Query Failures              | This OM measures the number of SRF query failures.                                                                                               |
| Accumulation OM | NP SRF Totals, SRF Relayed to HLR              | This OM measures the number of SRF messages relayed to the HLR.                                                                                  |
| Accumulation OM | NP SRF Totals, SRF Successful Messages to MSC  | This OM measures the number of SRF successful messages sent back to the MSC.                                                                     |
| Accumulation OM | NP SRF Totals, SRF Total Queries               | This OM measures the total number of SRF queries received.                                                                                       |
| Accumulation OM | NP SRF Totals, SRF Total Queries Ported        | This OM measures the total number of SRF ported number queries received.                                                                         |
| Accumulation OM | NP SRF Totals, SRF Transaction Errors Sent Out | This OM measures the number of SRF transaction error messages sent out.                                                                          |
| Accumulation OM | NP TnT Totals, TNT Acks Sent                   | This OM measures the number of Tariff non Transparency acknowledgement messages transmitted.                                                     |
| Accumulation OM | NP TnT Totals, TNT Decode Errors               | This OM measures the number of Tariff non Transparency MAP decode failures due to incorrect parameters that could not be decoded.                |
| Accumulation OM | NP TnT Totals, TNT Decode Invalid Params       | This OM measures the number of Tariff non Transparency MAP decode failures due to invalid parameters. (i.e. IMSI instead of MSISDN included)     |
| Accumulation OM | NP TnT Totals, TNT No NP DB Rec Found          | This OM measures the number of Tariff non Transparency queries received for numbers not found in the NP DB.                                      |
| Accumulation OM | NP TnT Totals, TNT Queries Non-Ported          | This OM measures the number of Tariff non Transparency non ported number queries received.                                                       |
| Accumulation OM | NP TnT Totals, TNT Queries Ported Across       | This OM measures the number of Tariff non Transparency ported across number queries received.                                                    |
| Accumulation OM | NP TnT Totals, TNT Queries Ported In           | This OM measures the number of Tariff non Transparency ported in number queries received.                                                        |

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| Accumulation OM | NP TnT Totals, TNT Queries Ported Out                | This OM measures the number of Tariff non Transparency ported out number queries received.                                                                                                                                                                           |
| Accumulation OM | NP TnT Totals, TNT Queries Unknown                   | This OM measures the number of Tariff non Transparency queries received for numbers with unknown ported status.                                                                                                                                                      |
| Accumulation OM | NP TnT Totals, TNT Query Failures                    | This OM measures the number of Tariff non Transparency query failures during processing.                                                                                                                                                                             |
| Accumulation OM | NP TnT Totals, TNT Total Messages Received           | This OM measures the total number of Tariff non Transparency queries received.                                                                                                                                                                                       |
| Accumulation OM | NP TnT Totals, TNT Total Queries Ported              | This OM measures the total number of Tariff non Transparency ported number queries received.                                                                                                                                                                         |
| Accumulation OM | NP TnT Totals, TNT Transmission Failures             | This OM measures the number of Tariff non Transparency failures during transmission of Ack.                                                                                                                                                                          |
| Accumulation OM | Route Set Management, RouteSet Congested Count       | This OM measures the number of times, a routeset went into network congestion.                                                                                                                                                                                       |
| Accumulation OM | Route Set Management, Routeset Man-busied Count      | This OM measures the number of times a routeset was manually made unavailable.                                                                                                                                                                                       |
| Accumulation OM | Route Set Management, Routeset Unavailability Count  | This OM measures the number of times a routeset was unavailable.                                                                                                                                                                                                     |
| Accumulation OM | Route Set Management, Routeset Unavailability Dur.   | This OM measures the total time, in seconds, a routeset was unavailable.                                                                                                                                                                                             |
| Accumulation OM | RTC Sanity, RTC12 Passive Audit Count                | This OM hooks into the node maintenance audit, and is pegged on the control shelf CCs, when it does not receive audit request from RTC12 even once. Thus this is a passive audit of RTC                                                                              |
| Accumulation OM | RTC Sanity, RTC15 Passive Audit Count                | This OM hooks into the node maintenance audit, and is pegged on both the control shelf CCs, when it does not receive audit request from RTC15 even once. Thus this is a passive audit of RTC.                                                                        |
| Accumulation OM | SAAL Link Management, Cum. Dur. of FE Processor Out. | This OM measures the cumulative duration in seconds during which the use of the link was precluded due to a remote (far-end) processor outage condition, summed across all far-end processor outage events.                                                          |
| Accumulation OM | SAAL Link Management, Cum. Dur. of Lack-of-Credit    | This OM measures the cumulative duration of time in seconds during which SSCOP had PDUs to send to its peer but could not do so because it was not given credit by the far end, summed over all the Lack-of-Credit events occurring during the measurement interval. |
| Accumulation OM | SAAL Link Management, Duration of Link in Service    | This OM measures the number of seconds the link is regarded in service.                                                                                                                                                                                              |
| Accumulation OM | SAAL Link Management, Invalid SSCOP PDUs Rx          | This OM measures the number of Invalid SSCOP PDUs Received.                                                                                                                                                                                                          |
| Accumulation OM | SAAL Link Management, Lack of Credit Events          | This OM measures the number of Lack-of-Credit Events.                                                                                                                                                                                                                |
| Accumulation OM | SAAL Link Management, PDUs Tx Requiring RTx          | This OM measures the number of SSCOP PDUs transmitted that required retransmission because they were not acknowledged by the far-end's SSCOP peer.                                                                                                                   |
| Accumulation OM | SAAL Link Management, Signaling Link Alig. Failures  | This OM measures the number of Signaling Link Alignment Failures.                                                                                                                                                                                                    |
| Accumulation OM | SAAL Link Management, SSCOP Connection Disconnects   | This OM measures the number of SSCOP Connection Disconnects which are characterized by the expiry of Timer_NO_RESPONSE.                                                                                                                                              |
| Accumulation OM | SAAL Link Management, SSCOP Connection Init. Fails   | This OM measures the number of SSCOP Initiation Failures, i.e. the inability to establish an SSCOP Connection.                                                                                                                                                       |
| Accumulation OM | SAAL Link Management, SSCOP Connection Re-est/Resync | This OM measures the number of SSCOP Re-establishments/Resynchronizations.                                                                                                                                                                                           |
| Accumulation OM | SAAL Link Management, SSCOP Connection Sum-of-Errors | This OM measures the total number of SSCOP Connection Disconnects, Connection Initiation Failures and Connection Re-establishment/Resynchronization.                                                                                                                 |

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| Accumulation OM | SAAL Link Management, SSCOP PDUs Sum-of-Errors        | This OM measures the total number of Unexpected SSCOP PDUs, Invalid SSCOP PDUs and SSCOP PDUs with Other/List Element Errors.                                                |
| Accumulation OM | SAAL Link Management, SSCOP PDUs with List Elem. Errs | This OM measures the number of SSCOP PDUs Received with List Element Errors.                                                                                                 |
| Accumulation OM | SAAL Link Management, Unexpected SSCOP PDUs Rx        | This OM measures the number of Unexpected SSCOP PDUs Received.                                                                                                               |
| Accumulation OM | SAAL Link Traffic, PDU Octets RTx                     | This OM measures the number of octets associated with retransmitted SSCOP Sequenced Data PDUs.                                                                               |
| Accumulation OM | SAAL Link Traffic, PDU Octets Rx                      | This OM measures the number of octets associated with SSCOP Sequenced Data PDUs received.                                                                                    |
| Accumulation OM | SAAL Link Traffic, PDU Octets Tx                      | This OM measures the number of octets associated with SSCOP Sequenced Data PDUs transmitted, including retransmissions.                                                      |
| Accumulation OM | SAAL Link Traffic, PDUs RTx                           | This OM measures the number of SSCOP Sequenced Data PDUs retransmitted.                                                                                                      |
| Accumulation OM | SAAL Link Traffic, PDUs Rx                            | This OM measures the number of SSCOP Sequenced Data PDUs received.                                                                                                           |
| Accumulation OM | SAAL Link Traffic, PDUs Tx                            | This OM measures the number of SSCOP Sequenced Data PDUs transmitted including retransmissions.                                                                              |
| Accumulation OM | SAAL Link Traffic, Total PDU Octets Rx                | This OM measures the number of octets associated with received SSCOP PDUs of all types.                                                                                      |
| Accumulation OM | SAAL Link Traffic, Total PDU Octets Tx                | This OM measures the number of octets associated with transmitted SSCOP PDUs of all types which may include Sequenced Data PDU retransmissions.                              |
| Accumulation OM | SAAL Link Traffic, Total PDUs Rx                      | This OM measures the number of SSCOP PDUs of all types received.                                                                                                             |
| Accumulation OM | SAAL Link Traffic, Total PDUs Tx                      | This OM measures the number of transmitted SSCOP PDUs of all types including Sequenced Data PDU retransmissions.                                                             |
| Accumulation OM | SCCP GTT, Alt Routing on Cong Count                   | This OM measures the number of times a message is routed to the backup system because the routeset to the primary system is congested.                                       |
| Accumulation OM | SCCP GTT, GTT Performed Count                         | This OM measures the total number of MSUs that successfully completed GTT (that is, a match was found for the global title). The count is kept across all translation types. |
| Accumulation OM | SCCP GTT, Hop Counter Violation Count                 | This OM measures the number of times that a SCCP hop counter violation has occurred.                                                                                         |
| Accumulation OM | SCCP GTT, No Translation for Addr Count               | This OM measures the number of times a match could not be found for the GTA in the translation table. The count is kept across all translation types.                        |
| Accumulation OM | SCCP GTT, Trans Type Not Found Count                  | This OM measures the number of times the translation type specified in the MSU was not supported by the USP.                                                                 |
| Accumulation OM | SCCP Local Subsystem, # Msgs for Local SS discarded   | This OM measures the number of messages destined to local subsystems that were discarded.                                                                                    |
| Accumulation OM | SCCP Local Subsystem, # Msgs for Local SS UDTSed      | This OM measures the number of messages destined to local subsystems that receive an error response (UDTS).                                                                  |
| Accumulation OM | SCCP Local Subsystem, Subsystem Activated             | This OM measures the number of times a subsystem has been manually activated.                                                                                                |
| Accumulation OM | SCCP Local Subsystem, Subsystem Allowed               | This OM measures the number of times a subsystem has gone in service (allowed).                                                                                              |
| Accumulation OM | SCCP Local Subsystem, Subsystem Allowed Duration      | This OM measures the total duration that the subsystem was in service (allowed).                                                                                             |
| Accumulation OM | SCCP Local Subsystem, Subsystem Deactivated           | This OM measures the number of times a subsystem has been manually deactivated.                                                                                              |
| Accumulation OM | SCCP Local Subsystem, Subsystem Prohibited            | This OM measures the number of times a subsystem has gone out of service (prohibited). Unit of measure is a 10 second period.                                                |



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| Accumulation OM | SCCP Local Subsystem, Subsystem Prohibited Duration | This OM measures the total duration that a subsystem was out of service (prohibited). Unit of measure is a 10 second period.           |
| Accumulation OM | SCCP LSS Instance, SSI Activated                    | This OM measures the number of times a subsystem instance has been manually activated.                                                 |
| Accumulation OM | SCCP LSS Instance, SSI Allowed                      | This OM measures the number of times a subsystem instance has gone in service (allowed).                                               |
| Accumulation OM | SCCP LSS Instance, SSI Allowed Duration             | This OM measures the duration that the subsystem instance was in service (allowed). Unit of measure is a 10 second period.             |
| Accumulation OM | SCCP LSS Instance, SSI Application Failure          | This OM measures the number of times a subsystem instance has gone out of service (application failure).                               |
| Accumulation OM | SCCP LSS Instance, SSI Congested                    | This OM measures the number of times a subsystem instance has gone into congestion.                                                    |
| Accumulation OM | SCCP LSS Instance, SSI Deactivated                  | This OM measures the number of times a subsystem instance has gone out of service (manually deactivated).                              |
| Accumulation OM | SCCP LSS Instance, SSI Platform Failure             | This OM measures the number of times a subsystem instance has gone out of service (platform failure).                                  |
| Accumulation OM | SCCP LSS Instance, SSI Prohibited Duration          | This OM measures the duration a local subsystem instance has been out of service (prohibited). Unit of measure is a 10 second period.  |
| Accumulation OM | SCCP System Totals, Conn-Orient IP Dist Viol Count  | This OM measures the number of IP originated connection-oriented messages that were discarded because they requested SCCP distribution |
| Accumulation OM | SCCP System Totals, Conn-Orient Msg Handled Count   | This OM measures the number of connection- oriented messages that were successfully routed                                             |
| Accumulation OM | SCCP System Totals, Conn-Orient Msg Rtg Fail Count  | This OM measures the number of connection- oriented messages that the USP was unable to route                                          |
| Accumulation OM | SCCP System Totals, LUDT Msg Rcvd Count             | This OM measures the number of LUDT messages that the SCCP level received.                                                             |
| Accumulation OM | SCCP System Totals, LUDT Msg Sent Count             | This OM measures the number of LUDT messages that the SCCP level sent.                                                                 |
| Accumulation OM | SCCP System Totals, LUDTS Msg Rcvd Count            | This OM measures the number of LUDTS messages that the SCCP level received.                                                            |
| Accumulation OM | SCCP System Totals, LUDTS Msg Sent Count            | This OM measures the number of LUDTS messages that the SCCP level sent.                                                                |
| Accumulation OM | SCCP System Totals, Msg Incompatibility             | This OM measures the number of LUDTS messages that the SCCP level sent.                                                                |
| Accumulation OM | SCCP System Totals, Msg too large for segmentation  | This OM measures the number of times segmentation fails due to an over-long message.                                                   |
| Accumulation OM | SCCP System Totals, MSUs Disc-Unrec SCCP Msg Count  | This OM measures the number of MSUs discarded because of an unrecognized SCCP message type.                                            |
| Accumulation OM | SCCP System Totals, Out of sequence SCCP msg count  | This OM measures the number of times Segments are received out of sequence                                                             |
| Accumulation OM | SCCP System Totals, Reassembly buffer unavailable   | This OM measures the number of times Reassembly resources unavailable occurred                                                         |
| Accumulation OM | SCCP System Totals, Reassembly failed               | This OM measures the number of times Reassembly fails for any non-specified reason.                                                    |
| Accumulation OM | SCCP System Totals, Reassembly Timer Expired        | This OM measures the number of times Reassembly Timer expired                                                                          |
| Accumulation OM | SCCP System Totals, Routing Failure - Unequip.User  | This OM measures the number of times SCCP Routing control fails to find a subsystem to route the message.                              |
| Accumulation OM | SCCP System Totals, SCCP Routing Failure Count      | This OM measures the number of messages that SCCP was unable to route.                                                                 |
| Accumulation OM | SCCP System Totals, Segmentation failed             | This OM measures the number of times segmentation fails for any non-specified reason.                                                  |
| Accumulation OM | SCCP System Totals, SSA Received Count              | This OM measures the number of subsystem-allowed (SSA) messages received.                                                              |
| Accumulation OM | SCCP System Totals, SSA Transmitted Count           | This OM measures the number of subsystem-allowed (SSA) messages transmitted.                                                           |

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| Accumulation OM | SCCP System Totals, SSP Received Count                         | This OM measures the number of subsystem-prohibited (SSP) messages received.                                                                                                                                                                                                                                       |
| Accumulation OM | SCCP System Totals, SSP Transmitted Count                      | This OM measures the number of subsystem-prohibited (SSP) messages transmitted.                                                                                                                                                                                                                                    |
| Accumulation OM | SCCP System Totals, SST Received Count                         | This OM measures the number of subsystem-status-test (SST) messages received.                                                                                                                                                                                                                                      |
| Accumulation OM | SCCP System Totals, SST Transmitted Count                      | This OM measures the number of subsystem-status-test (SST) messages transmitted.                                                                                                                                                                                                                                   |
| Accumulation OM | SCCP System Totals, Total messages handled                     | This OM measures all messages processed by SCCP routing control in both incoming and outgoing directions, whether or not the message is processed or delivered successfully. It includes Class 2 and Class 3 connection oriented messages. It does not include Subsystem Status messages such as SSP, SSA, or SST. |
| Accumulation OM | SCCP System Totals, UDT Msg Rcvd Count                         | This OM measures the number of UDT messages that the SCCP level received.                                                                                                                                                                                                                                          |
| Accumulation OM | SCCP System Totals, UDT Msg Sent Count                         | This OM measures the number of UDT messages sent from the SCCP level.                                                                                                                                                                                                                                              |
| Accumulation OM | SCCP System Totals, UDTs Msg Rcvd Count                        | This OM measures the number of UDTs messages that the SCCP level received.                                                                                                                                                                                                                                         |
| Accumulation OM | SCCP System Totals, UDTs Msg Sent Count                        | This OM measures the number of UDTs messages sent from the SCCP level.                                                                                                                                                                                                                                             |
| Accumulation OM | SCCP System Totals, XUDT Msg Rcvd Count                        | This OM measures the number of XUDT messages that the SCCP level received.                                                                                                                                                                                                                                         |
| Accumulation OM | SCCP System Totals, XUDT Msg Sent Count                        | This OM measures the number of XUDT messages sent from the SCCP level.                                                                                                                                                                                                                                             |
| Accumulation OM | SCCP System Totals, XUDTS Msg Rcvd Count                       | This OM measures the number of XUDTS messages that the SCCP level received.                                                                                                                                                                                                                                        |
| Accumulation OM | SCCP System Totals, XUDTS Msg Sent Count                       | This OM measures the number of XUDTS messages sent from the SCCP level.                                                                                                                                                                                                                                            |
| Accumulation OM | SCTP Management/Traffic Counts, Association Aborted Count      | This OM measures the number of associations that are aborted by the application, the peer connection or a failure in the network.                                                                                                                                                                                  |
| Accumulation OM | SCTP Management/Traffic Counts, Association Establish Attempts | This OM measures the number of associations which the user or peer SCTP tried to established.                                                                                                                                                                                                                      |
| Accumulation OM | SCTP Management/Traffic Counts, Association Terminated Count   | This OM measures the number of associations that are terminated by the application or the peer connection.                                                                                                                                                                                                         |
| Accumulation OM | SCTP Management/Traffic Counts, Chunk Retransmitted Count      | This OM measures the number of SCTP chunks retransmitted due to SCTP Packets or SCTP Sacks lost in the network. Note: A SCTP packet may contain more than one chunk.                                                                                                                                               |
| Accumulation OM | SCTP Management/Traffic Counts, Chunks Received Count          | This OM measures the number of SCTP chunks received. Note: A SCTP packet may contain more than one chunk.                                                                                                                                                                                                          |
| Accumulation OM | SCTP Management/Traffic Counts, Chunks Transmitted Count       | This OM measures the number of SCTP chunks transmitted. Note: A SCTP packet may contain more than one chunk.                                                                                                                                                                                                       |
| Accumulation OM | SCTP Management/Traffic Counts, Established Association Count  | This OM measures the number of associations which are in a established state.                                                                                                                                                                                                                                      |
| Accumulation OM | SCTP Management/Traffic Counts, Out of Blue SCTP Packet        | This OM measures the number of SCTP packets that are received but are not able to identify the association to which they belong.                                                                                                                                                                                   |
| Accumulation OM | SLR Database Totals, Add/Change Updates                        | This OM measures the total number of add/change updates received from the HLR provisioning system.                                                                                                                                                                                                                 |
| Accumulation OM | SLR Database Totals, Delete Updates                            | This OM measures the total number of delete updates received from the HLR provisioning system.                                                                                                                                                                                                                     |
| Accumulation OM | SLR Database Totals, Emergency Updates                         | This OM measures the total number of application database updates received from the USP debug facility and can only be displayed from the debug facility Note: Debug is only accessible by Nortel Networks Support Personnel.                                                                                      |

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| Accumulation OM | SLR Database Totals, Operational Time                   | This OM measures the total time within the OM interval that the SLRDB was operational.                                                                                                                            |
| Accumulation OM | SLR Database Totals, Retransmitted Updates              | This OM measures the total number of updates retransmitted within the BroadBand STP.                                                                                                                              |
| Accumulation OM | SLR LSSI Totals, Total Failed Queries                   | This OM measures the total number of SLR queries received by an NPC or NPS system node that failed for any reason across all services and message types.                                                          |
| Accumulation OM | SLR LSSI Totals, Total Queries Received                 | This OM measures the total number of SLR queries received by an NPC or an NPS system node across all services and message types.                                                                                  |
| Accumulation OM | SLR Message Type Totals, IMSI Failed Queries            | This OM measures the total number of IMSI queries received by an NPC or an NPS system node that failed for any reason.                                                                                            |
| Accumulation OM | SLR Message Type Totals, IMSI Failed SLRDB Lookup       | This OM measures the total number of IMSI queries received by an NPC or an NPS system node that failed in their SLRDB lookup.                                                                                     |
| Accumulation OM | SLR Message Type Totals, IMSI Query Received            | This OM measures the total number of IMSI queries received by an NPC or an NPS system node.                                                                                                                       |
| Accumulation OM | SLR Message Type Totals, IMSI Successful SLRDB Lookup   | This OM measures the total number of IMSI queries received by an NPC or an NPS system node that succeeded in their SLRDB lookup.                                                                                  |
| Accumulation OM | SLR Message Type Totals, MSISDN Failed Queries          | This OM measures the total number of MSISDN queries received by an NPC or an NPS system node that failed for any reason.                                                                                          |
| Accumulation OM | SLR Message Type Totals, MSISDN Failed SLRDB Lookup     | This OM measures the total number of MSISDN queries received by an NPC or an NPS system node that failed in their SLRDB lookup.                                                                                   |
| Accumulation OM | SLR Message Type Totals, MSISDN Query Received          | This OM measures the total number of MSISDN queries received by an NPC or an NPS system node.                                                                                                                     |
| Accumulation OM | SLR Message Type Totals, MSISDN Successful SLRDB Lookup | This OM measures the total number of MSISDN queries received by an NPC or an NPS system node that succeeded in their SLRDB lookup.                                                                                |
| Accumulation OM | SLR SMI Totals, High Congestion                         | This OM measures the total number of times that the high level congestion state was entered.                                                                                                                      |
| Accumulation OM | SLR SMI Totals, Login Failures                          | This OM measures the total number of failed HLR provisioning system login attempts.                                                                                                                               |
| Accumulation OM | SLR SMI Totals, Low Congestion                          | This OM measures the total number of times that the low level congestion state was entered.                                                                                                                       |
| Accumulation OM | SLR SMI Totals, Medium Congestion                       | This OM measures the total number of times that the medium level congestion state was entered.                                                                                                                    |
| Accumulation OM | SLR SMI Totals, Messages Failed Authentication          | This OM measures the total number of received messages from the HLR provisioning system that failed authentication of the retrieved RN against an associated GTT entry with an RN matching the retrieved value.   |
| Accumulation OM | SLR SMI Totals, Messages Invalid                        | This OM measures the total number of invalid messages received from the HLR provisioning system.                                                                                                                  |
| Accumulation OM | SLR SMI Totals, Messages Passed Authentication          | This OM measures the total number of received messages from the HLR provisioning system that successfully authenticated the retrieved RN against an associated GTT entry with an RN matching the retrieved value. |
| Accumulation OM | SLR SMI Totals, Messages Received                       | This OM measures the total number of messages received from the HLR provisioning system.                                                                                                                          |
| Accumulation OM | SLR SMI Totals, Messages Rejected                       | This OM measures the total number of received messages from the HLR provisioning system that were rejected.                                                                                                       |
| Accumulation OM | Special Study Totals, MSUs Received Count               | This OM measures the number of incoming MSUs acknowledged on the specified linkset with the specified OPC/DPC/SIO combination.                                                                                    |
| Accumulation OM | Special Study Totals, MSUs Transmitted Count            | This OM measures the number of outgoing MSUs successfully transmitted to the far end on the specified linkset with the specified OPC/DPC/SIO combination.                                                         |

|                 |                                                            |                                                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accumulation OM | Special Study Totals, Octets Received Count                | This OM measures the total number of MSU octets received on a specified linkset with the specified OPC/DPC/SIO combination, including the octets removed in MTP Level 2 processing.                                                                          |
| Accumulation OM | Special Study Totals, Octets Transmitted Count             | This OM measures the total number of MSU octets transmitted on the specified linkset with the specified OPC/DPC/SIO combination, including those octets that were added in MTP Level 2 processing.                                                           |
| Accumulation OM | System Node State, Disabled, Locked Duration               | This OM measures the number of seconds that a specific RTC, CC, or application system node is disabled and locked.                                                                                                                                           |
| Accumulation OM | System Node State, Disabled, Unlocked Duration             | This OM measures the number of seconds that a specific RTC, CC, or application system node is disabled and unlocked.                                                                                                                                         |
| Accumulation OM | System Node State, Enabled, Locked Duration                | This OM measures the number of seconds that a specific RTC, CC, or application system node is enabled and locked.                                                                                                                                            |
| Accumulation OM | System Node State, Enabled, Unlocked Duration              | This OM measures the number of seconds that a specific RTC, CC, or application system node is enabled and unlocked.                                                                                                                                          |
| Accumulation OM | System Node State, Locked, Off-line Duration               | This OM measures the number of seconds that a specific RTC, CC, or application system node is locked and off-line.                                                                                                                                           |
| Accumulation OM | System Totals, No Route MSU Discard Count                  | This OM measures the number of MSUs discarded due to routing failure of various causes (for example, an inaccessible DPC).                                                                                                                                   |
| Accumulation OM | Task Management, Idle Task Duration                        | This OM measures the number of milliseconds spent in idle time.                                                                                                                                                                                              |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No AS for OPC/CIC | This OM measures the number of TUP messages discarded as a result of not being able to find a valid AS for a given OPC/CIC.                                                                                                                                  |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No OPC/CIC Data   | This OM measures the number of TUP and BTUP messages discarded as a result of missing database entry for a given OPC or OPC/CIC.                                                                                                                             |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No Path           | This OM measures the number of TUP and BTUP messages discarded as a result of not being able to find an inservice path to a given AS.                                                                                                                        |
| Accumulation OM | TUP Received Message Counts, B/TUP Error No Route          | This OM measures the number of TUP messages discarded as a result of not being able to find a route to a given AS.                                                                                                                                           |
| Accumulation OM | TUP Received Message Counts, BTUP Call P Received Count    | This OM measures the number of BTUP call processing messages received from the SS7 Network.                                                                                                                                                                  |
| Accumulation OM | TUP Received Message Counts, BTUP Maint Received Count     | This OM measures the number of BTUP maintenance messages received from the SS7 Network.                                                                                                                                                                      |
| Accumulation OM | TUP Received Message Counts, TUP Call P Received Count     | This OM measures the number of TUP call processing messages received from the SS7 Network.                                                                                                                                                                   |
| Accumulation OM | TUP Received Message Counts, TUP Maint Received Count      | This OM measures the number of TUP maintenance messages received from the SS7 Network.                                                                                                                                                                       |
| Accumulation OM | TUP Received Message Counts, Wrong NE Received Count       | This OM measures the number of TUP messages discarded as a result of not receiving the message for a SG Network Element                                                                                                                                      |
| Accumulation OM | UDP, Full Socket Count                                     | This OM measures the number of counts that the udpstat full_socket variable has changed in the om period.                                                                                                                                                    |
| Maximum OM      | Link Traffic, Link utilization                             | This OM provides percentage of link utilization. For LSL it is calculated in erlangs while for HSL it is calculated as percentage of processor utilization.                                                                                                  |
| Maximum OM      | NP Database Totals, Max Average Update Rate                | This OM measures the highest update rate (in updates per second) averaged over a 60 second period. i.e. total updates over the 60 second window divided by 60. If the number of updates received in the 60 second window is less than 60 , the OM will be 0. |

|            |                                                 |                                                                                                                                                                                                                                            |
|------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum OM | NP Transaction Mgmt Totals, TxMgr Percent Used  | This OM measures the maximum percentage of used transactions in the Transaction Management application.                                                                                                                                    |
| Maximum OM | SLR Database Totals, Max. Update Rate           | This OM measures the highest update rate (in updates per second) during any 60 second period                                                                                                                                               |
| No Action  | System Node State, Percentage Enabled           | This OM measures the percentage of time that a specific RTC, CC, or application system node is enabled, or busy (for the Processor Utilization OM, GR-82-CORE section 6.4.5, item 10). The value for this OM ranges from 0 to 100 percent. |
| No Action  | Task Management, Collection Period Duration     | This OM measures the total number of milliseconds for an OM collection period. This OM can be used to calculate the percentage of use for all the other Task Management OMs.                                                               |
| No action  | Task Management, Level 0 Priority Task Duration | This OM measures the number of milliseconds spent in Level 0 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 1 Priority Task Duration | This OM measures the number of milliseconds spent in Level 1 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 2 Priority Task Duration | This OM measures the number of milliseconds spent in Level 2 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 3 Priority Task Duration | This OM measures the number of milliseconds spent in Level 3 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 4 Priority Task Duration | This OM measures the number of milliseconds spent in Level 4 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 5 Priority Task Duration | This OM measures the number of milliseconds spent in Level 5 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 6 Priority Task Duration | This OM measures the number of milliseconds spent in Level 6 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 7 Priority Task Duration | This OM measures the number of milliseconds spent in Level 7 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 8 Priority Task Duration | This OM measures the number of milliseconds spent in Level 8 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, Level 9 Priority Task Duration | This OM measures the number of milliseconds spent in Level 9 priority task(s).                                                                                                                                                             |
| No Action  | Task Management, OS System Tasks Duration       | This OM measures the number of milliseconds spent in VxWorks OS tasks.                                                                                                                                                                     |

## Appendix D: MG9000 Reported Alarms, Event Logs, Audit Logs

Appendix D. ISO/IEC JTC1/SC42 N15700, Part 1: PLN-07-QSS Standard 01.02 August 2007

|                                                    |         |                       |               |                                                                                                                                                                                                                                               |   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     |      |
|----------------------------------------------------|---------|-----------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| nLineFault<br>(NORTEL-UEMG-<br>LINE-MIB)           | SNLF367 | bpEndAlarmFas         | Minor         | Status of the End Alarm Fuse                                                                                                                                                                                                                  | Y | yes | Full End Alarm Fuse at the BIP panel                                                                                                                                                                                                                                                                                                                                                                                                                              | Check fuse and replace if necessary                                                                                                                                                                 | SN65 |
|                                                    | SNLF368 | bpSignalDistribution1 | Indeterminate | BIP Signal Distribution Port 1                                                                                                                                                                                                                | N | yes | At the MS9000 EM enable this BIP                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     | SN64 |
|                                                    | SNLF369 | bpSignalDistribution2 | Indeterminate | BIP Signal Distribution Port 2                                                                                                                                                                                                                | N | yes | At the MS9000 EM enable this BIP                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     | SN64 |
|                                                    | SNLF370 | bpSignalDistribution3 | Indeterminate | BIP Signal Distribution Port 3                                                                                                                                                                                                                | N | yes | At the MS9000 EM enable this BIP                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     | SN64 |
|                                                    | SNLF371 | bpSignalDistribution4 | Indeterminate | BIP Signal Distribution Port 4                                                                                                                                                                                                                | N | yes | At the MS9000 EM enable this BIP                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     | SN64 |
|                                                    | SNLF372 | bpVisualCritical      | Indeterminate | BIP Visual Critical                                                                                                                                                                                                                           | N | yes | Generate any Critical Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                         | Clear all Critical Alarm on an MS9000 within the Frame                                                                                                                                              | SN64 |
|                                                    | SNLF373 | bpVisualMajor         | Indeterminate | BIP Visual Major                                                                                                                                                                                                                              | N | yes | Generate any Major Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all Major Alarm on an MS9000 within the Frame                                                                                                                                                 | SN64 |
|                                                    | SNLF374 | bpVisualMinor         | Indeterminate | BIP Visual Minor                                                                                                                                                                                                                              | N | yes | Generate any Minor Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all any Minor Alarm on an MS9000 within the Frame                                                                                                                                             | SN64 |
|                                                    | SNLF375 | bpAudibleCritical     | Indeterminate | BIP Audible Critical                                                                                                                                                                                                                          | N | yes | Generate any Critical Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                         | Clear all Critical Alarm on an MS9000 within the Frame                                                                                                                                              | SN64 |
|                                                    | SNLF376 | bpAudibleMajor        | Indeterminate | BIP Audible Major                                                                                                                                                                                                                             | N | yes | Generate any Major Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all any Major Alarm on an MS9000 within the Frame                                                                                                                                             | SN64 |
|                                                    | SNLF377 | bpAudibleMinor        | Indeterminate | BIP Audible Minor                                                                                                                                                                                                                             | N | yes | Generate any Minor Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all any Minor Alarm on an MS9000 within the Frame                                                                                                                                             | SN64 |
|                                                    | SNLF378 | bpAlarmCntrlLED       | Indeterminate | BIP Alarm Cntrl LED                                                                                                                                                                                                                           | N | yes | Engage Alarm Cntrl Off button on BIP panel                                                                                                                                                                                                                                                                                                                                                                                                                        | Disengage Alarm Cntrl Off button on BIP panel                                                                                                                                                       | SN64 |
|                                                    | SNLF379 | bpTalkBatteryFailsLED | Indeterminate | BIP Talk Battery Fails LED                                                                                                                                                                                                                    | N | yes | Remove (or Offline)Lock via EM TB A Filter card                                                                                                                                                                                                                                                                                                                                                                                                                   | Reinsert (or Unlock)Online via EM TB A Filtercard                                                                                                                                                   | SN64 |
|                                                    | SNLF380 | bpTalkBatteryFailsLED | Indeterminate | BIP Talk Battery Fails LED                                                                                                                                                                                                                    | N | yes | Remove (or Offline)Lock via EM TB B Filter card                                                                                                                                                                                                                                                                                                                                                                                                                   | Reinsert (or Unlock)Online via EM TB B Filtercard                                                                                                                                                   | SN64 |
|                                                    | SNLF381 | bpCriticalLEDBank     | Indeterminate | BIP Critical LED Bank                                                                                                                                                                                                                         | N | yes | Generate any Critical Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                         | Clear all Critical Alarm on an MS9000 within the Frame                                                                                                                                              | SN64 |
|                                                    | SNLF382 | bpMajorLEDBank        | Indeterminate | BIP Major LED Bank                                                                                                                                                                                                                            | N | yes | Generate any Major Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all any Major Alarm on an MS9000 within the Frame                                                                                                                                             | SN64 |
|                                                    | SNLF383 | bpMinorLEDBank        | Indeterminate | BIP Minor LED Bank                                                                                                                                                                                                                            | N | yes | Generate any Minor Alarm on an MS9000 within the Frame                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all any Minor Alarm on an MS9000 within the Frame                                                                                                                                             | SN64 |
|                                                    | SNLF384 | bpEnvCtrlLED          | Indeterminate | BIP Environmental Control Unit 1 LED                                                                                                                                                                                                          | N | yes | Remove Fan Cable                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Check Fan cable, loose, or replace fan                                                                                                                                                              | SN64 |
|                                                    | SNLF385 | bpEnvCtrlLED          | Indeterminate | BIP Environmental Control Unit 4 LED                                                                                                                                                                                                          | N | yes | Remove Fan Cable                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Check Fan cable, loose, or replace fan                                                                                                                                                              | SN64 |
|                                                    | SNLF386 | bpAlarmFailsLED       | Indeterminate | BIP Alarm Processor Card Fails LED                                                                                                                                                                                                            | N | yes | At EM Offline/Unlock the BIP Alarm Processor Card                                                                                                                                                                                                                                                                                                                                                                                                                 | At EM Online/Lock the BIP Alarm Processor Card                                                                                                                                                      | SN64 |
|                                                    | SNLF387 | bpAlarmFailsLED       | Indeterminate | BIP Alarm Processor Card Fails LED                                                                                                                                                                                                            | N | yes | Generate any BIP alarm                                                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all BIP alarm                                                                                                                                                                                 | SN64 |
|                                                    | SNLF388 | bpAlarmFailsLED       | Indeterminate | BIP Alarm Processor Card Fails LED                                                                                                                                                                                                            | N | yes | Generate any BIP alarm                                                                                                                                                                                                                                                                                                                                                                                                                                            | Clear all BIP alarm                                                                                                                                                                                 | SN64 |
|                                                    | SNLF389 | bpAlarmFailsLED       | Indeterminate | Presence of BIP's Alarm Relay Card LED                                                                                                                                                                                                        | N | yes | Remove BIP's Alarm Relay Card                                                                                                                                                                                                                                                                                                                                                                                                                                     | Install BIP's Alarm Relay Card                                                                                                                                                                      | SN65 |
|                                                    | SNLF390 | bpCurALED             | Indeterminate | Status of Current Sense Card A LED                                                                                                                                                                                                            | N | yes | At EM Offline/Unlock the BIP Current Sense Card A                                                                                                                                                                                                                                                                                                                                                                                                                 | At EM Online/Lock the BIP Current Sense Card A                                                                                                                                                      | SN65 |
|                                                    | SNLF391 | bpCurBLED             | Indeterminate | Status of Current Sense Card B LED                                                                                                                                                                                                            | N | yes | At EM Offline/Unlock the BIP Current Sense Card B                                                                                                                                                                                                                                                                                                                                                                                                                 | At EM Online/Lock the BIP Current Sense Card B                                                                                                                                                      | SN65 |
|                                                    | SNLF392 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF393 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF394 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF395 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF396 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF397 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF398 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF399 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF400 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF401 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF402 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF403 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF404 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF405 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF406 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF407 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF408 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF409 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF410 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF411 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF412 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF413 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF414 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF415 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF416 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF417 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF418 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF419 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
|                                                    | SNLF420 | bpCompOverV           | Indeterminate | Interrog to generate alarm if a card connectivity fail is detected                                                                                                                                                                            | N | yes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                     | SN67 |
| nLineFault<br>(NORTEL-UEMG-<br>LINE-MIB)           | SWLN001 | lineInFault           | Minor         | Line In Fault                                                                                                                                                                                                                                 | Y | yes | Requires test hardware.                                                                                                                                                                                                                                                                                                                                                                                                                                           | Perform Line Card diag and replace card if faulty.                                                                                                                                                  | SN64 |
|                                                    | SWLN002 | lineProtectorFault    | Minor         | Hazardous Voltage                                                                                                                                                                                                                             | Y | yes | Apply higher voltage across the loop. An alternative if to do the following: You can force a line to be in fault (hardware) via the software command on the active ip. (lineIntrusionSubtable). Do this on a WLC based linecard circuit.<br><br>ITP (3 12) dBm subtable 2 31<br>Sub 2 - Circuit 31                                                                                                                                                                | Remove voltage. Perform Line Card Diag and Replace card if faulty.                                                                                                                                  | SN64 |
|                                                    | SWLN003 | lineBattlingState     | Minor         | Line in Battling state                                                                                                                                                                                                                        | Y | yes | Requires test gear to generate this alarm condition. An alternative if to do the following: You can force a line to be in fault (hardware) via the software command on the active ip. (lineIntrusionSubtable). Do this on a WLC based linecard circuit.<br><br>ITP (3 12) dBm subtable 2 31<br>Sub 2 - Circuit 31                                                                                                                                                 | Perform Line Card diag and replace card if faulty.                                                                                                                                                  | SN64 |
|                                                    | SWLN004 | lineBattlingState     | Minor         | Line in Battling state                                                                                                                                                                                                                        | Y | yes | Requires test gear to generate this alarm condition. An alternative if to do the following: You can force a line to be in fault (hardware) via the software command on the active ip. (lineIntrusionSubtable). Do this on a WLC based linecard circuit.<br><br>ITP (3 12) dBm subtable 2 31<br>Sub 2 - Circuit 31                                                                                                                                                 | Perform Line Card diag and replace card if faulty.                                                                                                                                                  | SN64 |
| nModemFault<br>(NORTEL-UEMG-<br>DSL-MIB)           | XDSL301 | isLATIC               | Minor         | Loss of signal - Local modem                                                                                                                                                                                                                  | N | yes | At the DSL line card pull the cable connector                                                                                                                                                                                                                                                                                                                                                                                                                     | See isLATIC                                                                                                                                                                                         | SN64 |
|                                                    | XDSL302 | isLATIC               | Minor         | Loss of frame - Local modem                                                                                                                                                                                                                   | N | yes | Utilize the LASHOST PC program to generate faults. A notebook PC is connected directly to the line card via a serial cable and RS232-TTL converter                                                                                                                                                                                                                                                                                                                | See isLATIC                                                                                                                                                                                         | SN64 |
|                                                    | XDSL303 | isLATIC               | Critical      | Loss of Power - Local modem                                                                                                                                                                                                                   | N | yes | Utilize the LASHOST PC program to generate faults. A notebook PC is connected directly to the line card via a serial cable and RS232-TTL converter                                                                                                                                                                                                                                                                                                                | Reset and/or reset line card. Investigate shelf/linecard power supplies.                                                                                                                            | SN64 |
|                                                    | XDSL304 | isLATIC               | Minor         | Loss of link - Local modem                                                                                                                                                                                                                    | N | yes | At the DSL line card pull the cable connector                                                                                                                                                                                                                                                                                                                                                                                                                     | Generally indicates the CPE has been powered off. If customer complains, it may indicate loop impairment or faulty modem. Check subscriber connector to line card.                                  | SN64 |
|                                                    | XDSL305 | isLATIC               | Minor         | Loss of signal - Remote modem                                                                                                                                                                                                                 | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | See isLATIC                                                                                                                                                                                         | SN64 |
|                                                    | XDSL306 | isLATIC               | Minor         | Loss of frame - Remote modem                                                                                                                                                                                                                  | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | See isLATIC                                                                                                                                                                                         | SN64 |
|                                                    | XDSL307 | isLATIC               | Minor         | Loss of power - Remote modem                                                                                                                                                                                                                  | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | None. This signifies a CPE Disconnect from the remote modem (normal power-off condition)                                                                                                            | SN64 |
|                                                    | XDSL308 | isLATIC               | Minor         | Loss of link - Remote modem                                                                                                                                                                                                                   | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | See isLATIC                                                                                                                                                                                         | SN64 |
|                                                    | XDSL309 | isLATICPresent        | Minor         | No remote modem present                                                                                                                                                                                                                       | N | yes | At the DSL line card pull the cable connector (wait a minute or two)                                                                                                                                                                                                                                                                                                                                                                                              | If persistent, changing/provisioning parameters of the circuit may improve immunity to loop impairments. Replacing the remote modem or linecard may also correct the problem.                       | SN64 |
|                                                    | XDSL310 | isLATIC               | Critical      | Local modem clock failure                                                                                                                                                                                                                     | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | same as above                                                                                                                                                                                       | SN64 |
|                                                    | XDSL311 | isLATIC               | Critical      | Local modem clock failure                                                                                                                                                                                                                     | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | same as above                                                                                                                                                                                       | SN64 |
|                                                    | XDSL312 | isLATIC               | Critical      | Local modem clock failure                                                                                                                                                                                                                     | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | same as above                                                                                                                                                                                       | SN64 |
| nBandwidthFault<br>(NORTEL-UEMG-<br>BANDWIDTH-MIB) | XDSL313 | isLATIC               | Critical      | ATM traffic dropped at WAC - upstream                                                                                                                                                                                                         | N | yes | Using an ATM test set (ADTECH) inject this type of fault                                                                                                                                                                                                                                                                                                                                                                                                          | If persistent, reset and/or replace the linecard. If still not clear, replace service modem and/or linecard.                                                                                        | SN64 |
|                                                    | XDSL314 | isLATIC               | Critical      | Loss of sync of ATM cells - upstream                                                                                                                                                                                                          | N | yes | Using an ATM test set (ADTECH) inject this type of fault                                                                                                                                                                                                                                                                                                                                                                                                          | If persistent, reset and/or replace the linecard. If still not clear, replace service modem and/or linecard.                                                                                        | SN64 |
|                                                    | XDSL315 | isLATIC               | Critical      | Loss of sync of ATM cells - downstream                                                                                                                                                                                                        | N | yes | Using an ATM test set (ADTECH) inject this type of fault                                                                                                                                                                                                                                                                                                                                                                                                          | same as above                                                                                                                                                                                       | SN64 |
|                                                    | XDSL316 | isLATIC               | Critical      | Local modem critical failure - not responding in normal mode, download failure or message completed                                                                                                                                           | N | yes | Using an ACSL Modem test set inject this type of fault.                                                                                                                                                                                                                                                                                                                                                                                                           | See vspHnemo                                                                                                                                                                                        | SN64 |
|                                                    | XDSL317 | isLATIC               | Critical      | General HW fault indication - circuit                                                                                                                                                                                                         | N | yes | Utilize the LASHOST PC program to generate faults. A notebook PC is connected directly to the line card via a serial cable and RS232-TTL converter                                                                                                                                                                                                                                                                                                                | Replace linecard.                                                                                                                                                                                   | SN64 |
|                                                    | EW300   | isLATIC               | Warning       | Reserved bandwidth used on the indicated shelf has exceeded the Bandwidth Congestion Threshold                                                                                                                                                | N | yes | At EM (Bandwidth Management view) set this threshold to a very low value. Generate enough traffic on the shelf (including PLCA) to exceed the threshold.                                                                                                                                                                                                                                                                                                          | Alarm is cleared when reserved bandwidth on the shelf is 10% below the Bandwidth Congestion Threshold. Increase threshold if to decrease the number of active calls on the shelf, or take no action | SN64 |
|                                                    | EW301   | isLATIC               | Warning       | This alarm is generated when reserved bandwidth use on the network interface has exceeded the Bandwidth Congestion Threshold. The alarm is cleared when reserved bandwidth on the network interface is 10% less than the threshold.           | N | yes | At EM (Bandwidth Management view) set this threshold to a very low value. Generate enough traffic on the MS9000 (including PLCA) to exceed the threshold.                                                                                                                                                                                                                                                                                                         | The alarm is cleared when reserved bandwidth on the network interface is 10% less than the threshold.                                                                                               | SN64 |
|                                                    | EW302   | isLATIC               | Warning       | This alarm is generated when reserved bandwidth dedicated to switched lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for | N | yes | At EM (Bandwidth Management view) set this threshold to a very low value. Generate enough SLA traffic on the MS9000 to exceed the threshold.                                                                                                                                                                                                                                                                                                                      | The alarm is cleared when reserved Switched lines bandwidth on the network interface is 10% less than the threshold.                                                                                | SN64 |
|                                                    | EW304   | isLATIC               | Warning       | Overall Cell Queue Congestion Alarm. Overall atm cell queue is at least 90% full                                                                                                                                                              | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when the overall cell queue fill is less than 80% full                                                                                                                             | SN64 |
|                                                    | EW305   | isLATIC               | Warning       | CEB Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                                    | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
|                                                    | EW306   | isLATIC               | Warning       | RT-VBR Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                                 | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
| nClockSyncFault<br>(NORTEL-UEMG-<br>CLOCKSYNC-MIB) | EW307   | isLATIC               | Warning       | NRT-VBR Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                                | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
|                                                    | EW308   | isLATIC               | Warning       | UBR Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                                    | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
|                                                    | EW309   | isLATIC               | Warning       | UBR PLUS Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                               | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
|                                                    | EW310   | isLATIC               | Warning       | CONTROL Channel Cell Queue Congestion Alarm. Alm cell queue for this service type is at least 90% full                                                                                                                                        | N | yes | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following Defeat command. To do this "off" to SHMP and use the "twelvevent" command with the "vlabatic" option                                                                                                                                                                                                | Alarm is cleared when this service type cell queue is less than 80% full                                                                                                                            | SN64 |
|                                                    | EW311   | isLATIC               | Warning       | This alarm is generated when reserved bandwidth dedicated to AB lines connections on the network interface has exceeded the Bandwidth Congestion Threshold with respect to the amount of bandwidth configured the network interface for       | N | yes | At EM (Bandwidth Management view) set this threshold to a very low value. Generate enough AB traffic on MS9000 to exceed the threshold.                                                                                                                                                                                                                                                                                                                           | The alarm is cleared when reserved AB lines bandwidth on the network interface is 10% less than the threshold.                                                                                      | SN65 |
|                                                    | CLK301  | isLATIC               | Minor         | Phase PLD (alpha 7046) detected a minimum phase difference greater than eight nano seconds. (FRAME PULSES BETWEEN ITPs DO NOT MATCH)                                                                                                          | Y | yes | To set it --> 1. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a092 0x0000<br>2. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a090 0x0000<br>To clear it --> 1. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a092 0x0000<br>2. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a090 0x0000                                                                                                                                                                            |                                                                                                                                                                                                     | SN65 |
|                                                    | CLK302  | isLATIC               | Major         | Frame pulse alignment did not get established with the active card - should occur on the inactive card and only FRAME PULSES BETWEEN ITP DO NOT                                                                                               | Y | yes | Put the Main ITP card                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     | SN65 |
|                                                    | CLK303  | isLATIC               | Major         | The high and low levels of the BYNC PLD clock are not logging (OUTPUT OF FREQUENCY PAL HAS BEEN LOV)                                                                                                                                          | Y | yes | The alarm cannot be generated by a test set or manual action. These are HW or SW faults. The easiest way to produce them is to use the MS9000 FITS Defeat commands.<br><br>To set it --> 1. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a092 0x0000<br>2. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a090 0x0000<br>To clear it --> 1. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a092 0x0000<br>2. ./halviewe 0x1230a08a 0x1324./halviewe 0x1230a090 0x0000 |                                                                                                                                                                                                     | SN65 |
|                                                    | CLK304  | isLATIC               | Minor         | The high and low levels of the mda clock are not                                                                                                                                                                                              | Y | yes | Put the Main ITP card                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     | SN65 |





|                                       |                            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------|----------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| noNodeFault (NORTEL)<br>UEMS NODE-MTE | ITXExternalRrc             | Minor    | EXTERNAL: DCC Slot 10 serial device<br>EXTERNAL: DCC Slot 11 serial device<br>EXTERNAL: ITP attached to port [0-7]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | N | yes | Same as Processor fault                  | Check the ITP to see if it has alarms. If so, handle them first. If no alarms on ITP or only EXTERNAL alarms on the ITP, replace the cable between ITP and ITP. If the alarm is for a DCC card, fix any DCC alarms first. Repeat ITP card, see if problem clears. Repeat DCC card, see if problem clears.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXPorRrc                  | Minor    | Serial Device 0 - to DCC card in slot 10<br>Serial Device 1 - to DCC card in slot 11<br>Serial Device 4 - to ITP card<br>Serial Device 5 - to ITP card<br>Serial Device 6 - to ITP card<br>Serial Device 7 - to ITP card<br>Serial Device 8 - to ITP card<br>Serial Device 9 - to ITP card<br>Serial Device 10 - to ITP card<br>Serial Device 11 - to ITP card<br>Serial Device 12 - to ITP card<br>Serial Device 13 - to ITP card<br>Serial Device 14 - to ITP card<br>Serial Device 15 - to ITP card<br>Serial Device 16 - to ITP card<br>Serial Device 17 - to ITP card<br>Serial Device 18 - to ITP card<br>Serial Device 19 - to ITP card                                                                                                                                                              | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN04   | 30 NE 318 10113 TBL M90K-Frame000.Slot2.Slot12<br>Location: 1-RMK-Frame000.Slot2.Slot12<br>Notification: IE 850<br>State: not acknowledged<br>Category: Equipment Alarm<br>Cause: Equipment Malfunction<br>Time: Apr 24 14:59:40 2003<br>Component ID: CardName=shd2.slot12.ITP<br>Specific Problem: Node Fault - Proxy fault<br>Description: Card communication failure - Proxy mode activated<br>Site: P3 RP05 Bay Jd<br>FFFF FF FF FFFF FFFF |
|                                       | ITXLinkInRrc               | Major    | Link 0 to 7 to ITP pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXNetForwarderRrc         | Major    | Net side cell forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y | yes | Same as Processor fault                  | If these types of alarms appear in conjunction with external faults, deal with the external faults first. If they appear alone, treat them as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXLinkForwarderRrc        | Major    | Link side cell forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes | Same as Processor fault                  | If these types of alarms appear in conjunction with external faults, deal with the external faults first. If they appear alone, treat them as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCLineExternalRrc          | Minor    | EXTERNAL: Master Shelf ITP slot 13<br>EXTERNAL: Master Shelf ITP slot 12<br>EXTERNAL: Main DCC<br>EXTERNAL: Card in slot [2-9, 14-21]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N | yes | Same as Processor fault                  | Check the far end slot to see if it has alarms. If so, handle them first. If no alarms on far end slot, or only EXTERNAL alarms on the far end slot, there is a backplane issue between the far end card and DCC. Repeat other card in question, see if problem clears. Repeat DCC card, see if problem clears.                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCLinePortRrc              | Minor    | Serial Device 0 - to Master Shelf ITP Slot 13<br>Serial Device 1 - to Master Shelf ITP Slot 12<br>Serial Device 3 - Link to Main DCC card<br>Serial Device 4 - to card in slot 2<br>Serial Device 5 - to card in slot 6<br>Serial Device 6 - to card in slot 14<br>Serial Device 7 - to card in slot 18<br>Serial Device 8 - to card in slot 3<br>Serial Device 9 - to card in slot 7<br>Serial Device 10 - to card in slot 15<br>Serial Device 11 - to card in slot 19<br>Serial Device 12 - to card in slot 4<br>Serial Device 13 - to card in slot 8<br>Serial Device 14 - to card in slot 16<br>Serial Device 15 - to card in slot 20<br>Serial Device 16 - to card in slot 5<br>Serial Device 17 - to card in slot 9<br>Serial Device 18 - to card in slot 17<br>Serial Device 19 - to card in slot 21 | Y | yes | Same as Processor fault                  | If these types of alarms appear in conjunction with external faults, deal with the external faults first. If they appear alone, treat them as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCQuadrantControlRrc       | Major    | Group of Serial Ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABNetworkExternalRrc       | Minor    | EXTERNAL: DCC slot 10 or 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N | yes | Same as Processor fault                  | Check the DCC to see if it has alarms. If so, handle them first. If no alarms on DCC, or only EXTERNAL alarms on the DCC, there is a backplane issue between the AB and DCC. Repeat AB card, see if problem clears. Repeat DCC card, see if problem clears.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABNetworkPortRrc           | Minor    | Serial Device 0 - to DCC Card in slot 10<br>Serial Device 1 - to DCC Card in slot 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Y | yes | Same as Processor fault                  | If these types of alarms appear in conjunction with external faults, deal with the external faults first. If they appear alone, treat them as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NE305                                 | ABNetworkInRrc             | Critical | Both lines to DCC Card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | GLANRrc                    | minor    | GLANLink to hub on Active ITP card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Y | yes | Same as Processor fault                  | The GLAN hub is located on the active ITP in the shelf where the fault appears. First by swatching ITPs and re-run diag on the affected card. If that fixes the problem, replace the newly inactive ITP, otherwise treat the fault as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPGLANHubRrc              | Critical | GLANHub, communicates with other cards on shelf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Y | yes | Same as Processor fault                  | The GLAN hub is located on the active ITP in the shelf where the fault appears. First by swatching ITPs and re-run diag on the affected card. If that fixes the problem, replace the newly inactive ITP, otherwise treat the fault as a card fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABLinkSideRrc              | Major    | DS12 port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Y | yes | Same as Processor fault                  | - Verify UEMS is in service<br>- Verify the AB card is unlocked<br>- Verify this AB card is not disabled, if so, solve other issues causing this card to be disabled.<br>- Check DS12 fibers, (tight check, clean fibers, verify fibers are present)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABLinkLocalRrc             | Minor    | XPM link, or DS12 connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABLinkACRrc                | Major    | All DS12 channels closed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes | Put cable to XPM                         | - Verify UEMS is in service<br>- Verify the AB card is unlocked<br>- Verify any AB cards not disabled, if so, solve other issues causing this card to be disabled.<br>- Check DS12 fibers, (tight check, clean fibers, verify fibers are present)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCWanBISOMP.Rrc            | Major    | Inband Messaging OMP Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Y | yes | Same as Processor fault                  | - Check for alarms on shelf controller<br>- Use LCI to verify that AESA provisioning information is correct.<br>- If the problem persists, call your next level of support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCWanBISCC.Rrc             | Major    | Inband Messaging CC Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCWanBISB.Rrc              | Major    | Shardlet B Shared Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCWanBISD12.Rrc            | Major    | Inband Messaging DS12 Link [0,1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Y | yes | Same as Processor fault                  | same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NE306                                 | ITPclockSyncRrc            | Critical | Clock Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Y | yes | Same as Processor fault                  | - If fault is on both ITPs<br>1) Verify Clock source is connected.<br>2) Wait up to 2 minutes for the clock audit to have a chance to detect clock source.<br>3) If fault persists, lock/unlock to restart the card.<br>4) If fault persists, call next level of support.<br>- If fault is on one ITP<br>1) Verify Clock source is connected.<br>2) Wait up to 2 minutes for the clock audit to have a chance to detect clock source.<br>3) If fault persists, lock/unlock to restart the card.<br>4) Replace the faulty card.                                                                                                                                                                                                                                            | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPClockPhaseLockRrc       | Major    | Clock Sync: Loss of Phase Lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPClockTempPhaseLockRrc   | Major    | Clock Sync: Loss of Temp Phase Lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPClockMnClockRrc         | Major    | Clock Sync: Loss of Mn Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPClockDataRrc            | Major    | Clock Sync: Loss of Data Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPClockOutputRrc          | Major    | Clock Sync: Loss of Clock Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncDataRrc             | Minor    | Clock Sync: Single Reference Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncOutputRrc           | Major    | Clock Sync: All Reference Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncClockRrc            | Minor    | Clock Sync: Loss of Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncCOF.Rrc             | Minor    | Clock Sync: Out of Frame                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NE307                                 | ITPclockSyncRrc            | variable | Clock Sync: Clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncDataRrc             | variable | Clock Sync: Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPsyncClockRrc            | Minor    | Clock Sync: Reference Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Y | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ICBnetWdrRrc               | Major    | BTIS Forwarder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ICBnetRrc                  | Minor    | BTIS clock reference (A or B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N | yes | Same as Processor fault                  | same as Clock Sync above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SN05.2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXFrameRrc                | Major    | Frame - timing synchronization device                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Y | yes | Same as Processor fault                  | - If fault is on both ITPs<br>1) Verify Clock source is connected.<br>2) Wait up to 2 minutes for the clock audit to have a chance to detect clock source.<br>3) If fault persists, lock/unlock to restart the card.<br>4) If fault persists, call next level of support.<br>- If fault is on one ITP<br>1) Verify Clock source is connected.<br>2) Wait up to 2 minutes for the clock audit to have a chance to detect clock source.<br>3) If fault persists, lock/unlock to restart the card.<br>4) Replace the faulty card.                                                                                                                                                                                                                                            | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXB1Rrc                   | Minor    | BTIS clock reference A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Y |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXB2Rrc                   | Minor    | BTIS clock reference B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Y |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXNetworkInRrc            | Minor    | Port 2 on serial device, port only used for diagnostics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCQuadrantControlRrc       | Minor    | Serial Port 0 - UNABLED due to ITP slot 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Y |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NE310                                 | SCQuadrantControlRrc       | Minor    | Serial Port 0 - UNABLED due to ITP slot 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Y |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCQuadrantControlRrc       | Warning  | Unused data stream in I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y | yes | Same as Processor fault                  | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCQuadrantControlRrc       | Warning  | Datal PWR (unused) Device for ports 10,5 or 18-19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N | yes | Same as Processor fault                  | No action required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCQuadrantControlRrc       | Warning  | Datal PWR (Unused) Port [0-19]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N | yes | Same as Processor fault                  | No action required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCTimeOfDayRrc             | minor    | Time of Day: Access to time server [6] failed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Y | yes | Same as Processor fault                  | Attempts to access the provisioned time server have failed.<br>- Verify the provisioned ip address of time server is correct<br>- Verify time server is operational and online.<br>- Use the LCI to re-submit the Time of day parameters, this forces immediate time server access.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITPCableRrc                | minor    | Cable configuration conflict                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Y | yes | Same as Processor fault                  | One of the cables to the ITPs has been connected in an unexpected way. Check to see if the cable on the two T1s match, and that the ITP ends of the cable are in the right ports.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ITXCableRrc                | Minor    | Cable configuration conflict, port [0 to 7]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Y | yes | Same as Processor fault                  | One of the cables to the ITPs has been connected in an unexpected way. Check to see if the cable on the two ITPs matches the mate ITP, and that the ITP ends of the cable are in the right ports.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | ABActivityCableRrc         | minor    | Activity control cable between ABi cards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes | Put activity cable between ABi card pair | The activity control cable is a small cable on the front of the ABi cards that is used for activity determination.<br>- Verify the cable is attached to both cards.<br>- Replace cable.<br>- If the fault persists, replace the inactive card.<br>- If the problem still persists, swap, replace newly inactive card.                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCiRrc                     | Minor    | Backplane Cross Connect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y | yes | Same as Processor fault                  | The carriers between the two DCC cards cannot communicate.<br>- Verify and fix any CARRIER alarms<br>- If seen on Active DCC<br>1) Restart the inactive DCC<br>2) If problem persists, replace inactive DCC<br>3) If problem persists, call next level of support<br>- If seen on inactive DCC<br>1) Restart the inactive DCC<br>2) If problem persists, swap DCC cards. This will cause carriers to go down momentarily. Be sure to call next level to verify it is permissible to swap.<br>3) Restart the newly inactive DCC card.<br>4) If problem persists, replace the newly inactive card.<br>5) If problem persists, call next level of support.<br>- If both DCCs have this fault, there is a backplane problem in the shelf. Replace the entire shelf backplane. | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | SCLinksRrc                 | Major    | Resource Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Y | yes | Same as Processor fault                  | Some of the carriers are not providing bandwidth.<br>- Verify and fix any CARRIER alarms.<br>- If problem persists, restart the card.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NE316                                 | downstreamFIFO             | Major    | ADSL: Downstream FIFO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Y | yes |                                          | Throttle back the downstream data from the SCO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | downstreamREC              | Major    | ADSL: Downstream REC error                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Y | yes |                                          | ?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | atm60Fault                 | Critical | ADSL: ATM60 fault                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Y | yes |                                          | Restart linecard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | upstream buffer overflow   | Critical | ADSL: Upstream buffer overflow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Y | yes |                                          | Throttle back the upstream data rate on the linecard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | downstream buffer overflow | Critical | ADSL: Downstream buffer overflow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Y | yes |                                          | Throttle back the downstream data to the linecard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | atm device timeout         | Critical | ADSL: ATM Device timeout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Y | yes |                                          | Restart linecard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | clock recovery             | Critical | ADSL: Loss of clock recovery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Y | yes |                                          | Restart linecard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       |                            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       |                            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       |                            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                           |         |                               |             |                                                                                                                                                                                                                                                                                                     |     |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------|---------|-------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | NE317   | dis.bkup                      | Critical    | ADSL DRP Lockup                                                                                                                                                                                                                                                                                     | Y   | yes       |                                                                                                                                                                                                    | Reload DSPs                                                                                                                                                                                                                                                                                                                                                                     | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | CallMacMinor                  | Minor       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | CallMacMinor                  | Minor       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | CallMacMinor                  | Minor       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | CallMacMinor                  | Minor       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | NE318   | Major                         | Major       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | Major                         | Major       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | Major                         | Major       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | Major                         | Major       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           |         | Major                         | Major       | Shelf IOT Card Alarm                                                                                                                                                                                                                                                                                | Y   |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| MG9000 Manager Reported Faults            | MGEM000 | ErrOutUnavailable             | Major       | Generated when MG9000 EM is not able to make connection to the Element Manager Database                                                                                                                                                                                                             | Y   | Yes       | 1. Make sure that persistence is turned on.2. Make the database unavailable.3. Perform some action (address/charge) on a VMG or termination.3. Check the alarm browser for the alarm being SET.    |                                                                                                                                                                                                                                                                                                                                                                                 | SN04   | C57 MGEM001 9232 TBL MG9K CorrelLostToME Location: 2-HSRK Notification ID: 817 State: not acknowledged Category: Communication Alarm Cause: Communications Subsystem Failure Time: Apr 24 10:57:05 2003 Component ID: MG9K-EM Core Network Specific Problem: Core Channel Down - Communication Lost to the                                                                                                        | MEH12_108BE *** MGEM001 APR24 10:57:05 9232 TBL MG9K CorrelLostToME Location: 2-HSRK Notification ID: 817 State: not acknowledged Category: Communication Alarm Cause: Communications Subsystem Failure Time: Apr 24 10:57:05 2003 Component ID: MG9K-EM Core Network Specific Problem: Core Channel Down - Communication Lost to the                                                                            |
|                                           | MGEM001 | CorrelLostToME                | Critical    | Generated when the MG9000 EM loses SNMP communication with MG9000                                                                                                                                                                                                                                   | Y   | Yes       | Break connection between the GW and the MG9K EM server. This can be done by taking the GWs OCS OOS at the PP15000, or disabling the Ethernet connect to the MG9K EM Server (disconnect the cable). | EM will periodically retry to establish communication to the Gateway. Check the following:<br>1. PING the IP address of the Shelf Controller to validate IP connectivity.<br>2. PING the IP address of the OCS CPOA port to validate IP connectivity.<br>3. Check connectivity between EM and MG.<br>4. Check for status of the OCS card and Node Maintenance task.             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGEM002 | InvalidEMPAAddress            | Major       | Generated when the MG9000 Manager has added an re MG9000 and tries to discover the NE. It will check the MG9000 EM IP address provisioned at the MG9000 and if it is incorrect will raise this alarm                                                                                                | Y   | Yes       | At the MG9000 LCI test the IP address of the MG9000 Manager to an incorrect value. At the MG9000 Manager do a manual discovery of that MG9000.                                                     | At the MG9000 LCI check the IP address of the MG9000 Manager and correct if necessary.                                                                                                                                                                                                                                                                                          | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGEM003 | AlarmBeingThrottled           | Critical    | Generated when the MG9000 sends too many alarms within a 5 second window. When this happens the MG9000 Manager will request this particular MG9000 stop sending Alarms and display this particular alarm. This condition will clear when the number of alarm within 5 sec falls below a set number. | Y   | yes       | At the MG9000 using DSHELL use the alarm generation utility an generate at least 10 alarm a second for at least 10 seconds                                                                         | At the MG9000 LCI check the IP address of the MG9000 Manager and correct if necessary.                                                                                                                                                                                                                                                                                          | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGEM004 | MG9K AlarmAuditFailed         | Critical    | Alarm Audit Failed - The alarm audit on the GW failed                                                                                                                                                                                                                                               |     | yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (MEDIA_GATEWAY_MIB)                       | MGCS300 | mgdByInvalidControllerAddress |             | Indicates that a message was received from a controller that did not match any valid controller IP Address                                                                                                                                                                                          | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGCS301 | mgdByInvalidTerminationID     |             | Indicates a mismatch of Termination ID                                                                                                                                                                                                                                                              | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGCS302 | mgdByInvalidPackageID         |             | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | MGCS303 | mgdByInvalidPackageID         |             | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN04   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nMtaFault (NORTEL_MG_MTA-MIB)             | TEST300 | mgdByInvalidTerminationID     |             | Indicates a mismatch of Termination ID                                                                                                                                                                                                                                                              | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | TEST301 | mgdByInvalidPackageID         |             | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | TEST302 | mgdByInvalidPackageID         |             | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | TEST303 | mgdByInvalidPackageID         |             | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | n/a | no        | N/A                                                                                                                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                             | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nMESAFAULT (NORTEL-UEMG-MEGACO-MIB)       | ESA900  | Entered ESA                   | Critical    | Communication between GWC and GW is lost. Entered ESA mode                                                                                                                                                                                                                                          | Y   | yes       | Break connection between the GW and the GWC when ESA is enabled. This can be done by taking the GWs OCS OOS at the PP15000, or disabling the Ethernet connect to the GWC (disconnect the cable).   | Using the Traceroute or Ping MG9000 Manager tool test the network communications path between the EM the the MG9K, and the EM and the GWC. Check OCS connection at the MG900, PP15000, and the SAFET Shelf Controller. Check the Ethernet connection at the GWC, PP8600, and SAFET Shelf Controller. Check the state of the DCC cards at the MG9000. Correct any problems found | SN05   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | ESA901  | nMESAActiveFailed             | Critical    | Shutdown load of ESA data from the CSK Core has failed                                                                                                                                                                                                                                              |     | yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | ESA902  | nMESAActiveFailed             | Critical    | Failed to set up FIFP connection; login failure - EM failed to push ESA to VMG                                                                                                                                                                                                                      |     |           |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nMmegacoFault (NORTEL-UEMG-MEGACO-MIB)    | VMG000  | VMG OOS                       | Critical    | Generated when Root Termination goes out of service (Communication between Gateway and GWC is lost and ESA is not enabled)                                                                                                                                                                          | Y   | yes       | Break connection between the GW and the GWC when ESA is disabled. This can be done by taking the GWs OCS OOS at the PP15000, or disabling the Ethernet connect to the GWC (disconnect the cable).  | Using the Traceroute or Ping MG9000 Manager tool test the network communications path between the EM the the MG9K, and the EM and the GWC. Check OCS connection at the MG900, PP15000, and the SAFET Shelf Controller. Check the Ethernet connection at the GWC, PP8600, and SAFET Shelf Controller. Check the state of the DCC cards at the MG9000. Correct any problems found | SN05   | C11 VMG 300 1723 TBL MG9K NMmegacoFault Location: 1-RM9K-Frame000.Shelf2 Slot12 Notification ID: 885 State: not acknowledged Category: Equipment Alarm Cause: Equipment Malfunction Time: Apr 24 15:11:34 2003 Component ID: CardFrame.shelf2.slot12.ITP Specific Problem: NMmegacoFault - Root Termination status change Description: Call Processing Out of Service. Site: PP-PP05 Bay_ID: FFFF FF FFF FFFF FFF | nMmegacoFault (NORTEL-UEMG-MEGACO-MIB) Location: 1-RM9K-Frame000.Shelf2 Slot12 Notification ID: 885 State: not acknowledged Category: Equipment Alarm Cause: Equipment Malfunction Time: Apr 24 15:11:34 2003 Component ID: CardFrame.shelf2.slot12.ITP Specific Problem: NMmegacoFault - Root Termination status change Description: Call Processing Out of Service. Site: PP-PP05 Bay_ID: FFFF FF FFF FFFF FFF |
|                                           | VMG001  | BadCalls                      | Minor       | QoS Alarm that is generated when the number of bad call reaches a certain threshold                                                                                                                                                                                                                 | N   | SLIP only | In the MG9000 EM set the QoS threshold to a low level. Using a "Packet Storm" or "Shuna" test set, inject errors on the OCS/STMT network interface on a particular active calls SVC                | Check GWC QoS collector for any QoS error patterns. Narrow down probable areas where errors could occur. Run test calls to narrow down further. If error is only on that one line there may be a card fault. If problem is in the network isolate problem area and correct.                                                                                                     | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| nMmegacoQosFault (NORTEL-UEMG-MEGACO-MIB) | VMG002  | PacketLoss                    | Minor       | QoS Alarm that is generated when the number of Packet Loss reaches a certain threshold                                                                                                                                                                                                              | N   | SLIP only | Same as above                                                                                                                                                                                      | Same as above                                                                                                                                                                                                                                                                                                                                                                   | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG003  | Jitter                        | Minor       | QoS Alarm that is generated when IP message jitter reaches a certain threshold                                                                                                                                                                                                                      | N   | SLIP only | Same as above                                                                                                                                                                                      | Same as above                                                                                                                                                                                                                                                                                                                                                                   | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG004  | Latency                       | Minor       | QoS Alarm that is generated when IP message Latency reaches a certain threshold                                                                                                                                                                                                                     | N   | SLIP only | Same as above                                                                                                                                                                                      | Same as above                                                                                                                                                                                                                                                                                                                                                                   | SN06   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG005  | mgdByInvalidTerminationID     | Critical    | Indicates a mismatch of Termination ID                                                                                                                                                                                                                                                              | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG006  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG007  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG008  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG009  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG010  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG011  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG012  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG013  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG014  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | VMG015  | mgdByInvalidPackageID         | Critical    | Indicates that a message was received from a controller that contained an event, signal, or description that was not recognized for the package                                                                                                                                                     | N   | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Performance (NORTEL-UEMG-PERFMON-MIB)     | OVL004  | Performance Degraded          | Minor/Major | Overload Detection Alarm that is generated whenever the MG9000 actually enters an overload condition.                                                                                                                                                                                               |     | Yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN06.2 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | OVL008  | nMMsgLinkFatal                | Critical    | An external messaging link has closed and cannot be re-established.                                                                                                                                                                                                                                 |     | yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BCTP (NORTEL-UEMG-RELMSGNO-MIB)           | OVL009  | nMMsgLinkSevDegraded          | Major       | Message loss is high enough such that the message link is in a degraded service state. For ASE, this must mean that some calls are failing and perhaps maintenance action are being (e.g. static data).                                                                                             |     | yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                           | OVL010  | nMMsgLinkDegraded             | Minor       | Message loss is high enough such that the system is starting to see performance degradation. Potentially, this could mean increased latency, reduced messaging through the system, buffer overflows, and perhaps heading toward congestion.                                                         |     | yes       |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                 | SN07   |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Supported in EM but not enabled at MG9000           |         |                                |                                                                                                                                                                                                                                                                                                                                                                         |                              |                    |                                                                                                                                                                                                                                                                          |              |                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------|---------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New or changed in SN07                              |         |                                |                                                                                                                                                                                                                                                                                                                                                                         |                              |                    |                                                                                                                                                                                                                                                                          |              |                                                                                                                                                                                                                                                                                                                    |
| MG9000 Reported Event LOGs                          |         |                                |                                                                                                                                                                                                                                                                                                                                                                         |                              |                    |                                                                                                                                                                                                                                                                          |              |                                                                                                                                                                                                                                                                                                                    |
| LOG Subsystem (MIB)                                 | LOG Id  | LOG Type                       | Description                                                                                                                                                                                                                                                                                                                                                             | SN06 VoA Telcordia Coverage? | Supported/ Enabled | Procedure To Generate LOG                                                                                                                                                                                                                                                | EM Supported | LOG Output Example                                                                                                                                                                                                                                                                                                 |
| ATM Event (NORTEL-UEMG-ATM-MIB)                     | VC800   | atmPvcPvcFailures-Trap         | Indicates that one or more PVCs or PVLCs on this interface has failed since the last atmPvcFailuresTrap was sent.                                                                                                                                                                                                                                                       | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | VC800   | rmAtmThreshold                 | Generated when an ATM interface stat exceeds the specified threshold.                                                                                                                                                                                                                                                                                                   | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | VC801   | noAtmStatVcThreshTrap          | Generated when the VC stat exceeds specified threshold.                                                                                                                                                                                                                                                                                                                 | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Data Audit Event                                    | MGAU800 | AuditLogNotification           | Generated my the MG9000 Manager when an Audit is started, stopped, a data mismatch was found between them MG9000 and the MG9000 Manager, or a communications failure occurred while the Audit was running                                                                                                                                                               | N                            | yes                | Clear the data from an ITP card, start the Audit, letting it run to completion.                                                                                                                                                                                          | SN05         |                                                                                                                                                                                                                                                                                                                    |
| Bandwidth Event (NORTEL-UEMG-BANDWIDTH-MIB)         | BW800   | nrBwSwitchFabricCongestion     | A nrBwSwitchFabricCongestion Notification is generated when one of the input cellQueues Cross the configured threshold percentage.                                                                                                                                                                                                                                      | N                            | yes                | This fault is very difficult to produce during normal operations with a test set or manual action. The best way to generate this fault is using the following <b>Dshell</b> command. To do this "cd" to SNMP and use the "bwevent" command with the "testfabric" option. | SN04         | NTL STD:<br>RTPS    BW800 JAN28 22:10:40 0462 THR MG9K BW Switch Fabric Congestion<br>NE Number: 19<br>NE Name: CO_19<br>PhysLoc: Ne.ne19<br>Bandwidth Switch Fabric Congestion Type: CBR Switch Fabric Congestion Bandwidth<br>Bandwidth Notification Value: 70.0 %<br>Bandwidth Current Total Queue Fill: 90.0 % |
|                                                     | BW801   | nrBwBandwUtilizationCongestion | A nrBwBandwUtilization Notification is generated when the total or d/s/d cell rates Cross the configured threshold percentage.                                                                                                                                                                                                                                          | N                            | yes                | Set the DSL threshold (at BW Manager GUI an EM) to a low level, generate data traffic on a number of DSL lines until the LOG appears.                                                                                                                                    | SN04         | SCC2:<br>10 BW 800 8936 THR MG9K BW Switch Fabric Congestion<br>NE Number: 19<br>NE Name: CO_19<br>PhysLoc: Ne.ne19<br>Bandwidth Switch Fabric Congestion Type: CBR Switch Fabric Congestion Bandwidth<br>Bandwidth Notification Value: 70.0 %<br>Bandwidth Current Total Queue Fill: 90.0 %                       |
| DS1 Carrier Event (NORTEL-UEMG-CARRIER-MIB)         | MGCA800 | dsx1LineStatus-Change          | Trap is sent when the value of an instance dsx1Line Status changes.                                                                                                                                                                                                                                                                                                     | N                            | yes                | Remove the DS1 cable and replace                                                                                                                                                                                                                                         | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGCA800 | apsTrapSwitchover              | Sent when the value of an instance of apsCircSwitchover increments.                                                                                                                                                                                                                                                                                                     | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGCA801 | apsTrapModeMis-match           | Sent when the value of an instance of apsStatusModeMismatch increments                                                                                                                                                                                                                                                                                                  | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGCA802 | apsProtSwitchRejectEvent       |                                                                                                                                                                                                                                                                                                                                                                         | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
| BIP Input/Output State Change (NORTEL-UEMG-SHF-MIB) | SHLF501 | nrShiftInputOutputOperStatus   | TRAP sent when any BIP Input/Output state change event occurs for an Input/Output with an alarm severity of Indeterminate.                                                                                                                                                                                                                                              | N                            | yes                | Change any BIP Input/Output Alarm Severity setting to indeterminate and then follow test procedure for that alarm.                                                                                                                                                       | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Test Event                                          | TEST600 | testComplete                   | Signifies that a test has completed for a particular entity.                                                                                                                                                                                                                                                                                                            | N                            | yes                | Run a Line test or Run a Line card Diag                                                                                                                                                                                                                                  | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Link Event                                          | LINK500 | linkDown                       | Signifies that the SNMPv2 entity has detected that the IOPerStatus object is about to enter the down state.                                                                                                                                                                                                                                                             | N                            | yes                | Take the ITP card pair Lock and Offline                                                                                                                                                                                                                                  | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | LINK501 | linkUp                         | Signifies that the SNMP entity has detected that the IOPerStatus object left the down state.                                                                                                                                                                                                                                                                            | N                            | yes                | Take the ITP card pair online and Unlocked                                                                                                                                                                                                                               | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Clock Sync Event (NORTEL-UEMG-CLOCKSYNC-MIB)        | CLK500  | ClockSyncChange                | A change has occurred for Clock Sync: timingModeChange (1), clockModeChange (2).                                                                                                                                                                                                                                                                                        | N                            | yes                | Remove the Colock source cable to the ITX card                                                                                                                                                                                                                           | SN04         |                                                                                                                                                                                                                                                                                                                    |
| SLoA Event                                          | SWL600  | nrMtaTrapConnectionStatus      | Sent when SNM indicates status of the connection                                                                                                                                                                                                                                                                                                                        | N                            | yes                | Put line under test                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
| MEGACO Event                                        | MGC500  | medGwyLinkStatus-Change        | Indicates that status of media gateway control link has changed.                                                                                                                                                                                                                                                                                                        | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGC501  | medGwyTermination-StatusChange | Sent when a termination changes Status.                                                                                                                                                                                                                                                                                                                                 | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
| SNMP Event                                          | SNMP600 | snmpEnableAuthen-Traps         | Indicates permission to generate authenticationFailure traps                                                                                                                                                                                                                                                                                                            | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | SNMP601 | coldStart                      | Signifies that the SNMP entity is reinitializing itself and its configuration may have been altered                                                                                                                                                                                                                                                                     | N                            | yes                | Initiate Coldstart from the MG9K LCI                                                                                                                                                                                                                                     | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | SNMP602 | warmStart                      | Signifies that the SNMP entity is reinitializing itself such that its configuration is unaltered.                                                                                                                                                                                                                                                                       | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Network Element Event (NORTEL-UEMG-NODE-MIB)        | NE500   | nrNodeSwact                    | Generated when the Node does a switch of activity.                                                                                                                                                                                                                                                                                                                      | N                            | yes                | SWAC the OC3 card pair                                                                                                                                                                                                                                                   | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE501   | nrNodeStateChange              | Generated when the Node changes state.                                                                                                                                                                                                                                                                                                                                  | N                            | yes                | Take ITP OOS, put back inservice                                                                                                                                                                                                                                         | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE502   | DS1SpareOperationEvent         | Generated when a DS1 card is spared                                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Manually spare a ds1 card                                                                                                                                                                                                                                                | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE503   |                                | ASL Switch Membership                                                                                                                                                                                                                                                                                                                                                   |                              | yes                |                                                                                                                                                                                                                                                                          | SN06.2       |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE504   |                                | ASL State Change                                                                                                                                                                                                                                                                                                                                                        |                              | yes                |                                                                                                                                                                                                                                                                          | SN06.2       |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE600   | entConfigChange                | Generated when the value of entLastChangeTime changes.                                                                                                                                                                                                                                                                                                                  | N                            | yes                | Plug in new line card                                                                                                                                                                                                                                                    | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE601   | nrNodeRestartBegin             | Generated when the Node is restarting.                                                                                                                                                                                                                                                                                                                                  | N                            | yes                | Restart ITP card                                                                                                                                                                                                                                                         | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE602   | nrNodeRestart-Complete         | Generated when the Node completes its Restart                                                                                                                                                                                                                                                                                                                           | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE603   | nrNodeSWLoad-Complete          | Generated when the Node completes its Software Load                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Load an ITP with new SW load                                                                                                                                                                                                                                             | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE604   | nrNodeSWUpgrade-Complete       | Generated when a SW Upgrade has completed                                                                                                                                                                                                                                                                                                                               | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE605   |                                | Generated when a Network Element is deleted                                                                                                                                                                                                                                                                                                                             | N                            | yes                | Delete a MG9K from the EM                                                                                                                                                                                                                                                | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE602   |                                | Generated when a Reinitialize Gateway event occurs                                                                                                                                                                                                                                                                                                                      | N                            | yes                | Envoke the Reinitialize option on the OC3 card                                                                                                                                                                                                                           | SN05         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | NE607   | nrNodeCardDeleted              | Generated when a card is deleted                                                                                                                                                                                                                                                                                                                                        | N                            | yes                | Provision an MG9K card for deletion from the EM then pull the card from MG9K                                                                                                                                                                                             | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Alarm Reliability Event                             | ALM998  | AlarmSequenceError             | Generated when the MG9000 Manager detects it has missed Alarms from the MG9000                                                                                                                                                                                                                                                                                          | N                            | yes                | Break connection (OC3) to MG9K, generate a number of alarms at MG9K, resetup MG9K connection.                                                                                                                                                                            | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | ALM999  | AlarmSequenceRestored          | Generated when the MG9000 Manager recovered the missing Alarms from the MG9000                                                                                                                                                                                                                                                                                          | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN04         |                                                                                                                                                                                                                                                                                                                    |
| DSL Event (NORTEL-UEMG-DSL-MIB)                     | XDSL600 | adslAturRateChangeTrap         | The ATUcs transmit rate has changed (RADSL mode only)                                                                                                                                                                                                                                                                                                                   | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL601 | adslAturHFailureTrap           | ATUC initialization failed                                                                                                                                                                                                                                                                                                                                              | n/a                          | no                 | N/A                                                                                                                                                                                                                                                                      | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL602 | adslAturRateChangeTrap         | The ATUrs transmit rate has changed (RADSL mode only)                                                                                                                                                                                                                                                                                                                   | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL800 | adslAturPerfLossThreshTrap     | Loss of Framing 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                    | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL801 | adslAturPerfLossThreshTrap     | Loss of Signal 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL802 | adslAturPerfLprsThreshTrap     | Loss of Power 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                      | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL803 | adslAturPerfEsThreshTrap       | Errored Second 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL804 | adslAturPerfLolsThreshTrap     | Loss of Link 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                       | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL805 | adslAturPerfLofsThreshTrap     | Loss of Framing 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                    | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL806 | adslAturPerfLossThreshTrap     | Loss of Signal 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL807 | adslAturPerfLprsThreshTrap     | LPRS 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                               | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL808 | adslAturPerfEsThreshTrap       | Errored Second 15-minute interval threshold reached                                                                                                                                                                                                                                                                                                                     | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | XDSL809 | nrDSLThreshold Trap            | A nrDSLThreshold notification is sent when a DSL Interface exceeds the specified threshold on a given performanceMeasure, specified by the nrDSLThresholdNotifyType:<br>atufec (1),<br>atucorc (2),<br>atunord (3),<br>atunord (4),<br>atuchec (5),<br>atufec (6),<br>atufec (7),<br>atublockError (8),<br>atunord (9),<br>atunord (10),<br>atuhec (11),<br>atufec (12) | N                            | yes                | Using an ADSL Modem <b>test set</b> inject large numbers of this type of error.                                                                                                                                                                                          | SN04         |                                                                                                                                                                                                                                                                                                                    |
| Manager Upgrade Event                               | UPGD600 |                                | indicating an upgrade is needed.                                                                                                                                                                                                                                                                                                                                        | N                            | yes                | Requires the customer to perform the upgrade or downgrade procedure. Follow MG9K EM upgrade procedures                                                                                                                                                                   | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | UPGD601 |                                | indicating an export has started                                                                                                                                                                                                                                                                                                                                        | N                            | yes                | Requires no immediate action                                                                                                                                                                                                                                             | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | UPGD602 |                                | indicating an export has completed                                                                                                                                                                                                                                                                                                                                      | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | UPGD603 |                                | indicating an import has started                                                                                                                                                                                                                                                                                                                                        | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | UPGD604 |                                | indicating an import has completed                                                                                                                                                                                                                                                                                                                                      | N                            | yes                | Same as above                                                                                                                                                                                                                                                            | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGE700  |                                | MG9000 Manager Server application Startup                                                                                                                                                                                                                                                                                                                               | N                            | yes                | Telnet into the MG9000 Manager server and execute the shutdown procedure then execute following command "topnortelmgksrv_06/bin/mgkmpkl start"                                                                                                                           | SN06         |                                                                                                                                                                                                                                                                                                                    |
|                                                     | MGE701  |                                | MG9000 Manager Server application Shutdown                                                                                                                                                                                                                                                                                                                              | N                            | yes                | Telnet into the MG9000 Manager server and execute the following command "topnortelmgksrv_06/bin/mgkmpkl stop"                                                                                                                                                            | SN06         |                                                                                                                                                                                                                                                                                                                    |

|                                       |         |                          |                                                                  |   |     |                                                                                                                                                                    |        |
|---------------------------------------|---------|--------------------------|------------------------------------------------------------------|---|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Manager Event                         | MGEM702 |                          | MG9000 Manager Mid-Tier Server application Startup               | N | yes | Telnet into the MG9000 Manager Mid-Tier server and execute the shutdown procedure then execute the following command "opt/nortel/mg9kmsr_06/bin/mg9kmsdtmp1 start" | SN06   |
|                                       | MGEM703 |                          | MG9000 Manager Mid-Tier Server application Shutdown              | N | yes | Telnet into the MG9000 Manager Mid-Tier server and execute the following command "opt/nortel/mg9kmsr_06/bin/mg9kmsdtmp1 stop"                                      | SN06   |
|                                       | OMC700  |                          | MG9000 Manager Mid-Tier Server OM Collector application Startup  | N | yes | Telnet into the MG9000 Manager Mid-Tier server and execute the shutdown procedure then execute the following command "opt/nortel/omctr_06/bin/OMtmp1 start"        | SN06   |
|                                       | OMC701  |                          | MG9000 Manager Mid-Tier Server OM Collector application Shutdown | N | yes | Telnet into the MG9000 Manager Mid-Tier server and execute the following command "opt/nortel/omctr_06/bin/OMtmp1 stop"                                             | SN06   |
| Performance (NORTEL-UEMG-PERFMON-MIB) | OVLDB00 | ovldRacMonPduRateFault   | Pdu Rate Threshold crossed                                       |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB01 | ovldRacMonCvMsgBFault    | CvMsg Message Rate Overloaded Alarm                              |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB02 | ovldRacMonConnQueueFault | Connection Queue Overloaded Alarm                                |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB03 | ovldRacMonCpuUtilFault   | PDU Rate Overloaded Alarm                                        |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB04 | perfMonCPUFault          | CPU Utilization Overloaded Alarm                                 |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB05 | perfMonRamFault          | RAM Utilization Overloaded Alarm                                 |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB06 | perfMonFlashFault        | Flash Utilization Overloaded Alarm                               |   | yes |                                                                                                                                                                    | SN06.2 |
|                                       | OVLDB07 | perfMonChanFault         | Chan Utilization Overloaded Alarm                                |   | yes |                                                                                                                                                                    | SN06.2 |

# MG9000 Manager User Action Audit LOGs

| LOG Subsystem  | LOG Id  | LOG Type      | Description                                                                 | SN06 VoA Telcordia Coverage? | Procedure To Generate LOG                                        |
|----------------|---------|---------------|-----------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------|
| MG9000 Manager | MGEM600 | MG9000 HW     | SWACT of ABI, ITP, ITX, OC3, or IMA card                                    | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM601 | MG9000 HW     | Lock of ABI, ITP, ITX, OC3, IMA, DS1, MTA, WLC, SAA, XDSL, SIC card         | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM602 | MG9000 HW     | Unlock of ABI, ITP, ITX, OC3, IMA, DS1, MTA, WLC, SAA, XDSL, SIC card       | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM603 | MG9000 HW     | Force Lock of ABI, ITP, ITX, OC3, IMA, DS1, MTA, WLC, SAA, XDSL, SIC card   | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM604 | MG9000 HW     | Force Unlock of ABI, ITP, ITX, OC3, IMA, DS1, MTA, WLC, SAA, XDSL, SIC card | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM605 | MG9000 HW     | Diag of ABI, ITP, ITX, OC3, IMA, DS1, MTA, WLC, SAA, XDSL, SIC card         | n/a                          | See procedures in MG9000 FCAPS Document Fault Management section |
|                | MGEM606 | SLoA Services | Create a VMG                                                                | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM607 | SLoA Services | Delete a VMG                                                                | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM608 | SLoA Services | ESA data configuration                                                      | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM609 | SLoA Services | Gateway data configuration                                                  | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM610 | SLoA Services | Create Termination                                                          | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM611 | SLoA Services | Bulk Termination creation                                                   | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM612 | SLoA Services | Create ESA Service Code                                                     | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM613 | SLoA Services | Delete ESA Service Code                                                     | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM614 | SLoA Services | Delete Termination                                                          | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM615 | SLoA Services | Bulk Termination deletion                                                   | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM616 | SLoA Services | Delete all termination on a card                                            | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM617 | SLoA Services | Change Termination data                                                     | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM618 | PLoA Services | Create a PLoA Passive Endpoint                                              | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM619 | PLoA Services | Create a PLoA Active Endpoint                                               | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM620 | PLoA Services | Create a PLoA Hairpin connection                                            | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM621 | PLoA Services | PLoA Connection Admin State change                                          | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM622 | PLoA Services | PLoA Service Restart                                                        | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM623 | PLoA Services | PLoA Connection SVC test initiated                                          | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM624 | PLoA Services | PLoA Connection SVC test abort                                              | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM625 | PLoA Services | PLoA Connection Unlock test                                                 | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM626 | PLoA Services | Delete a PLoA Endpoint                                                      | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM627 | ADSL Services | Modify ADSL data circuit provisioning attributes                            | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM628 | ADSL Services | De-provision ADSL data circuit service                                      | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM629 | ADSL Services | Add new ADSL data circuit                                                   | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM630 | ADSL Services | Change ADSL data circuit                                                    | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM631 | ADSL Services | Delete ADSL data circuit                                                    | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM632 | DS1 IMA       | Set links in DS1 IMA group                                                  | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM633 | DS1 IMA       | Start DS1 IMA group pattern test                                            | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM634 | DS1 IMA       | Stop DS1 IMA group pattern test                                             | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM635 | DS1 IMA       | Add DS1 IMA link to group                                                   | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM636 | DS1 IMA       | Remove DS1 IMA link from group                                              | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM637 | DS1 IMA       | Set administration state on DS1 IMA link                                    | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |
|                | MGEM638 | DS1 IMA       | Set configuration state on DS1 IMA link                                     | n/a                          | See procedures in MG9000 FCAPS Document Configuration Management |

|         |              |                                                                |                                                                                              |                                                                  |
|---------|--------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| MGEM639 | Carrier      | OC3, DS1 IMA, DS1, DS0, carrier lock                           | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM640 | Carrier      | OC3, DS1 IMA, DS1, DS0, multiple carrier lock                  | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM641 | Carrier      | OC3, DS1 IMA, DS1, DS0, carrier unlock                         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM642 | Carrier      | OC3, DS1 IMA, DS1, DS0, multiple carrier unlock                | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM643 | Carrier      | OC3, DS1 IMA, DS1, DS0, forced carrier lock                    | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM644 | Carrier      | OC3, DS1 IMA, DS1, DS0, forced multiple carrier lock           | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM645 | Carrier      | OC3, DS1 IMA, DS1, DS0, forced carrier unlock                  | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM646 | Carrier      | OC3, DS1 IMA, DS1, DS0, forced multiple carrier unlock         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM647 | Carrier      | OC3, DS1 IMA, DS1, DS0, carrier online                         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM648 | Carrier      | OC3, DS1 IMA, DS1, DS0, multiple carrier online                | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM649 | Carrier      | OC3, DS1 IMA, DS1, DS0, carrier offline                        | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM650 | Carrier      | OC3, DS1 IMA, DS1, DS0, multiple carrier offline               | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM651 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit lock                     | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM652 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit multiple lock            | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM653 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit unlock                   | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM654 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit multiple unlock          | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM655 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit diagnostic check         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM656 | Line Circuit | WLC, ADSL Data/Line circuit abort diagnostic check             | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM657 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit set end to end test port | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM658 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit set PAV test port        | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM659 | Line Circuit | WLC, ADSL Data/Line, SAA Line circuit clear test               | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM660 | LCI          | Create new LCI user                                            | n/a                                                                                          |                                                                  |
| MGEM661 | LCI          | Delete existing LCI user                                       | n/a                                                                                          |                                                                  |
| MGEM662 | LCI          | Modify existing LCI user data                                  | n/a                                                                                          |                                                                  |
| MGEM663 | DS1          | Channelize DS1 carrier                                         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM664 | DS1          | Unchannelize DS1 carrier                                       | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM665 | DS1          | Modify DS1 carrier provisioning attributes                     | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM666 | DS1          | Synchronize pre-provisioned bundles                            | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM667 | DS1          | Assign DS1 card spare                                          | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM668 | DS1          | Release DS1 card spare                                         | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM669 | DS1          | Revert DS1 card sparing activity                               | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM670 | DS1          | Initiate DS1 card sparing activity                             | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM671 | DS1          | Add DS1 card to protection group                               | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM672 | DS1          | Remove DS1 card from protection group                          | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM673 | DS1 DS0      | Provision DS0 bundle on DS1 carrier                            | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM674 | DS1 DS0      | Modify DS0 bundle                                              | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM675 | DS1 DS0      | Set DS0 bundle circuit identifier                              | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM676 | DS1 DS0      | Lock DS0 bundle                                                | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM677 | DS1 DS0      | Unlock DS0 bundle                                              | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
| MGEM678 | DS1 DS0      | Delete DS0 bundle                                              | n/a                                                                                          | See procedures in MG9000 FCAPS Document Configuration Management |
|         | MGEM679      | ABI                                                            | ABI Card Switch Mastership requested                                                         |                                                                  |
|         | MGEM679      |                                                                | getCardType(+ restart requested                                                              |                                                                  |
|         | MGEM679      |                                                                | Frame location update requested                                                              |                                                                  |
|         | MGEM680      |                                                                | getCardType(+ configuration state (Online/Offline/Deprovision/Re-Initialize change requested |                                                                  |
|         | MGEM681      |                                                                | Unused                                                                                       |                                                                  |

|  |         |  |                                              |  |  |
|--|---------|--|----------------------------------------------|--|--|
|  | MGEM682 |  | Unused                                       |  |  |
|  | MGEM683 |  | Unused                                       |  |  |
|  | MGEM684 |  | Unused                                       |  |  |
|  | MGEM685 |  | Unused                                       |  |  |
|  | MGEM686 |  | Unused                                       |  |  |
|  | MGEM687 |  | Unused                                       |  |  |
|  | MGEM688 |  | Unused                                       |  |  |
|  | MGEM689 |  | Unused                                       |  |  |
|  | MGEM690 |  | Unused                                       |  |  |
|  | MGEM691 |  | Unused                                       |  |  |
|  | MGEM692 |  | Unused                                       |  |  |
|  | MGEM693 |  | Unused                                       |  |  |
|  | MGEM694 |  | Unused                                       |  |  |
|  | MGEM695 |  | Unused                                       |  |  |
|  | MGEM696 |  | Unused                                       |  |  |
|  | MGEM697 |  | Unused                                       |  |  |
|  | MGEM698 |  | Unused                                       |  |  |
|  | MGEM699 |  | Unused                                       |  |  |
|  | MGEM700 |  | Audit request for one NE                     |  |  |
|  | MGEM701 |  | Software Download Requested-single card type |  |  |
|  | MGEM704 |  | Delete NE request                            |  |  |
|  | MGEM705 |  | getCardType(+ deprovision requested          |  |  |
|  | MGEM706 |  | Provision/Create a DFAD Tap                  |  |  |
|  | MGEM707 |  | Deprovision/Delete a DFAD Tap                |  |  |
|  | MGEM708 |  | Unused                                       |  |  |
|  | MGEM709 |  | Provision/Create an MTAP request             |  |  |
|  | MGEM710 |  | Deprovision/Delete an MTAP request           |  |  |
|  | MGEM711 |  | Upgrade VMG requested                        |  |  |
|  | MGEM712 |  | Submit a request for audit                   |  |  |
|  | MGEM713 |  | Discovery request                            |  |  |

# Appendix E: Succession VOA/IP Passport 15000 and Preside MDM Alarm Log Summary

## Introduction

This document provides a list of Passport 15000 (PP15000), Passport Voice Gateway (PVG) and Preside Multiservice Data Manager (MDM) alarm logs applicable to up to Succession SN06.2 for Voice over ATM (VOA) and Voice over IP (VOIP) solutions. This document supercedes the PP15000/MDM portions of [1], which contains alarm logs applicable to pre-SN04 Succession releases.

The purpose of this document includes:

- It provides a Succession VOA/VOIP customer (and more specifically an OSS Fault application writer) a summarized subset of the possible alarms that can appear when PP15000 and MDM are configured for the Succession VOA/VOIP application. The descriptions of the alarms are found in [3] and [4].
- When configured to receive PP15000/MDM Alarm logs in SCC2 format from the Supernode Data Manager (SDM), it also provides the mapping information needed to interpret the SCC2 format.
- It is also input to solution-level OSS Guide information which is in progress of being delivered to provide this information in the FCAPS-based solution documentation.

## SCC2 Log Format

The SCC2 log report for Passport and MDM alarms comprises a one line header, followed by seven lines of body text, as per the following example:

```
37 PPEM300 8169 TBL
time: 2002 01 11 15 37 06
event: clear
compld: EM P15KF LP 7 SONET 3
severity: cleared
faultCode: 70115201
alarmType: communications
commentData: Loss of frame condition has been cleared.
```

The header is of format:

```
aabbccdddeeffgghhijjj
```

Each field, as applicable for Passport and MDM alarms, is described in Table 1.

**Table 1 Passport 15000 and MDM SCC2 Header Field Description**

| Field | Description                                       | Applicable Log Values                                                                                                                                                        |
|-------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aa    | Alarm severity<br>Passport/MDM alarm log severity | "*C" = critical alarm<br>"***" = major alarm<br>"* " = minor and warning and indeterminate alarm<br>" " = clear alarm<br>Two characters, left justified, padded with blanks. |



| Field                     | Description                                                                                                                                                                       | Applicable Log Values                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| bb                        | Minute indicator<br>Two numeric character indicator representing the minutes after the hour. Generated by SDM at time SDM receives the alarm log from MDM.                        | Ranges from 00 to 59, right justified, padded with zeros.                                                                                                                                                                                                 |
| c                         | single space                                                                                                                                                                      | " "                                                                                                                                                                                                                                                       |
| dddd                      | Log Name<br>Assigned by SDM. Based upon the first four digits ("Index Group") of the eight-digit Passport or MDM alarm identifier.                                                | Four characters, left justified, padded with blanks.<br>"CA " for index group 0000.<br>"PPEM" for index groups beginning with 70xx and some fault codes in group 0999.<br>"MDM " for index groups beginning with 30xx and some fault codes in group 0999. |
| eee                       | Log Number<br>Three numeric characters representing the Passport or MDM Alarm Type. Note that the Alarm Type "debug" is not translated as a fault, but rather as information log. | "300" = communications<br>"301" = quality of service<br>"302" = processing<br>"303" = equipment<br>"304" = environmental<br>"305" = security<br>"306" = operator<br>"307" = unknown                                                                       |
| f                         | A single space for all Passport and MDM alarm logs.                                                                                                                               | " "                                                                                                                                                                                                                                                       |
| gg                        | Global Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every alarm log.                                                           | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                                                                                                 |
| hh                        | Device Sequence Number<br>Generated by SDM. Two numeric characters, incremented by SDM upon receipt of every device specific alarm log from MDM (originated by Passport or MDM).  | Ranges from 00 to 99, right justified, padded with zeros.                                                                                                                                                                                                 |
| i                         | single space                                                                                                                                                                      | " "                                                                                                                                                                                                                                                       |
| jjjj                      | Event Type<br>Assigned by SDM. String assigned for all Passport and MDM alarm logs.                                                                                               | "TBL "<br>Four characters, left justified, padded with blanks.                                                                                                                                                                                            |
| Lines 2, 3, 4, 5, 6, 7, 8 | Body Text<br>Seven textual lines, each of form<br><AlarmFieldName>: <AlarmFieldValue>                                                                                             | "time: "<br>"event: "<br>"compld: "<br>"severity: "<br>"faultCode: "<br>"alarmType: "<br>"commentData: "<br>Comment data is truncated so that entire log does not exceed 900 bytes.                                                                       |

## Passport 15000 Alarm Logs

Table 2 presents the list of Passport set/clear alarm logs that are applicable for Succession VOA/VOIP.

Table 2 does not explicitly state all Passport clear alarm logs that correspond to each set. The SCC2 header for the clear differs from its corresponding set by only the first two characters. The characters “aa” are replaced by “ ” (two spaces). This format is presented in Table 1.

The Passport alarm identifier consists of an eight-digit number identifying the alarm. The first four digits comprise the **Index Group**, which represents logical groupings of alarms. The last four digits are the **SubIndex**, which is an identifier within each index group.

**Component Name** indicates the managed object against which the alarm Log is generated. This table contains the CLI format of a component name. The “compld” field in SCC2 format contains this information (with the module’s <nodename> pre-pended). Also, “compld” follows the MDM API-style format (with component type and instance separated by a space instead of a slash, and ‘\$’ appearing in place of a null instance value). Variables (usually instance value ranges) are denoted by <> and the reader should reference the Alarms NTP’s [3] and [4] for further information.

**Table 2 Passport 15000 Set/Clear Alarms Supported for Succession**

| Passport Index Group | Component Name                                                                                                                          | PP/PVG configuration (N/A) | Passport SubIndex | Importance Category (N/A) | SCC2 Header                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-----------------------------------------------------------------------------|
| 0000                 | OSI administrative state changes, general engineering and memory alarms, internal software error detected, etc.                         |                            |                   |                           |                                                                             |
|                      | This alarm can apply to many Passport components.                                                                                       |                            | 0000              |                           | bb CA eee gghh<br>TBL<br>where:<br>eee = 302, 303, 306                      |
|                      | This alarm can apply to many Passport components.                                                                                       |                            | 1000              |                           | aabb CA eee gghh<br>TBL<br>where:<br>aa = “*C”, “**”, “*”<br>eee = 300, 306 |
|                      | This alarm can apply to many Passport components.                                                                                       |                            | 1001              |                           | aabb CA 303 gghh<br>TBL<br>where:<br>aa = “*C”, “**”, “*”                   |
|                      | This alarm can apply to many Passport components.                                                                                       |                            | 3000              |                           | aabb CA eee gghh<br>TBL<br>where:<br>aa = “*C”, “**”, “*”<br>eee = 300, 302 |
|                      | This alarm can apply to many Passport components.                                                                                       |                            | 3001<br>3002      |                           | aabb CA 302 gghh<br>TBL<br>where:<br>aa = “*C”, “**”, “*”                   |
| 7000                 | Provisioning alarms. These alarms apply to failures resulting from provisioning attempts. e.g., loading a provisioning file has failed. |                            |                   |                           |                                                                             |
|                      | Prov                                                                                                                                    |                            | 0007              |                           | aabb PPEM306 gghh<br>TBL<br>where:<br>aa = “*C”, “**”, “*”                  |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                   | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                       |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|---------------------------------------------------|
|                      | This alarm can apply to many Passport components.                                                                                                                                                                                                                |                            | 0010              |                           | * bb PPEM302 gghh TBL                             |
|                      | Prov Migration                                                                                                                                                                                                                                                   |                            | 0033              |                           | aabb PPEM306 gghh TBL<br>where:<br>aa = “*C”, “*” |
|                      | Prov                                                                                                                                                                                                                                                             |                            | 0036              |                           | aabb PPEM301 gghh TBL<br>where:<br>aa = “*”, “*”  |
|                      | Prov                                                                                                                                                                                                                                                             |                            | 0037              |                           | *Cbb PPEM301 gghh TBL                             |
|                      | Prov                                                                                                                                                                                                                                                             |                            | 0038              |                           | * bb PPEM301 gghh TBL                             |
|                      | Prov                                                                                                                                                                                                                                                             |                            | 0040              |                           | **bb PPEM302 gghh TBL                             |
|                      | Provisioning Patch                                                                                                                                                                                                                                               |                            | 0041              |                           | * bb PPEM306 gghh TBL                             |
| 7002                 | Backplane control system alarms; e.g., communication failure between a card and the backplane. Note:<br>FabricCard instance range (<i>): X, Y<br>Card instance range (<n>): 0-15                                                                                 |                            |                   |                           |                                                   |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0002              |                           | **bb PPEM303 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0003              |                           | * bb PPEM303 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0005              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0006              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0007              |                           | **bb PPEM302 gghh TBL                             |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                   |                            | 0008              |                           | * bb PPEM303 gghh TBL                             |
|                      | Shelf FabricCard/<i>                                                                                                                                                                                                                                             |                            | 0009              |                           | * bb PPEM303 gghh TBL                             |
| 7003                 | Data collection system alarms; e.g., an alarm or log queue size has exceeded a threshold.<br>Collector instance range (<t>): accounting, alarm, log, debug, scn, trap, stats, rtstats, appl<br>Agent instance range (<n>): 0-15<br>LP instance range (<n>): 0-15 |                            |                   |                           |                                                   |
|                      | Collector/<t> Agent/<n>                                                                                                                                                                                                                                          |                            | 0001              |                           | **bb PPEM301 gghh TBL                             |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                            |                            | 0002              |                           | **bb PPEM302 gghh TBL                             |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                            |                            | 0003              |                           | * bb PPEM301 gghh TBL                             |
|                      | LP/<n> Eng AAList                                                                                                                                                                                                                                                |                            | 0007              |                           | **bb PPEM301 gghh TBL                             |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                            |                            | 0008              |                           | * bb PPEM306 gghh TBL                             |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-----------------------|
| 7008                 | File system alarms.<br>Disk instance range (<n>): 0-1<br>Card instance range (<x>): 0-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |                   |                           |                       |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1001              |                           | **bb PPEM302 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1002              |                           | *Cbb PPEM302 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1004              |                           | *Cbb PPEM303 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1005              |                           | * bb PPEM303 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1006              |                           | **bb PPEM302 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 1008              |                           | **bb PPEM303 gghh TBL |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1009              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1010              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1011              |                           |                       |
|                      | FileSystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | 1019              |                           | * bb PPEM303 gghh TBL |
| 7011                 | Port management system and Automatic Protection Switching alarms.<br>LP instance range (<n>): 0-15<br>Port types (<type>): Sonet, EDS1, DS3, BridgedSonet(Bso), Ethernet, Sdh<br>Sonet instance range (<n2>): 0-15 (16-port); 0-3 (4-port)<br>EDS1 instance range (<n2>): 0-1<br>IMA instance range (<n3>): 0-13<br>LK instance range (<n4>): 0-31<br>DS3 instance range (<n2>): 0-3 (4-port); 0-11 (12-port)<br>DS1 instance range (<n3>): 1-28<br>Ethernet instance range (<n2>): 0-3<br>LAPS instance range (<n>): 0-15999<br>Chan instance range (<n4>): 0-23<br>Bso instance range (<n2>): 0-15<br>Pbg instance range (<n>): 0-15999<br>Sdh instance range (<n2>): 0-3<br>Sts instance range (<n2>): 0-2<br>Lag instance range (<y>): 0-7<br>Lag link instance range (<z>): 0-31 |                            |                   |                           |                       |
|                      | LP/<n> DS3/<n2> IMA <n3>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            | 1100              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> IMA/<n3>...<br>...LK/<n4>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | 1200              |                           | *Cbb PPEM300 gghh TBL |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1210              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1211              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1212              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1213              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1214              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1215              |                           |                       |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 1216              |                           |                       |
|                      | LP/<n> Lag/<y>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | 1500              |                           | *Cbb PPEM300 gghh TBL |

| Passport Index Group | Component Name                                                                                                                                   | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-----------------------|
|                      | LP/<n> Lag/<y> Link/<z>                                                                                                                          |                            | 1501              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> <type>/<n2>                                                                                                                               |                            | 2000              |                           | *Cbb PPEM303 gghh TBL |
|                      | LP/0 EDS1/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1 |                            | 5000              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/0 EDS1/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1 |                            | 5001              |                           | * bb PPEM300 gghh TBL |
|                      | LP/0 EDS1/<n2><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                             |                            | 5002              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                   |                            | 5003              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                   |                            | 5004              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                   |                            | 5005              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1                   |                            | 5006              |                           | **bb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3><br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1<br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1                   |                            | 5010              |                           | * bb PPEM300 gghh TBL |
|                      | LP/<n> DS3/<n2> DS1/<n3>                                                                                                                         |                            | 5011              |                           | * bb PPEM300 gghh TBL |

| Passport Index Group | Component Name                                                                                                        | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-------------------------------------------------------|
|                      | LP/0 EDS1/<n2>                                                                                                        |                            | 5050              |                           | aabb PPEM303 gghh<br>TBL<br>where:<br>aa = “*C”, “* “ |
|                      | LP/<n> DS3/<n2><br>Lp/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3} E1<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4} DS1 |                            | 5100              |                           | *Cbb PPEM300 gghh<br>TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                                       |                            | 5101              |                           | *Cbb PPEM300 gghh<br>TBL                              |
|                      |                                                                                                                       |                            | 5102              |                           |                                                       |
|                      |                                                                                                                       |                            | 5103              |                           |                                                       |
|                      |                                                                                                                       |                            | 5104              |                           |                                                       |
|                      | LP/<n> DS3/<n2>                                                                                                       |                            | 5105              |                           | * bb PPEM300 gghh<br>TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                                       |                            | 5110              |                           | *Cbb PPEM300 gghh<br>TBL                              |
|                      | LP/<n> DS3/<n2>                                                                                                       |                            | 5111              |                           | * bb PPEM300 gghh<br>TBL                              |
|                      |                                                                                                                       |                            | 5120              |                           |                                                       |
|                      |                                                                                                                       |                            | 5121              |                           |                                                       |
|                      |                                                                                                                       |                            | 5122              |                           |                                                       |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sdh/<n2>                                                                                  |                            | 5200              |                           | *Cbb PPEM300 gghh<br>TBL                              |
|                      |                                                                                                                       |                            | 5201              |                           |                                                       |
|                      |                                                                                                                       |                            | 5202              |                           |                                                       |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sdh/<n2>                                                                                  |                            | 5203              |                           | * bb PPEM300 gghh<br>TBL                              |
|                      |                                                                                                                       |                            | 5204              |                           |                                                       |
|                      |                                                                                                                       |                            | 5210              |                           |                                                       |
|                      |                                                                                                                       |                            | 5211              |                           |                                                       |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0           |                            | 5250              |                           | *Cbb PPEM300 gghh<br>TBL                              |
|                      |                                                                                                                       |                            | 5251              |                           |                                                       |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0           |                            | 5252              |                           | * bb PPEM300 gghh<br>TBL                              |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0           |                            | 5253              |                           | *Cbb PPEM300 gghh<br>TBL                              |

| Passport Index Group | Component Name                                                                                                                                                                                                                       | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header           |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-----------------------|
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0                                                                                                                          |                            | 5254              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0                                                                                                                          |                            | 5255              |                           | *Cbb PPEM300 gghh TBL |
|                      | Lp/<n> Sonet/<n2> Sts/<n2><br>Lp/<n> Sdh/<n2> Vc4/0<br>Lp/<num1> Sdh/<n2> Vc4/0<br>Vc12/{1-3, 1-7, 1-3}<br>Laps/<n> Sts/<num3><br>Laps/<n> Sdh/<num2> Vc4/0<br>Laps/<n> Sdh/<n2> Vc4/0<br>Vc12/{1-3, 1-7, 1-3}<br>Pbg/<n> Sts/{0-11} |                            | 5256              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Sonet/<n2> Sts/<n2><br>LP/<n> Sdh/<n2> Vc4/0<br>LAPS/<n> Sts/<n2><br>LAPS/<n> Vc4/0<br>Pbg/<n> Sts/0                                                                                                                          |                            | 5260              |                           | * bb PPEM300 gghh TBL |
|                      |                                                                                                                                                                                                                                      |                            | 5261              |                           |                       |
|                      | LAPS/<n>                                                                                                                                                                                                                             |                            | 5270              |                           | **bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                             |                            | 5271              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                             |                            | 5272              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                             |                            | 5273              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/n                                                                                                                                                                                                                               |                            | 5274              |                           | * bb PPEM300 gghh TBL |
|                      | LAPS/<n>                                                                                                                                                                                                                             |                            | 5275              |                           | *Cbb PPEM300 gghh TBL |
|                      | LP/<n> Sdh/<n2> Vc4/0<br>Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2><br>Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}                                                           |                            | 5290              |                           | * bb PPEM303 gghh TBL |
|                      |                                                                                                                                                                                                                                      |                            | 5291              |                           |                       |
|                      |                                                                                                                                                                                                                                      |                            | 5292              |                           |                       |
|                      |                                                                                                                                                                                                                                      |                            | 5293              |                           |                       |
|                      |                                                                                                                                                                                                                                      |                            | 5294              |                           |                       |

| Passport Index Group | Component Name                                                                                                                                                          | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                         |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|-----------------------------------------------------|
|                      | LP/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2> Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}    |                            | 5295<br>5296      |                           | *Cbb PPEM303 gghh TBL                               |
|                      | LP/<n> Sdh/<n2> Vc4/0 Vc12/{1-3,1-7,1-3}<br>Lp/<n> Sonet/<n2> Sts/<n2> Vt1dot5/{1-7,1-4}<br>LAPS/<n> Vc4/0 Vc12/{1-3,1-7,1-3}<br>LAPS/<n> Sts/<n2> Vt1dot5/{1-7,1-4}    |                            | 5297              |                           | *Cbb PPEM303/6 gghh TBL                             |
|                      | LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>LP/<n> Ethernet/<n2><br>OpticalModule                                   |                            | 5400              |                           | *Cbb PPEM300 gghh TBL                               |
|                      |                                                                                                                                                                         |                            | 5401              |                           | *Cbb PPEM300 gghh TBL                               |
|                      |                                                                                                                                                                         |                            | 5402              |                           | *Cbb PPEM300 gghh TBL                               |
|                      |                                                                                                                                                                         |                            | 5403              |                           | *Cbb PPEM300 gghh TBL                               |
|                      |                                                                                                                                                                         |                            | 5480              |                           | **bb PPEM300 gghh TBL                               |
|                      | LP/<n> Sonet/<n2><br>LP/<n> Sonet/<n2> Sts/0<br>LAPS/<n> Sts/0<br>LP/<n> DS3/<n2><br>LP/<n> DS3/<n2> DS1/<n3><br>LP/<n> DS3/<n2> DS1/<n3><br>Chan/<n4><br>Pbg/<n> Sts/0 |                            | 5501              |                           | **bb PPEM300 gghh TBL                               |
|                      | LP/<n> DS3/<n2>                                                                                                                                                         |                            | 5601<br>5602      |                           | * bb PPEM300 gghh TBL                               |
|                      | LP/<n> DS3/<n2>                                                                                                                                                         |                            | 5603<br>5604      |                           | **bb PPEM300 gghh TBL                               |
| 7012                 | Processor control system alarms.<br>LP instance range (<n>): 0-15<br>Card instance range (<n>): 0-15<br>FabricCard instance range (<i>): X, Y                           |                            |                   |                           |                                                     |
|                      | Shelf                                                                                                                                                                   |                            | 0050              |                           | **bb PPEM303 gghh TBL                               |
|                      | Shelf                                                                                                                                                                   |                            | 0051              |                           | aabb PPEM303 gghh TBL<br>where:<br>aa = "***", "**" |
|                      | Shelf<br>Shelf FabricCard/<i>                                                                                                                                           |                            | 0052              |                           | **bb PPEM303 gghh TBL                               |



| Passport Index Group | Component Name                                                                         | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                        |
|----------------------|----------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|----------------------------------------------------|
|                      | Shelf                                                                                  |                            | 0053              |                           | **bb PPEM303 gghh TBL                              |
|                      | Shelf                                                                                  |                            | 0055              |                           | aabb PPEM303 gghh TBL<br>where:<br>aa = “**” , “*” |
|                      | Shelf                                                                                  |                            | 0056              |                           | * bb PPEM303 gghh TBL                              |
|                      | Shelf                                                                                  |                            | 0057              |                           | **bb PPEM303 gghh TBL                              |
|                      | Shelf                                                                                  |                            | 0058              |                           | TBL                                                |
|                      | Shelf                                                                                  |                            | 0059              |                           | *Cbb PPEM304 gghh TBL                              |
|                      | Shelf Card/<n>                                                                         |                            | 0100              |                           | aabb PPEM303 gghh TBL<br>where:<br>aa = “*C” , “*” |
|                      | Shelf Card/<n>                                                                         |                            | 0103              |                           | **bb PPEM303 gghh TBL                              |
|                      | Shelf Card/<n>                                                                         |                            | 0104              |                           | TBL                                                |
|                      | Shelf Card/<n>                                                                         |                            | 0105              |                           | * bb PPEM306 gghh TBL                              |
|                      | LP/<n>                                                                                 |                            | 0200              |                           | *Cbb PPEM302 gghh TBL                              |
|                      | LP/<n>                                                                                 |                            | 0202              |                           | * bb PPEM306 gghh TBL                              |
|                      | Shelf Card/<n> SpServ                                                                  |                            | 0301              |                           | * bb PPEM302 gghh TBL                              |
| 7013                 | Message block usage alarms.<br>LP instance range (<n>): 0-15                           |                            |                   |                           |                                                    |
|                      | LP/<n>                                                                                 |                            | 0000              |                           | * bb PPEM301 gghh TBL                              |
|                      | LP/<n>                                                                                 |                            | 0001              |                           | **bb PPEM301 gghh TBL                              |
|                      | LP/<n>                                                                                 |                            | 0002              |                           | * bb PPEM301 gghh TBL                              |
|                      |                                                                                        |                            | 0003              |                           |                                                    |
|                      |                                                                                        |                            | 0004              |                           |                                                    |
|                      |                                                                                        |                            | 0005              |                           |                                                    |
|                      | LP/<n>                                                                                 |                            | 0011              |                           | * bb PPEM301 gghh TBL                              |
|                      |                                                                                        |                            | 0021              |                           |                                                    |
|                      | LP/<n>                                                                                 |                            | 0022              |                           | **bb PPEM301 gghh TBL                              |
| 7014                 | Memory management alarms                                                               |                            |                   |                           |                                                    |
|                      | LP/<n>                                                                                 |                            | 0000              |                           | * bb PPEM301 gghh TBL                              |
|                      | LP/<n>                                                                                 |                            | 0001              |                           | **bb PPEM301 gghh TBL                              |
| 7015                 | Network time-of-day (TOD) synchronization alarms.<br>Server instance range (<n>): 1-10 |                            |                   |                           |                                                    |
|                      | Time                                                                                   |                            | 0000              |                           | **bb PPEM304 gghh                                  |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                          |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|------------------------------------------------------|
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 0002              |                           | TBL                                                  |
|                      | Time Server/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 0010              |                           | * bb PPEM300 gghh                                    |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 0011              |                           | TBL                                                  |
|                      | Time Server/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 0012              |                           | * bb PPEM300 gghh<br>TBL                             |
| 7017                 | Network clock synchronization alarms                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                   |                           |                                                      |
|                      | NS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            | 1000              |                           | * bb PPEM300 gghh<br>TBL                             |
| 7021                 | Internet protocol alarms. For Succession VOA, the IP stack is used only for network management connectivity purposes. For VOIP VR is used to connect to IP network. More than 1 VR may be provisioned in this configuration.<br>VR instance range (<i>): any string, but often specified simply as a digit (e.g., "0")<br>Cache instance range (<n>): 0-15<br>Name of the vrf (<y>)<br>LP number (<lpnum>): 0-15<br>IP address (<ipaddress>): address of the local IpLogicalInterface |                            |                   |                           |                                                      |
|                      | Vr/<i> Ip Cache/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 0006              |                           | **bb PPEM302 gghh<br>TBL                             |
|                      | Vr/<i> Ip Cpp<br>IsolatedDa/<ipaddress>,<br><lpnum>                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 0013              |                           | * bb PPEM305 gghh<br>TBL                             |
|                      | Rtr/<i> Cpp<br>IsolatedDa/<ipaddress>,<br><lpnum><br>Rtr/<i> Vrf/<y> Cpp<br>IsolatedDa/<ipaddress>,<br><lpnum>                                                                                                                                                                                                                                                                                                                                                                        |                            | 0014              |                           | **bb PPEM305 gghh<br>TBL                             |
| 7026                 | LAN port management system alarms. For Succession VOA, the LAN port management system is used only for network management connectivity purposes Same alarms are used for VOIP.                                                                                                                                                                                                                                                                                                        |                            |                   |                           |                                                      |
|                      | LP/0 OamEnet/0                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | 3000              |                           | *Cbb PPEMeee gghh<br>TBL<br>where:<br>eee = 300, 303 |
|                      | LP/0 OamEnet/0                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | 3005              |                           | * bb PPEMeee gghh<br>TBL<br>where:<br>eee = 300, 303 |
| 7039                 | ATM Core alarms.<br>AtmIf instance range (<n>): 1-4095<br>Vcc instance range (<n2.n3>): n2 is VPI; n3 is VCI                                                                                                                                                                                                                                                                                                                                                                          |                            |                   |                           |                                                      |
|                      | Atmif/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | 1000              |                           | * bb PPEM300 gghh<br>TBL                             |
|                      | Atmif/<n> Vcc/<n2.n3>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            | 2000              |                           | * bb PPEM302 gghh                                    |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | 2003              |                           | TBL                                                  |
|                      | Atmif/<n> Vpt/<n2>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            | 3000              |                           | * bb PPEM300 gghh<br>TBL                             |
|                      | Atmif/<n>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | 4001              |                           | **bb PPEM300 gghh<br>TBL                             |

| Passport Index Group | Component Name                                                                                                                           | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header                                       |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|---------------------------------------------------|
|                      | Atmif/<n>                                                                                                                                |                            | 5000              |                           | *Cbb PPEM300 gghh TBL                             |
| 7041                 | ATM Networking alarms.<br>AtmIf instance range (<n>): 1-4095<br>Vpt instance range (<n2>): 0-4095<br>CfgNode instance range (<n>): 0-104 |                            |                   |                           |                                                   |
|                      | Atmif/<n> Uni Ilmi                                                                                                                       |                            | 0050              |                           | **bb PPEMeee gghh TBL<br>where:<br>eee = 300, 303 |
|                      | Atmif/<n> Uni Sig<br>Atmif/<n> Pnni Sig                                                                                                  |                            | 0150              |                           | **bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Uni Sig<br>Atmif/<n> Pnni Sig<br>Atmif/<n> Uni Ilmi<br>Atmif/<n> Pnni Rcc                                                      |                            | 0200              |                           | **bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Pnni Rcc                                                                                                                       |                            | 0250              |                           | **bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Pnni Rcc                                                                                                                       |                            | 0253              |                           | **bb PPEM300 gghh TBL                             |
|                      | Artg Pnni                                                                                                                                |                            | 0301              |                           | **bb PPEM300 gghh TBL                             |
|                      | Artg Pnni CfgNode<n> Rcc                                                                                                                 |                            | 0302              |                           | **bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Uni<br>Atmif/<n> Pnni                                                                                                          |                            | 0400              |                           | * bb PPEM300 gghh TBL                             |
|                      | Atmif/<n>                                                                                                                                |                            | 0401              |                           | **bb PPEM30? gghh TBL                             |
|                      | Atmif/<n> Uni<br>Atmif/<n> Pnni                                                                                                          |                            | 0500              |                           | * bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Uni<br>Atmif/<n> Pnni                                                                                                          |                            | 0600<br>0601      |                           | * bb PPEM302 gghh TBL                             |
|                      | Artg Pnni CfgNode /<n>                                                                                                                   |                            | 0700              |                           | **bb PPEM300 gghh TBL                             |
|                      | Atmif/<n> Pnni Rcc                                                                                                                       |                            | 0701              |                           | **bb PPEM300 gghh TBL                             |
|                      | Artg Pnni CfgNode /<n>                                                                                                                   |                            | 0703              |                           | * bb PPEM300 gghh TBL                             |
| 7042                 | Circuit Emulation Service (CES) alarms.<br>Aal1Ces instance range (<n>) : 1-16383                                                        |                            |                   |                           |                                                   |
|                      | Aal1Ces/<n>                                                                                                                              |                            | 0001              |                           | **bb PPEM301 gghh TBL                             |
|                      | Aal1Ces/<n>                                                                                                                              |                            | 0002              |                           | **bb PPEM302 gghh TBL                             |
|                      | Aal1Ces/<n>                                                                                                                              |                            | 0003              |                           | **bb PPEM300 gghh TBL                             |
| 7054                 | Sparing panel subsystem alarms.<br>Card instance range (<n>): 0-15                                                                       |                            |                   |                           |                                                   |
|                      | Shelf Card/<n>                                                                                                                           |                            | 0100<br>0101      |                           | **bb PPEM303 gghh TBL                             |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header            |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|------------------------|
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0102              |                           |                        |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0103              |                           |                        |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0104              |                           |                        |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0105              |                           |                        |
| 7056                 | <p>Voice Services Processor (VSP) / Narrowband Service Trunk over ATM (Nsta)<br/> This group is specific to PVG application (e.g. severe failure of the VSP card)<br/> Lp instance range (&lt;x&gt;): 0-15<br/> PModule instance range (&lt;y&gt;): 1-24<br/> PBlock instance range (&lt;z&gt;): 1-2<br/> NSTA instance range (&lt;i&gt;): 0-15999<br/> GigE instance range (&lt;m&gt;): 0-1<br/> Control instance range (&lt;n&gt;): mg or sg<br/> Conn instance range (&lt;l&gt;): 0-128<br/> Brag instance range (&lt;d&gt;): 0-159999<br/> Q921 instance range (&lt;r&gt;): 1-31<br/> LapV5 instance value (&lt;w&gt;): 15, 16, 31<br/> Tag instance range (&lt;u&gt;): 0-16777215<br/> AtmTConn instance range (&lt;h&gt;): 1-2700 (max 4094)<br/> dBrag instance range (&lt;t&gt;): 0-127<br/> BragS instance range (&lt;k&gt;): 0-15<br/> CasDefn instance range (&lt;z&gt;): 0-24</p> |                            |                   |                           |                        |
|                      | Lp/<x> Vsp PModule/<y>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | 0002              |                           | ** bb PPEM306 gghh TBL |
|                      | Lp/<x> Vsp PModule/<y><br>PBlock/<z>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            | 0003              |                           | *Cbb PPEM303 gghh TBL  |
|                      | Lp/<x> Vsp GigE/<m>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            | 0500              |                           | ** bb PPEM300 gghh TBL |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0501              |                           |                        |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | 0502              |                           |                        |
|                      | Nsta/<i> Conn/<l><br>Nsta/<i> Vgs AtmTConn/<h>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | 1000              |                           | **bb PEM300 gghh TBL   |
|                      | Nsta/<l> Vgs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            | 1200              |                           | * bb PPEM300 gghh TBL  |
|                      | Nsta/<i> Vgs IpMConn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            | 1201              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<i> Vgs Control/<n><br>Mediagateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            | 1202              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<i> Vgs Control/<n><br>Signalingateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                   |                           |                        |

| Passport Index Group | Component Name                                                                                                                                                                                                                                            | PP/PVG configuration (N/A) | Passport Subindex | Importance Category (N/A) | SCC2 Header            |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|---------------------------|------------------------|
|                      | Nsta/<i> Vgs Control/<n> MediaGateway Aap<br>Nsta/<i> Vgs Control/<n> Signalinggateway Aap<br>Nsta/<i>Vgs Control/<n> SpvcAp<br>Nsta/<i> Vgs IpMConn Aap<br>Nsta/<i> Vgs IpMConn SpvcAp<br>Nsta/<i> Vgs AtmTConn/<h> Aap<br>Nsta/<l> Vgs AtmTConn/<h> Aap |                            | 1203              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<i> Vgs                                                                                                                                                                                                                                              |                            | 1204              |                           | * bb PPEM302 gghh TBL  |
|                      | Nsta/<i> Vgs CasDefn/<z>                                                                                                                                                                                                                                  |                            | 1208              |                           | * bb PPEM302 gghh TBL  |
|                      | Lp/<x> Vsp PModule/y>                                                                                                                                                                                                                                     |                            | 1209              |                           | * bb PPEM303 gghh TBL  |
|                      | Nsta/<x> Vgs Brag/<d> Q921/<r><br>Nsta/<i> Vgs BragS/<k> dBrag/<t> Q921                                                                                                                                                                                   |                            | 1210              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<x> Vgs lua                                                                                                                                                                                                                                          |                            | 1211              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<x> Vgs Brag/<d> V5Link LapV5/<w>                                                                                                                                                                                                                    |                            | 1213              |                           | ** bb PPEM300 gghh TBL |
|                      | Nsta/<x> Vgs Tag/<u>                                                                                                                                                                                                                                      |                            | 1217              |                           | *Cbb PPEM302 gghh TBL  |
| 7060                 | ATM and Frame Resource Control alarms.<br>LP instance range (<n>): 0-15<br>Aqm instance range (<n2>): 0-3                                                                                                                                                 |                            |                   |                           |                        |
|                      | LP/<n> Eng Fcrc                                                                                                                                                                                                                                           |                            | 1000              |                           | **bb PPEM300 gghh TBL  |
|                      | LP/<n> Eng Arc Aqm/<n2>                                                                                                                                                                                                                                   |                            | 1100              |                           | * bb PPEM300 gghh TBL  |

The following table specifies the alarms where field “event” has the value “message”. There won’t be a “clear” for these, but some action may still be required (e.g., security issue).

**Table 3 Passport 15000 Message Alarms Supported for Succession VOA/VOIP**

| Passport Index Group | Component Name                                                                  | Solution Notes | Passport Subindex | Importance Category | SCC2 Header                    |
|----------------------|---------------------------------------------------------------------------------|----------------|-------------------|---------------------|--------------------------------|
| 0000                 | OSI administrative state changes, general engineering and memory alarms, etc.   |                |                   |                     |                                |
|                      | These alarms can apply to many Passport components. Often, it is: EM/<nodename> |                | 9000              |                     | * bb CA eee gghh TBL<br>where: |
|                      |                                                                                 |                | 9001              |                     |                                |
|                      |                                                                                 |                | 9002              |                     |                                |

| Passport Index Group | Component Name                                                                                                                                                                  | Solution Notes | Passport Subindex | Importance Category | SCC2 Header           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|-----------------------|
|                      |                                                                                                                                                                                 |                | 9003              |                     | eee = 300, 302        |
| 7000                 | Provisioning alarms. These alarms apply to failures resulting from provisioning attempts. e.g., loading a provisioning file has failed.                                         |                |                   |                     |                       |
|                      | Prov                                                                                                                                                                            |                | 0001              |                     | *Cbb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0002              |                     | * bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0003              |                     | *Cbb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0004              |                     | *Cbb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0005              |                     | * bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0006              |                     | *Cbb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0008              |                     | **bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0009              |                     | **bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0012              |                     | * bb PPEM306 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0013              |                     | * bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0015              |                     | * bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0016              |                     | * bb PPEM30? gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0029              |                     | * bb PPEM30? gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0030              |                     | * bb PPEM30? gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0031              |                     | * bb PPEM302 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0032              |                     | * bb PPEM30? gghh TBL |
|                      | This alarm can apply to many Passport components.                                                                                                                               |                | 0035              |                     | * bb PPEM307 gghh TBL |
|                      | Prov                                                                                                                                                                            |                | 0039              |                     | * bb PPEM306 gghh TBL |
| 7002                 | Backplane control system alarms; e.g., communication failure between a card and the backplane. Note:<br>Card instance range (<n>): 0-15<br>FabricCard instance range (<i>): X,Y |                |                   |                     |                       |
|                      | Shelf FabricCard/<i>                                                                                                                                                            |                | 0010              |                     | * bb PPEM303 gghh TBL |
|                      | Shelf FabricCard/<i>                                                                                                                                                            |                | 0012              |                     | * bb PPEM303 gghh TBL |
|                      | Shelf FabricCard/<i>                                                                                                                                                            |                | 0013              |                     | * bb PPEM303 gghh TBL |
|                      | Shelf FabricCard/<i>                                                                                                                                                            |                | 0014              |                     | * bb PPEM303 gghh TBL |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                | Solution Notes | Passport Subindex | Importance Category | SCC2 Header           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|-----------------------|
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                |                | 1000              |                     | *Cbb PPEM303 gghh TBL |
| 7003                 | Data collection system alarms; e.g., an alarm or log queue size has exceeded a threshold.<br>Collector instance range (<t>): accounting, alarm, log, debug, scn, trap, stats, rtstats, appl<br>Agent instance range (<n>): 0-15                               |                |                   |                     |                       |
|                      | Collector/<t> Agent/<n>                                                                                                                                                                                                                                       |                | 0004              |                     | * bb PPEM301 gghh TBL |
|                      | Collector/<t> Spooler                                                                                                                                                                                                                                         |                | 0008              |                     | * bb PPEM306 gghh TBL |
| 7006                 | Network Management Interface system alarms.<br>Management Interface type (<type>): Fmip, Ftp, Local, Telnet<br>Session instance range (<n>): 1-35 (Fmip); 1-16 (Ftp); 1-2 (Local); 1-16 (Telnet)                                                              |                |                   |                     |                       |
|                      | Nmis <type>                                                                                                                                                                                                                                                   |                | 0001              |                     | **bb PPEM305 gghh TBL |
|                      | Nmis <type> Session/<n>                                                                                                                                                                                                                                       |                | 0002              |                     | * bb PPEM305 gghh TBL |
|                      | Nmis <type> Session/<n>                                                                                                                                                                                                                                       |                | 0003              |                     | **bb PPEM300 gghh TBL |
|                      | Nmis Ftp                                                                                                                                                                                                                                                      |                | 0005              |                     | **bb PPEM302 gghh TBL |
|                      | Nmis Fmip                                                                                                                                                                                                                                                     |                | 0006              |                     | **bb PPEM305 gghh TBL |
|                      | Nmis <type> Session/<n>                                                                                                                                                                                                                                       |                | 0007              |                     | **bb PPEM300 gghh TBL |
|                      | Nmis Fmip                                                                                                                                                                                                                                                     |                | 0008              |                     | **bb PPEM300 gghh TBL |
| 7008                 | File system alarms.<br>Disk instance range (<n>): 0-1                                                                                                                                                                                                         |                |                   |                     |                       |
|                      | FileSystem                                                                                                                                                                                                                                                    |                | 1003              |                     | **bb PPEM302 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1012              |                     | * bb PPEM303 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1013              |                     | **bb PPEM303 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1014              |                     | **bb PPEM307 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1015              |                     | * bb PPEM307 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1016              |                     | * bb PPEM307 gghh TBL |
|                      | FileSystem Disk/<n>                                                                                                                                                                                                                                           |                | 1018              |                     | * bb PPEM303 gghh TBL |
|                      | FileSystem                                                                                                                                                                                                                                                    |                | 1020              |                     | * bb PPEM303 gghh TBL |
|                      | Shelf Card/<x>                                                                                                                                                                                                                                                |                | 1021              |                     | **bb PPEM303 gghh TBL |
| 7011                 | Port management system and Automatic Protection Switching alarms.<br>LP instance range (<n>): 0-15<br>Port types (<type>): Sonet, DS3<br>Sonet instance range (<n2>): 0-15 (16-port); 0-3 (4-port)<br>DS3 instance range (<n2>): 0-11 (12-port); 0-3 (4-port) |                |                   |                     |                       |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                                                                                          | Solution Notes | Passport Subindex | Importance Category | SCC2 Header                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|---------------------------------------------------------------|
|                      | LP/<n> <type>/<n2>                                                                                                                                                                                                                                                                                                                      |                | 2002              |                     | **bb PPEM303 gghh TBL                                         |
|                      | LP/<n> DS3/<n2>                                                                                                                                                                                                                                                                                                                         |                | 5112              |                     | * bb PPEM300 gghh TBL                                         |
|                      | LP/<n> <type>/<n2>                                                                                                                                                                                                                                                                                                                      |                | 8000              |                     | * bb PPEM300 gghh TBL                                         |
| 7012                 | Processor control system alarms.<br>LP instance range (<n>): 0-15<br>Card instance range (<n>): 0-15                                                                                                                                                                                                                                    |                |                   |                     |                                                               |
|                      | Shelf                                                                                                                                                                                                                                                                                                                                   |                | 0054              |                     | **bb PPEM303 gghh TBL                                         |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                                                                                          |                | 0101              |                     | * bb PPEM303 gghh TBL                                         |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                                                                                          |                | 0102              |                     | * bb PPEM301 gghh TBL                                         |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                                                                                          |                | 0151              |                     | **bb PPEM302 gghh TBL                                         |
|                      |                                                                                                                                                                                                                                                                                                                                         |                | 0152              |                     |                                                               |
|                      |                                                                                                                                                                                                                                                                                                                                         |                | 0153              |                     |                                                               |
|                      | Shelf Card/<n>                                                                                                                                                                                                                                                                                                                          |                | 0154              |                     | **bb PPEM303 gghh TBL                                         |
|                      |                                                                                                                                                                                                                                                                                                                                         |                | 0155              |                     |                                                               |
|                      |                                                                                                                                                                                                                                                                                                                                         |                | 0156              |                     |                                                               |
|                      | LP/<n>                                                                                                                                                                                                                                                                                                                                  |                | 0201              |                     | * bb PPEM306 gghh TBL                                         |
|                      | LP/0                                                                                                                                                                                                                                                                                                                                    |                | 0203              |                     | * bb PPEM303 gghh TBL                                         |
|                      | LP/<n>                                                                                                                                                                                                                                                                                                                                  |                | 0204              |                     | * bb PPEM306 gghh TBL                                         |
|                      | Shelf Card/<n> SpServ                                                                                                                                                                                                                                                                                                                   |                | 0300              |                     | aabb PPEMeee gghh TBL<br>where:<br>aa = “*C”, “* “<br>eee=any |
| 7015                 | Network time-of-day (TOD) synchronization alarms.                                                                                                                                                                                                                                                                                       |                |                   |                     |                                                               |
|                      | Time                                                                                                                                                                                                                                                                                                                                    |                | 0001              |                     | * bb PPEMeee gghh TBL<br>eee=304, 306, 307                    |
| 7017                 | Network clock synchronization alarms.                                                                                                                                                                                                                                                                                                   |                |                   |                     |                                                               |
|                      | Ns                                                                                                                                                                                                                                                                                                                                      |                | 1001              |                     | * bb PPEM301 gghh TBL                                         |
| 7021                 | Internet protocol alarms. For Succession VOA, the IP stack is used only for network management connectivity purposes. For VOIP VR is used to connect to IP network. OSPF and IP static Routes can be used. More than 1 VR can be provisioned.<br>VR instance range (<i>): any string, but often specified simply as a digit (e.g., “0”) |                |                   |                     |                                                               |
|                      | VR/<i> Ip                                                                                                                                                                                                                                                                                                                               |                | 0000              |                     | * bb PPEM300 gghh TBL                                         |
|                      | VR/<i> Ip OSPF                                                                                                                                                                                                                                                                                                                          |                | 1000              |                     |                                                               |
|                      | VR/<i> Ip OSPF                                                                                                                                                                                                                                                                                                                          |                | 1001              |                     |                                                               |
|                      | VR/<i> Ip OSPF                                                                                                                                                                                                                                                                                                                          |                | 1002              |                     |                                                               |
|                      | VR/<i> Ip OSPF                                                                                                                                                                                                                                                                                                                          |                | 1003              |                     |                                                               |
|                      |                                                                                                                                                                                                                                                                                                                                         |                |                   |                     |                                                               |



| Passport Index Group | Component Name                                                                                                                                                                                                             | Solution Notes | Passport Subindex | Importance Category | SCC2 Header           |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|-----------------------|
|                      | VR/<i> Ip OSPF<br><br>VR/<i> Ip OSPF<br>VR/<l> Ip OSPF<br>VR/<l> Ip OSPF<br>VR/<i> Ip                                                                                                                                      |                |                   |                     |                       |
|                      |                                                                                                                                                                                                                            |                |                   |                     |                       |
|                      |                                                                                                                                                                                                                            |                | 1011              |                     |                       |
|                      |                                                                                                                                                                                                                            |                | 1016              |                     |                       |
|                      |                                                                                                                                                                                                                            |                | 1017              |                     |                       |
|                      |                                                                                                                                                                                                                            |                | 1100              |                     |                       |
|                      |                                                                                                                                                                                                                            |                | 4000              |                     |                       |
|                      | Vr/<i>                                                                                                                                                                                                                     |                | 1021              |                     | **bb PPEM302 gghh TBL |
|                      | Vr/<i> Ip Ospf                                                                                                                                                                                                             |                | 1101              |                     | * bb PPEM302 gghh TBL |
| 7026                 | LAN port management system alarms. For Succession VOA, the LAN port management system is used only for network management connectivity purposes. For VOIP same alarms are used.                                            |                |                   |                     |                       |
|                      | LP/0 OamEnet/0                                                                                                                                                                                                             |                | 3002              |                     | * bb PPEM30? gghh TBL |
|                      | LP/0 OamEnet/0                                                                                                                                                                                                             |                | 3003              |                     | * bb PPEM303 gghh TBL |
|                      | LP/0 OamEnet/0                                                                                                                                                                                                             |                | 3006              |                     | * bb PPEM302 gghh TBL |
| 7039                 | ATM Core alarms.<br>AtmIf instance range (<n>): 1-4095<br>Vcc instance range (<n2.n3>): n2 is VPI; n3 is VCI                                                                                                               |                |                   |                     |                       |
|                      | Atmif/<n> Vcc/<n2.n3>                                                                                                                                                                                                      |                | 2001              |                     | * bb PPEM302 gghh TBL |
|                      | Atmif/<n>                                                                                                                                                                                                                  |                | 4000              |                     | * bb PPEM300 gghh TBL |
| 7041                 | ATM Networking alarms.<br>AtmIf instance range (<n>): 1-4095<br>CfgNode instance range (<n>): 0-104<br>Top instance range (<n>): 0-104<br>Node instance range (<id>): 44-hex digit id<br>Vpt instance range (<n2>): 0-4095 |                |                   |                     |                       |
|                      | Atmif/<n> Uni                                                                                                                                                                                                              |                | 0000              |                     | * bb PPEM306 gghh TBL |
|                      | Atmif/<n> Uni                                                                                                                                                                                                              |                | 0001              |                     | * bb PPEM303 gghh TBL |
|                      | Atmif/<n> Uni Ilmi                                                                                                                                                                                                         |                | 0051              |                     | **bb PPEM300 gghh TBL |
|                      | Atmif/<n> Uni<br>Atmif/<n> Pnni<br>Atmif/<n> Vpt/<n2> Uni<br>Atmif/<n> Vpt/<n2> Pnni                                                                                                                                       |                | 0151              |                     | *Cbb PPEM300 gghh TBL |
|                      | Atmif/<n> Pnni Rcc                                                                                                                                                                                                         |                | 0251              |                     | **bb PPEM300 gghh TBL |
|                      | Atmif/<n> Pnni Rcc                                                                                                                                                                                                         |                | 0252              |                     | **bb PPEM300 gghh TBL |
|                      | Artg Pnni Top/<n> Node/<id>                                                                                                                                                                                                |                | 0602              |                     | **bb PPEM301 gghh TBL |

| Passport Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                               | Solution Notes | Passport Subindex | Importance Category | SCC2 Header               |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|---------------------------|
|                      | Artg                                                                                                                                                                                                                                                                                                                                                                                                                         |                | 0603              |                     | **bb PPEM303 gghh<br>TBL  |
| 7056                 | Voice Services Processor (VSP) / Narrowband Service Trunk over ATM (Nsta)<br>This group is specific to PVG application (e.g. severe failure of the VSP card)<br>Lp instance range (<x>): 0-15<br>PModule instance range (<y>): 1-24<br>PBlock instance range (<z>): 1-2<br>NSTA instance range (<i>): 0-15999<br>Conn instance range (<l>): 0-128<br>Brag instance range (<d>): 0-159999<br>BragS instance range (<p>): 0-15 |                |                   |                     |                           |
|                      | Lp/<x> Vsp PModule/<y>                                                                                                                                                                                                                                                                                                                                                                                                       |                | 0006              |                     | * bb PPEM303 gghh<br>TBL  |
|                      | Nsta/<i> Conn/<l> Brag/<d> Ccst                                                                                                                                                                                                                                                                                                                                                                                              |                | 1101              |                     | * bb PPEM300 gghh<br>TBL  |
|                      | Nsta/<i> Vgs lua                                                                                                                                                                                                                                                                                                                                                                                                             |                | 1212              |                     | * bb PPEM300 gghh<br>TBL  |
|                      | Lp/<x> Vsp PModule/<y>                                                                                                                                                                                                                                                                                                                                                                                                       |                | 1214              |                     | **bb PPEM302 gghh<br>TBL  |
|                      | Nsta/<i> Vgs BragS/<p>                                                                                                                                                                                                                                                                                                                                                                                                       |                | 1215              |                     | ** bb PPEM302 gghh<br>TBL |
| 7060                 | ATM and Frame Resource Control alarms.<br>LP instance range (<n>): 0-15                                                                                                                                                                                                                                                                                                                                                      |                |                   |                     |                           |
|                      | LP/<n> Eng Arc Ov                                                                                                                                                                                                                                                                                                                                                                                                            |                | 1200              |                     | * bb PPEM301 gghh<br>TBL  |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                                                                   |                | 1300              |                     |                           |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                                                                   |                | 1400              |                     |                           |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                                                                   |                | 1500              |                     |                           |
|                      | LP/<n> Eng                                                                                                                                                                                                                                                                                                                                                                                                                   |                | 1600              |                     |                           |
| 7071                 | LAN ApplicationLAN application instance (<n>): 0-255                                                                                                                                                                                                                                                                                                                                                                         |                |                   |                     |                           |
|                      | LA/<n>                                                                                                                                                                                                                                                                                                                                                                                                                       |                | 1000              |                     | *Cbb PPEM302 gghh<br>TBL  |
| 7080                 | Software file system.<br><name> = name of the software application                                                                                                                                                                                                                                                                                                                                                           |                |                   |                     |                           |
|                      | Sw Av/<name>                                                                                                                                                                                                                                                                                                                                                                                                                 |                | 0100              |                     | **bb PPEM302 gghh<br>TBL  |

Reference [3] provides detailed descriptions of Passport alarm logs, of which only a portion are applicable for Succession VOA/VOIP.

## MDM Alarm Logs

Table 4 presents the list of MDM and MDM proxy set/clear alarm logs that are applicable for Succession VOA/VOIP.

Applicable MDM set/clear alarms logs include those due to MDM software failure, and alarms related to the monitoring of the platform on which MDM is operating. MDM proxy alarm logs are alarms that MDM initiates on behalf of Passport (for a number of reasons) and injects into the Passport alarm log stream.

The table does not explicitly state all MDM clear alarm logs that correspond to each set. The clear differs from its corresponding set by only the first two characters. The characters “aa” are replaced by “ ” (two spaces). This format is presented in Table 1.

The MDM alarm identifier consists of an eight-digit number identifying the alarm. The first four digits comprise the **Index Group**, which represents logical groupings of alarms. The last four digits are the **SubIndex**, which is an identifier within each index group.

**Component Name** indicates the managed object against which the alarm Log is generated. This table contains the CLI format of a component name. The “compld” field in SCC2 format contains this information (with the module’s <nodename> pre-pended). Also, “compld” follows the MDM API-style format (with component type and instance separated by a space instead of a slash, and ‘\$’ appearing in place of a null instance value). Variables (usually instance value ranges) are denoted by <> and the reader should reference the Alarms NTP’s [3] and [4] for further information.

**Table 4 MDM Set/Clear Alarms Supported for Succession VOA/VOIP**

| MDM Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A | MDM SubIndex | Importance category (N/A) | SCC2 Header                                                                     |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------|---------------------------|---------------------------------------------------------------------------------|
| 0999            | Loss of access to a Passport shelf from MDM. MDM tries to reconnect and when it succeeds in doing so, will do a “state walk” of major components on the shelf and issue alarms for those components that are out-of-service. EM instance range (<nodename>): a string, typically the CLLI identifier for the PP15000                                                                                                                                                                                                                                                                                     |     |              |                           |                                                                                 |
|                 | EM/<nodename>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     | 0001         |                           | *Cbb MDM 303 gghh TBL                                                           |
| 0999            | MDM Proxy-alarm. MDM-originated alarm sent on behalf of the Passport, either due to a state walk or a state-change notification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |              |                           |                                                                                 |
|                 | This alarm can apply to many Passport components.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 0012         |                           | **bb PPEMeee gghh TBL<br>where:<br>eee = 300, 301, 302, 303, 304, 305, 306, 307 |
| 3010            | Indicates faults on MDM server processes, which are needed by the MDM tools/applications. The MDM Log Display GUI or corresponding Unix Utility (nmslog) may also be used to find the information for the cause of the problem.<br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>APP instance range (<a>): a string, denoting the name of an MDM software application<br>GROUP instance range (<g>): a string, which is the HGDS group name for a set of Passports<br>PP instance range (<nodename>): a string, typically the CLLI identifier for the PP15000 |     |              |                           |                                                                                 |
|                 | NMS/<x> APP/<a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     | 0000         |                           | **bb MDM 302 gghh TBL                                                           |
|                 | NMS/<x> GROUP/<g>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 0700         |                           | * bb MDM 305 gghh TBL                                                           |

| MDM Index Group | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N/A | MDM SubIndex | Importance category (N/A) | SCC2 Header                                             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------|---------------------------|---------------------------------------------------------|
|                 | NMS/<x> PP/<nodename>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 0701         |                           | * bb MDM 300 gghh TBL                                   |
|                 | NMS/<x> PP/<nodename>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 0702         |                           | * bb MDM 300 gghh TBL                                   |
|                 | NMS/<x><br>APPL/TODCHANGEVER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | 0703         |                           | * bb MDM 304 gghh TBL                                   |
| 3011            | MDM Platform monitoring; e.g. Solaris and Sun monitoring, including: CPU, disk space, memory, local ports and connectivity to adjacent neighbors. The severity of resource problems are determined via thresholds. Connectivity problems are determined using ping command.<br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>APP instance range (<a>): a string, denoting the name of an MDM software application<br>DISK instance range (<v>): a string, denoting disk volume name<br>CPU instance range (<c>): a string, denoting the CPU id<br>PORT and CONNECTION instance range (<ip>): an IP address or host name<br>SDS instance range (<d>): logical disk name |     |              |                           |                                                         |
|                 | NMS/<x> APP/<a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 0001         |                           | *Cbb MDM 303 gghh TBL                                   |
|                 | NMS/<x> DISK/<v>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     | 0100         |                           | aabb MDM 303 gghh TBL<br>where:<br>aa = “*C”, “**”, “*” |
|                 | NMS/<x> CPU/<c>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 0200         |                           | aabb MDM 303 gghh TBL<br>where:<br>aa = “*C”, “**”, “*” |
|                 | NMS/<x> MEMORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     | 0300         |                           | aabb MDM 303 gghh TBL<br>where:<br>aa = “*C”, “**”, “*” |
|                 | NMS/<x> PORT/<ip>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     | 0401         |                           | **bb MDM 303 gghh TBL                                   |
|                 | NMS/<x> CONNECTION/<ip>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     | 0501         |                           | *Cbb MDM 303 gghh TBL                                   |
|                 | NMS/<x> SDS/<d>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 0600         |                           | *Cbb MDM 303 gghh TBL                                   |
|                 | NMS/<x>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     | 0700         |                           | aabb MDM 303 gghh TBL<br>where:<br>aa = “*C”, “**”      |
| 600x            | MDP application alarms.<br>NMS instance range (<x>): a string, typically the hostname of the MDM server platform<br>MDP instance range (<a>): a string, denoting the name of an MDP software application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |              |                           |                                                         |
|                 | NMS/<x> MDP/<a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 00001-40000  |                           | aabb MDM 307 gghh TBL<br>where:<br>aa = “*C”, “**”, “*” |

Reference [4] provides detailed descriptions of MDM and MDM proxy alarm logs, of which only a portion are applicable for Succession VOA/VOIP.

## SN06(VOA)-to-SN06.2(VOA/VOIP) Delta Summary

The following table captures the SN06.2 (VOA/VOIP) alarm log delta that includes PVG application as compared with SN06 (VOA) documentation that did not include any PVG application specifics

**Table 5 SN06 (non PVG content) -to-SN06.2 (including PVG content) Change Summary Description**

| <b>Fault Code</b>     | <b>Description of Change</b> |
|-----------------------|------------------------------|
| <b>SET ALARMS</b>     |                              |
| 70115400              | New                          |
| 70115401              | New                          |
| 70115402              | New                          |
| 70115403              | New                          |
| 70115480              | New                          |
|                       |                              |
| 7026 3000             | New                          |
|                       |                              |
| 7056 0002             | New                          |
| 7056 0003             | New                          |
| 7056 0500             | New                          |
| 7056 0501             | New                          |
| 7056 0502             | New                          |
| 7056 1000             | New                          |
| 7056 1200             | New                          |
| 7056 1201             | New                          |
| 7056 1202             | New                          |
| 7056 1203             | New                          |
| 7056 1204             | New                          |
| 7056 1209             | New                          |
| 7056 1210             | New                          |
| 7056 1211             | New                          |
| 7056 1213             | New                          |
|                       |                              |
| <b>MESSAGE Alarms</b> |                              |
|                       |                              |
| 7000 0039             | New                          |
|                       |                              |
| 7021 1000             | New                          |
| 7021 1002             | New                          |
| 7021 1003             | New                          |
| 7021 1004             | New                          |
| 7021 1005             | New                          |
| 7021 1006             | New                          |
| 7021 100B             | New                          |
| 7021 1100             | New                          |
|                       |                              |
| 7056 1101             | New                          |
| 7056 1212             | New                          |
| 70561214              | New                          |
| 7056 1215             | New                          |
|                       |                              |
| 7060 1300             | New                          |

|           |     |
|-----------|-----|
| 7060 1400 | New |
| 7060 1500 | New |
| 7060 1600 | New |
|           |     |
| 7071 1200 | New |

## SN06.2-to-SN07(VOA/VOIP) Delta Summary

The following table captures the SN07 (VOA/VOIP) alarm log delta as compared with SN06.2 (VOA/VOIP) documentation.

**Table 6 SN06.2-to-SN07 Change Summary Description**

| <b>Fault Code</b>     | <b>Description of Change</b> |
|-----------------------|------------------------------|
| <b>SET ALARMS</b>     |                              |
| 7000 0041             | New                          |
|                       |                              |
| 7003 0008             | New                          |
|                       |                              |
| 7011 1500             | New                          |
| 7011 1501             | New                          |
| 7011 5254             | New                          |
| 7011 5255             | New                          |
| 7011 5256             | New                          |
|                       |                              |
| 7012 0059             | New                          |
|                       |                              |
| 7021 0013             | New                          |
| 7021 0014             | New                          |
|                       |                              |
| 7041 0700             | New                          |
| 7041 0701             | New                          |
| 7041 0703             | New                          |
|                       |                              |
| 7056 1208             | New                          |
| 7056 1217             | New                          |
|                       |                              |
|                       |                              |
| <b>MESSAGE Alarms</b> |                              |
|                       |                              |
| 7008 1021             | New                          |
|                       |                              |
| 7021 1021             | New                          |
| 7021 1101             | New                          |
|                       |                              |
| 7041 0151             | New                          |
|                       |                              |
| 7056 0006             | New                          |
|                       |                              |
| 7080 0100             | New                          |

## References

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2. Passport 15000 for Universal Access – AAL1 (SN06) Integrated Solution Specification, Issue 3.04, Oct 22, 2002
3. NTP 241-5701-500 Passport 6400, 7400, 15000, 20000 Alarms, 5.2S1, Nov/2003.
4. NTP 241-6001-501 MDM Proxy Alarms Reference Guide, 14.3RSUP, 2003.
5. NTP 241-6001-309 Preside MDM Management Data Provider User Guide, 14.3RSUP, 2003.
6. Supernode Data Manager - Log Applications Enhancement Design Summary (DSUM), 2002.
7. NTP NN10600-500 Multiservice Switch 7400/15000/20000 Alarms Reference, 6.1M2, July 2004

## Appendix F: CICM Logs and Alarms for SN07

The following table is the list of events that can be generated by the SAM21 blade-based CICM product in SN07. Some notes on the table's contents at the time of writing:

- The CICM353 log events are unique to the SAM16-based CICM product and are not contained in the table below.
- The CICM303 log (CorruptVLCM alarm) has no identified clear in the table below. A software issue discovered late in the release found that the alarm was being delivered improperly (as an SNMP trap instead of routed to the /var/log logging system on CS2000 Management Tools). When the CR tracking this issue is resolved, the event will have no severity and through the /var/log logging system.
- The CICM328 log (WindowsRestart alarm) has no identified clear in the table below. The WindowsRestart alarm occurs when CICM restarts. When the CICM application comes up, there is a cold start trap generated which is not documented in the table below. It may be possible to use this event as a "clear" for WindowsRestart.



## CICM Logs and Alarms in SN07

| Log     | CICM Output          | Alarm                       | Severity | Category        | Description                        | Specific Problem                                                         |
|---------|----------------------|-----------------------------|----------|-----------------|------------------------------------|--------------------------------------------------------------------------|
| CICM300 | /var/log/customerlog | LegacyError                 | None     | environmental   | Legacy Error Log.                  | Log details: XXX                                                         |
| CICM300 | /var/log/customerlog | LegacyWarning               | None     | environmental   | Legacy Warning Log.                | Log details: XXX                                                         |
| CICM301 | ALARM_TRAP_to_IEMS   | softwareMismatch            | Minor    | environmental   | Software Version Mismatch.         | Version Mismatch. Local Version XXX. Mate Version XXX.                   |
| CICM301 | ALARM_TRAP_to_IEMS   | softwareMismatchClear       | None     | environmental   | Software Version Mismatch.         | Version Mismatch. Local Version XXX. Mate Version XXX.                   |
| CICM302 | /var/log/customerlog | RouteOrElementStateMismatch | None     | communications  | Route/element state mismatch       | Resetting adapter, state= XXX mate=XXX                                   |
| CICM303 | ALARM_TRAP_to_IEMS   | CorruptVLCM                 | Warning  | equipment       | Corrupt VLCM.                      | VLCM name XXX is corrupt - in memory gateway already has id of XXX.      |
| CICM304 | /var/log/customerlog | UnableBindIP                | None     | communications  | Unable to bind IP.                 | Unable to bind IP address XXX to interface XXX.                          |
| CICM305 | /var/log/customerlog | NoAdapterMib                | None     | processingError | Unable To Bind Adapter.            | Unable to obtain dynamic adapter config from Mib - cannot bind adapter.  |
| CICM306 | /var/log/customerlog | NoAdminIPNodeA              | None     | processingError | No admin Ip for node A.            | No admin address datafilled for node A                                   |
| CICM306 | /var/log/customerlog | NoAdminIPNodeB              | None     | processingError | No admin Ip for node B.            | No admin address datafilled for node B                                   |
| CICM306 | /var/log/customerlog | NoAdminNetMask              | None     | processingError | No admin net mask.                 | No admin net mask datafilled                                             |
| CICM306 | /var/log/customerlog | InvalidAdminAddr            | None     | processingError | Invalid admin address.             | Invalid admin ip address specified XXX                                   |
| CICM306 | /var/log/customerlog | InvalidAdminMask            | None     | processingError | Invalid admin mask.                | Invalid admin mask specified XXX                                         |
| CICM307 | /var/log/customerlog | SkippingDisabledAdapter     | None     | communications  | Skipping disabled adapter          | Skipping disabled XXX adapter.                                           |
| CICM308 | /var/log/customerlog | UFTPSessionTimeout1         | None     | communications  | UFTPSessionTimeout.                | Timed out after XXX secs - No request details received from client       |
| CICM308 | /var/log/customerlog | UFTPSessionTimeout2         | None     | communications  | UFTPSessionTimeout.                | Timed out after XXX secs - No response from client                       |
| CICM308 | /var/log/customerlog | UFTPSessionTimeout3         | None     | communications  | UFTPSessionTimeout.                | Timed out after XXX secs - Terminated after error occurred               |
| CICM309 | /var/log/customerlog | NoStreamsAvailable          | None     | communications  | NoStreamsAvailable.                | No streams available for CreateConnection, XXX streams already allocated |
| CICM310 | /var/log/customerlog | H248SendPortNotFoundInMIB   | None     | communications  | H248 Send Port Not Found in MIB.   | XXX : H248 send port not found in MIB.Defaulting to XXX                  |
| CICM310 | /var/log/customerlog | H248ListenPortNotFoundInMIB | None     | communications  | H248 Listen Port Not Found in MIB. | XXX : H248 listen port not found in MIB.Defaulting to XXX                |

|         |                      |                                        |          |                 |                                    |                                                                                                                                             |
|---------|----------------------|----------------------------------------|----------|-----------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| CICM311 | /var/log/customerlog | CouldNotOpenRegKey                     | None     | processingError | Could not open registry key.       | Could not open XXX in registry. New hierarchy needs to be created. This event can be generated during initial configuration of the gateway. |
| CICM311 | /var/log/customerlog | MibFailedOpenKey                       | None     | processingError | Mib failed to open key.            | Mib node error: failed to open key XXX.                                                                                                     |
| CICM312 | /var/log/customerlog | MIBCompatFailure                       | None     | processingError | MIB compatibility failure.         | MIB compatability failure. Could not find the MIB entries for release XXX                                                                   |
| CICM312 | /var/log/customerlog | MIBCompatRemFailure                    | None     | processingError | MIB compatibility remote failure.  | MIB compatability failure. Could not find the MIB entries for release XXX on remote node                                                    |
| CICM313 | ALARM_TRAP_to_IEMS   | GWCCConnectionLoss                     | Critical | communications  | GWC Connection Loss                | CICM has lost connection with the GWC                                                                                                       |
| CICM313 | ALARM_TRAP_to_IEMS   | GWCCConnectionLossClear                | None     | communications  | GWC Connection Loss                | CICM has regained connection with GWC                                                                                                       |
| CICM314 | /var/log/customerlog | MibReadFailure                         | None     | processingError | Mib Registry Read Failure.         | Mib registry error: failed to read attribute XXX in key XXX. Probable cause is out of date config data.                                     |
| CICM316 | /var/log/customerlog | UnableCreateSocket                     | None     | communications  | Unable to create a socket.         | Unable to create a socket. Error = XXX                                                                                                      |
| CICM316 | /var/log/customerlog | UnableBindSocketAddr                   | None     | communications  | Unable to Bind Socket to IP.       | Unable to Bind Socket to IP address.                                                                                                        |
| CICM316 | /var/log/customerlog | AddrNotAvailable                       | None     | communications  | Addr not available.                | Specified address is not available on the local host.                                                                                       |
| CICM316 | /var/log/customerlog | AddrInUse                              | None     | communications  | Addr already in use.               | Specified address is already in use.                                                                                                        |
| CICM316 | /var/log/customerlog | NoAsyncReadMode                        | None     | communications  | No async read mode                 | Unable to select asynchronous read mode. Error = XXX                                                                                        |
| CICM316 | /var/log/customerlog | ErrorSetSocketTMO                      | None     | communications  | Error setting socket tmo           | Error setting socket timeout. Error = XXX                                                                                                   |
| CICM322 | ALARM_TRAP_to_IEMS   | SystemShutdown                         | Critical | processingError | System Shutdown                    | System is shutting down due to user command.                                                                                                |
| CICM322 | ALARM_TRAP_to_IEMS   | SystemStartUp                          | None     | processingError | System Shutdown                    | System is starting up.                                                                                                                      |
| CICM323 | /var/log/customerlog | SlaveAdapterReceivedNoPackets          | None     | communications  | Slave adapter received no packets  | Slave adapter XXX received no packets                                                                                                       |
| CICM324 | /var/log/customerlog | FatalStateError                        | None     | equipment       | Fatal Error in state               | Fatal error in state XXX.                                                                                                                   |
| CICM325 | /var/log/customerlog | ElementNotConfigured                   | None     | processingError | Element Not Configured.            | Element XXX is not configured.                                                                                                              |
| CICM325 | /var/log/customerlog | ElementNotConfigured2                  | None     | processingError | Config data missing.               | Configuration data missing, service cannot start.                                                                                           |
| CICM326 | /var/log/customerlog | UnableToGetPhysicalLinkStatusForDevice | None     | communications  | Unable to get physical link status | Unable to get physical link status for device XXX                                                                                           |
| CICM327 | /var/log/customerlog | FailedStartNetObj                      | None     | equipment       | Failed to start network status     | Failed to start network status object, hr=0x XXX                                                                                            |

|         |                      |                                       |          |                 |                                              |                                                                                       |
|---------|----------------------|---------------------------------------|----------|-----------------|----------------------------------------------|---------------------------------------------------------------------------------------|
| CICM328 | ALARM_TRAP_to_IEMS   | WindowsRestart                        | Critical | equipment       | Windows restart                              | Auto reboot on failure is set. Initiating windows restart.                            |
| CICM329 | /var/log/customerlog | AuditMateDown                         | None     | equipment       | Audit Mate Node Down                         | Node initialisation: mate node is down                                                |
| CICM329 | /var/log/customerlog | AuditMateActive                       | None     | equipment       | Audit Mate Node Down                         | Node initialisation: mate node is active in state XXX                                 |
| CICM330 | /var/log/customerlog | CantDoPhysicalCheckOnLink             | None     | communications  | Can't do physical check on link              | Can't do physical check on link XXX                                                   |
| CICM331 | /var/log/customerlog | CompFailureShutdown                   | None     | equipment       | Component failure : shutdown                 | Component XXX has failed. Initiating shutdown. XXX                                    |
| CICM332 | /var/log/customerlog | BadTransition                         | None     | equipment       | Bad transition on mate node                  | Bad transition on mate node from XXX to XXX                                           |
| CICM333 | /var/log/customerlog | NoAccessRemoteName                    | None     | communications  | No access to remote name                     | No access to the remote name in the MIB.                                              |
| CICM334 | ALARM_TRAP_to_IEMS   | MateFailure                           | Warning  | equipment       | Audit: Mate Node Failed                      | Mate node failed - Broadcast failure and ask components to promote to Master.         |
| CICM334 | ALARM_TRAP_to_IEMS   | MateRecovered                         | None     | equipment       | Audit: Mate Node Failed                      | Mate node recovered.                                                                  |
| CICM335 | /var/log/customerlog | RouteElementInvalid                   | None     | communications  | Route Element Invalid                        | Local route element XXX or remote route element XXX is invalid                        |
| CICM336 | /var/log/customerlog | NetworkRecovery                       | None     | communications  | Network loss and recovery                    | Network has been lost and then recovered, mate (slave) must reboot.                   |
| CICM337 | ALARM_TRAP_to_IEMS   | NoMessageToA                          | Major    | equipment       | Message To Node A Failed                     | Failed to send message to Node A.                                                     |
| CICM337 | ALARM_TRAP_to_IEMS   | NoMessageToAClear                     | None     | equipment       | Message To Node A Failed                     | Clear Failed to send message to Node A.                                               |
| CICM338 | /var/log/customerlog | NetworkElementHasFailed               | None     | communications  | Network Element Failed                       | Network Element XXX Failed                                                            |
| CICM339 | ALARM_TRAP_to_IEMS   | NoMessageFromB                        | Major    | equipment       | No Message Received From B                   | Have not received a message from Node B for 1.5*ALARM_POLL_PERIOD Seconds. XXX        |
| CICM339 | ALARM_TRAP_to_IEMS   | NoMessageFromB Clear                  | None     | equipment       | No Message Received From B                   | Clear: Have not received a message from Node B for 1.5*ALARM_POLL_PERIOD Seconds. XXX |
| CICM340 | /var/log/customerlog | CantSetLocalAdapter                   | None     | communications  | Can't set local adapter                      | Can't set local adapter, invalid adapter specified                                    |
| CICM341 | ALARM_TRAP_to_IEMS   | BackupFail                            | Minor    | processingError | Backup Fail.                                 | Scheduled/on-demand backup failed during last iteration.                              |
| CICM341 | ALARM_TRAP_to_IEMS   | BackupFailClear                       | None     | processingError | Backup Fail.                                 | Scheduled/on-demand backup failed during last iteration.                              |
| CICM342 | /var/log/customerlog | UnableToBindAdminIPAddressToInterface | None     | communications  | Unable to bind admin IP address to interface | Unable to bind admin IP address to interface XXX - will continue to attempt to bind   |
| CICM344 | /var/log/customerlog | CantSetSlaveAdapter                   | None     | communications  | Can't set slave adapter                      | Can't set slave adapter, invalid adapter specified xxx                                |

|         |                          |                                    |      |                |                                            |                                                                                        |
|---------|--------------------------|------------------------------------|------|----------------|--------------------------------------------|----------------------------------------------------------------------------------------|
| CICM345 | /var/log/customer<br>log | EMMateDown                         | None | communications | EM Mate Down                               | Mate node down. Name: XXX.<br>XXX                                                      |
| CICM346 | /var/log/customer<br>log | EMMibWriteFail                     | None | communications | EM Mate Down                               | Couldn't write EM remote node<br>status to Mib                                         |
| CICM348 | /var/log/customer<br>log | ChangingSlaveAda<br>pter           | None | communications | Changing slave adapter                     | Changing slave adapter from<br>XXX to XXX                                              |
| CICM350 | /var/log/customer<br>log | GetInterfaceDevice<br>Mapping      | None | communications | Get Interface Device<br>Mapping Failed     | Get Interface Device Mapping<br>Failed                                                 |
| CICM352 | /var/log/customer<br>log | CantMapAdapter                     | None | communications | Can't map adapter                          | Can't map XXX to an NT<br>device, link state won't be<br>checked                       |
| CICM354 | /var/log/customer<br>log | maxRudpSessions<br>NotPresent      | None | communications | maxRudpSessionsNot<br>Present.             | Maximum sessions<br>configuration not present                                          |
| CICM354 | /var/log/customer<br>log | UnableToSetMaxR<br>UDPSessions     | None | communications | UnableToSetMaxRUD<br>PSessions.            | unable to set max RUDP<br>sessions [may already be<br>started]                         |
| CICM355 | /var/log/customer<br>log | VmgIpAddressBind<br>Failed         | None | communications | Bind UDP socket for<br>vmg failed.         | Failed to start UDP socket. hr<br>XXX                                                  |
| CICM355 | /var/log/customer<br>log | VmgTerminationInv<br>alid          | None | communications | VMG termination<br>invalid.                | VMG XXX termination XXX<br>invalid                                                     |
| CICM356 | /var/log/customer<br>log | AdapterDown                        | None | communications | Adapter down                               | Adapter XXX is down - aborting<br>start until all adapters are up                      |
| CICM357 | /var/log/customer<br>log | EchoServerPortNot<br>Present       | None | communications | EchoServerPortNotPre<br>sent.              | Echo server port configuration<br>not present                                          |
| CICM358 | /var/log/customer<br>log | UnableToMapNET<br>oInterfaceNumber | None | communications | Unable to map ne to an<br>interface number | Unable to map ne XXX to an<br>interface number                                         |
| CICM360 | /var/log/customer<br>log | AutoBindAdapter                    | None | communications | Auto-bind adapter<br>problem               | Auto-bind adapter XXX XXX                                                              |
| CICM361 | /var/log/customer<br>log | HostPortNotPresen<br>t             | None | communications | HostPortNotPresent.                        | Host port configuration not<br>present                                                 |
| CICM362 | /var/log/customer<br>log | SwactRequestReje<br>cted           | None | communications | Swact request rejected                     | Swact request rejected XXX                                                             |
| CICM363 | /var/log/customer<br>log | CreateConnectionA<br>ckFailed      | None | communications | Create ConnectionAck<br>Failed.            | CreateConnectionAck::can't<br>determine destination for<br>message                     |
| CICM363 | /var/log/customer<br>log | ModifyConnectionA<br>ckFailed      | None | communications | Modify ConnectionAck<br>Failed.            | ModifyConnectionAck::can't<br>determine destination for<br>message                     |
| CICM363 | /var/log/customer<br>log | SetConnectionAck<br>Failed         | None | communications | Set ConnectionAck<br>Failed.               | SetConnNetModeAck::can't<br>determine destination for<br>message                       |
| CICM363 | /var/log/customer<br>log | noPtimeCanBeNeg<br>otiated         | None | communications | no ptime can be<br>negotiated.             | Ensure a common ptime exists<br>between the GWC and the<br>CICM terminal audio profile |
| CICM363 | /var/log/customer<br>log | noCodecCanBeNe<br>gotiated         | None | communications | no codec can be<br>negotiated.             | Ensure a common codec exists<br>between the GWC and the<br>CICM terminal audio profile |
| CICM364 | /var/log/customer<br>log | RegisterGatewayFa<br>iled          | None | communications | Register Gateway<br>Failed                 | Register Gateway XXX Failed                                                            |

|         |                      |                                    |       |                 |                                  |                                                                                           |
|---------|----------------------|------------------------------------|-------|-----------------|----------------------------------|-------------------------------------------------------------------------------------------|
| CICM364 | /var/log/customerlog | UnRegisterGatewayFailed            | None  | communications  | UnRegister Gateway Failed        | UnRegister Gateway XXX Failed                                                             |
| CICM365 | /var/log/customerlog | MibSyncMateFail                    | None  | equipment       | Mib Sync Mate Failure            | Mate node failed during MIB synchronisation. This node will start partially Synchronised. |
| CICM366 | /var/log/customerlog | MibSyncSCMPollfail                 | None  | equipment       | Mib Sync SCM Poll Failure        | Opening Service Control Manager FAILURE.                                                  |
| CICM367 | /var/log/customerlog | ErrorDatafillTones                 | None  | equipment       | Error Datafilling Tones          | Error encountered datafilling tones!.                                                     |
| CICM368 | /var/log/customerlog | NoMaxSessions                      | None  | equipment       | Max Sessions Not Present         | Invalid config. Max Sessions not present.                                                 |
| CICM368 | /var/log/customerlog | MaxSessionsNotPresent              | None  | communications  | MaxSessionsNotPresent.           | Maximum sessions configuration not specified                                              |
| CICM369 | /var/log/customerlog | NoDomainLicense                    | None  | equipment       | No Domain License                | No network domain license for terminal at XXX                                             |
| CICM370 | ALARM_TRAP_to_IEMS   | MateFailure                        | Major | communications  | Mate Failure.                    | Admin reports mate node failure.                                                          |
| CICM370 | ALARM_TRAP_to_IEMS   | MateStarting                       | None  | communications  | Mate Failure.                    | Admin reports Mate Node start.                                                            |
| CICM371 | /var/log/customerlog | TerminalError                      | None  | equipment       | An Error Occured on the Terminal | Terminal Error XXX                                                                        |
| CICM372 | /var/log/customerlog | UnableToMapAdapter                 | None  | communications  | Unable to map adapter            | Unable to map XXX adapter XXX to an ip address.                                           |
| CICM373 | /var/log/customerlog | UFTP Firmware File OpenFailed      | None  | communications  | UFTP Firmware File OpenFailed.   | Failed to open file XXX.                                                                  |
| CICM373 | /var/log/customerlog | UFTP Firmware File OpenFailedFatal | None  | communications  | UFTP Firmware File OpenFailed.   | Invalid directory or file XXX not found                                                   |
| CICM373 | /var/log/customerlog | UFTP Firmware File ReadError       | None  | communications  | UFTP Firmware File ReadError.    | Firmware file XXX read error                                                              |
| CICM373 | /var/log/customerlog | UFTP Command File ReadError        | None  | communications  | UFTP Command File ReadError.     | UFTP Command File ReadError                                                               |
| CICM373 | /var/log/customerlog | UFTP Command File CreationError    | None  | communications  | UFTP Command File CreationError. | Command = XXX                                                                             |
| CICM373 | /var/log/customerlog | UFTP Base Directory Missing        | None  | communications  | UFTP Base Directory Missing.     | UFTP base directory missing from registry                                                 |
| CICM374 | /var/log/customerlog | ReadPollPeriodFail                 | None  | communications  | Poll Period Read Fail            | Couldn't read gwPollPeriod from mib. Defaulting to 30 seconds.                            |
| CICM375 | ALARM_TRAP_to_IEMS   | SAM21 Version Mismatch             | Minor | processingError | SAM21 Version Mismatch.          | SAM21 Version Mismatch. Version XXX                                                       |
| CICM375 | ALARM_TRAP_to_IEMS   | SAM21 Version MismatchClear        | None  | processingError | SAM21 Version Mismatch.          | SAM21 Version Mismatch. Version XXX                                                       |
| CICM376 | /var/log/customerlog | ShuttingDownTerminals              | None  | communications  | ShuttingDownTerminals.           | Shutdown counter set to zero minutes, shutting down terminals immediately                 |
| CICM376 | /var/log/customerlog | TerminalShutDownAborted            | None  | communications  | TerminalShutDownAborted.         | Terminal shutdown aborted                                                                 |
| CICM377 | ALARM_TRAP_to_IEMS   | SyslogFailure                      | Major | communications  | Syslog Failure.                  | Syslog failure. Last stream in failure XXX.                                               |
| CICM377 | ALARM_TRAP_to_IEMS   | SyslogFailureClear                 | None  | communications  | Syslog Failure.                  | Syslog failure clear.                                                                     |

|         |                          |                                                        |          |                |                                                               |                                                                         |
|---------|--------------------------|--------------------------------------------------------|----------|----------------|---------------------------------------------------------------|-------------------------------------------------------------------------|
| CICM378 | /var/log/customer<br>log | ExcessNodes                                            | None     | communications | Excessive Nodes on<br>EM                                      | More than 100 nodes present,<br>unrecommended configuration             |
| CICM379 | /var/log/customer<br>log | RegisterSessionFai<br>led                              | None     | communications | Register Session Failed                                       | Register Session Failed on<br>Gateway XXX                               |
| CICM379 | /var/log/customer<br>log | RegisterSessionFai<br>ledRange                         | None     | communications | Register Gateway<br>Failed                                    | Register Gateway XXX Failed<br>termination XXX is out of range          |
| CICM379 | /var/log/customer<br>log | RegisterSessionFai<br>ledInvalid                       | None     | communications | Register Gateway<br>Failed                                    | Register Gateway XXX Failed<br>termination XXX is invalid               |
| CICM379 | /var/log/customer<br>log | CouldntStartAuditTi<br>mer                             | None     | communications | Couldn't start audit<br>timer                                 | Couldn't start audit timer                                              |
| CICM380 | ALARM_TRAP_t<br>o_IEMS   | FailedPollIMG                                          | Warning  | communications | Fail Poll MG                                                  | Failed to Poll Media Gateway<br>XXX.                                    |
| CICM380 | ALARM_TRAP_t<br>o_IEMS   | FailedPollIMGClear                                     | None     | communications | Fail Poll MG                                                  | Failed to Poll Media Gateway<br>XXX.                                    |
| CICM381 | ALARM_TRAP_t<br>o_IEMS   | NetworkLoss                                            | Critical | communications | Network Loss.                                                 | Critical network connection loss<br>on adapter XXX                      |
| CICM381 | ALARM_TRAP_t<br>o_IEMS   | ClearNetworkLoss                                       | None     | communications | Network Loss.                                                 | Critical network connection loss<br>cleared on adapter XXX              |
| CICM381 | ALARM_TRAP_t<br>o_IEMS   | NetworkLossMajor                                       | Major    | communications | Network Loss.                                                 | Major network connection loss<br>on adapter XXX                         |
| CICM381 | ALARM_TRAP_t<br>o_IEMS   | ClearNetworkLoss<br>Major                              | None     | communications | Network Loss.                                                 | Major network connection loss<br>cleared on adapter XXX                 |
| CICM382 | ALARM_TRAP_t<br>o_IEMS   | RemoteHostFail                                         | Minor    | communications | Remote Host Fail.                                             | Disabling client XXX with<br>interface XXX.                             |
| CICM382 | ALARM_TRAP_t<br>o_IEMS   | RemoteHostFailCle<br>ar                                | None     | communications | Remote Host Fail.                                             | Enabling client XXX with<br>interface XXX.                              |
| CICM383 | ALARM_TRAP_t<br>o_IEMS   | FirmwareUpgradeF<br>ail                                | Warning  | communications | Firmware upgrade<br>failure.                                  | Firmware upgrade failure.                                               |
| CICM383 | ALARM_TRAP_t<br>o_IEMS   | FirmwareUpgradeF<br>ailClear                           | None     | communications | Firmware upgrade<br>failure.                                  | Firmware upgrade failure.                                               |
| CICM383 | /var/log/customer<br>log | FirmwareUpgradeN<br>otSupportedUFTP<br>OverUnistim     | None     | communications | FirmwareUpgradeNotS<br>upportedUFTPOverUni<br>stim.           | Firmware upgrade is not<br>supported via UFTP over<br>Unistim. File XXX |
| CICM384 | /var/log/customer<br>log | NodeIsolatedForcin<br>gTransitionFromMa<br>sterToSlave | None     | communications | Node Isolated - Forcing<br>transition from master<br>to slave | Node Isolated - Forcing<br>transition from master to slave              |
| CICM385 | /var/log/customer<br>log | SlaveNodeIsolated                                      | None     | communications | Slave Node isolated                                           | Slave Node isolated                                                     |
| CICM386 | /var/log/customer<br>log | UFTPmaxSessions<br>MIBDataFatal                        | None     | communications | UFTPmaxSessions<br>value in the mib is<br>incorrect           | UFTPmaxSessions must be at<br>least one. Value XXX is invalid           |
| CICM386 | /var/log/customer<br>log | UFTPmaxSessions<br>MIBDataNonFatal                     | None     | communications | UFTPmaxSessions<br>value is missing from<br>the mib           | UFTPmaxSessions missing<br>using default value XXX                      |
| CICM387 | ALARM_TRAP_t<br>o_IEMS   | CommsFailedCicm                                        | Major    | communications | CICM Poll Failed                                              | Failed to Poll CICM Node XXX.                                           |
| CICM387 | ALARM_TRAP_t<br>o_IEMS   | CommsFailedCicm<br>Clear                               | None     | communications | CICM Poll Failed                                              | Failed to Poll CICM Node XXX.                                           |
| CICM388 | /var/log/customer<br>log | UFTPtimerTimeout<br>MIBDataNonFatal                    | None     | communications | UFTPtimerTimeout<br>value is missing from<br>the mib          | UFTPtimerTimeout missing<br>using default value XXX                     |



|         |                      |                                                |          |                 |                                                                  |                                                                    |
|---------|----------------------|------------------------------------------------|----------|-----------------|------------------------------------------------------------------|--------------------------------------------------------------------|
| CICM389 | /var/log/customerlog | UFTPInvalidClientMessage                       | None     | communications  | UFTP_INVALID_CLIENT_MESSAGE                                      | UFTP_INVALID_CLIENT_MESSAGE XXX value XXX is invalid               |
| CICM390 | ALARM_TRAP_to_IEMS   | FailedPAMConn                                  | Major    | communications  | Failed To Connect PAM server                                     | PAM server XXX is not responding to authentication requests        |
| CICM390 | ALARM_TRAP_to_IEMS   | FailedPAMConnClear                             | None     | communications  | Failed To Connect PAM server                                     | PAM server XXX is now responding to authentication requests        |
| CICM391 | /var/log/customerlog | ProcessNetworkStateTransitionStateError        | None     | communications  | Invalid transition                                               | ProcessNetworkStateTransition() called with invalid transition XXX |
| CICM392 | /var/log/customerlog | PAMServerTMO                                   | None     | communications  | PAM Server TMO                                                   | Timeout occurred whilst awaiting response from PAM server XXX      |
| CICM393 | /var/log/customerlog | TakeoverManualAbortedIsNotImplemented          | None     | communications  | Takeover manual aborted, is not implemented                      | Takeover manual aborted, is not implemented                        |
| CICM394 | /var/log/customerlog | FailedToUnbindAdapter                          | None     | communications  | Fatal error: Unable to unbind adapter                            | Fatal error: Unable to unbind adapter.                             |
| CICM395 | /var/log/customerlog | MateNodeFailedTemporarily                      | None     | communications  | Mate node failed temporarily                                     | Mate node failed temporarily for XXX iterations                    |
| CICM396 | /var/log/customerlog | TakeoverAbortIsNotImplemented                  | None     | communications  | Takeover abort, is not implemented                               | Takeover abort, is not implemented                                 |
| CICM397 | /var/log/customerlog | MateNodeLostForcingTransitionFromSlaveToMaster | None     | communications  | Mate node lost - Forcing transition from slave to master         | Mate node lost - Forcing transition from slave to master           |
| CICM398 | /var/log/customerlog | MateNodeLost                                   | None     | communications  | Mate node lost                                                   | Mate node lost                                                     |
| CICM399 | /var/log/customerlog | RouteMapError                                  | None     | communications  | Route map error                                                  | Resetting adapter, state= XXX mate=XXX                             |
| CICM500 | /var/log/customerlog | StateChange                                    | None     | processingError | State Change.                                                    | Admin reports a state change to XXX for component XXX.             |
| CICM503 | /var/log/customerlog | NetAccessStateChange                           | None     | communications  | Network Access State Change                                      | Network access state change to XXX                                 |
| CICM504 | /var/log/customerlog | EMNetworkChange                                | None     | communications  | EM Network State Change                                          | Network connectivity XXX. hr=XXX                                   |
| CICM505 | /var/log/customerlog | StopMonitoring                                 | None     | communications  | Stop Monitoring                                                  | Stopped monitoring node XXX                                        |
| CICM506 | /var/log/auditlog    | MonitorStart                                   | None     | communications  | Start Monitoring                                                 | Started to monitor node XXX.                                       |
| CICM507 | /var/log/auditlog    | ConnectToPAMServer                             | None     | environmental   | Connect to PAM.                                                  | Connect to PAM.                                                    |
| CICM508 | /var/log/customerlog | SlaveInstructedToChangeToInvalidAdapter        | None     | communications  | Slave instructed to change to invalid adapter, selecting default | Slave instructed to change to invalid adapter, selecting default   |
| CICM509 | ALARM_TRAP_to_IEMS   | ProcessStateChange                             | Critical | processingError | Critical Process State Change.                                   | Critical Process XXX is not running.                               |
| CICM509 | ALARM_TRAP_to_IEMS   | ProcessStateChangeClear                        | None     | processingError | Critical Process State Change.                                   | Critical Process XXX is running.                                   |

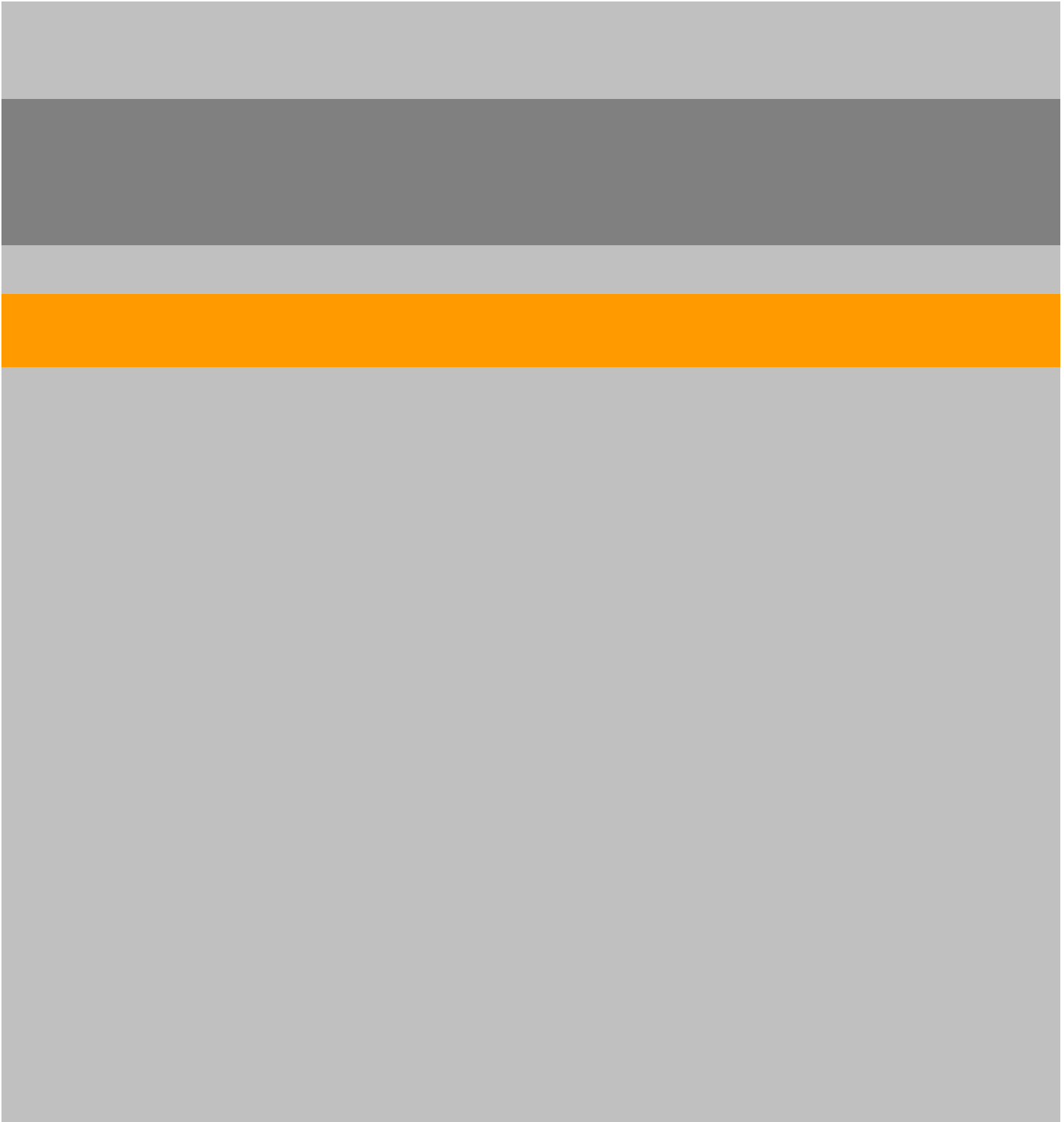
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|---------|----------------------|------------------------------|-------|------------------|--------------------------------|----------------------------------------------------------------------|
| CICM509 | ALARM_TRAP_to_IEMS   | ServiceStateChange           | Major | processingError  | Service State Change.          | Service XXX is not running.                                          |
| CICM509 | ALARM_TRAP_to_IEMS   | ServiceStateChangeClear      | None  | processingError  | Service State Change.          | Service XXX is running.                                              |
| CICM510 | /var/log/auditlog    | EMMateUp                     | None  | environmental    | EM Mate Up.                    | EM Mate Up. Name: XXX.                                               |
| CICM512 | /var/log/customerlog | StartSWACT                   | None  | processingError  | Start SWACT.                   | Admin reports a request to start SWACT.                              |
| CICM512 | /var/log/customerlog | PromoteToMaster              | None  | processingError  | Promote to Master.             | Admin reports a request to promote to Master.                        |
| CICM512 | /var/log/customerlog | DemoteToSlave                | None  | processingError  | Demote to Slave.               | Admin reports a request to demote to slave.                          |
| CICM513 | /var/log/auditlog    | ChangingLocalAdapter         | None  | communications   | Changing local adapter         | Changing local adapter from XXX to XXX                               |
| CICM603 | /var/log/customerlog | InvalidEventReport           | None  | processingError  | Invalid Event Report.          | Invalid report received from Admin.                                  |
| CICM604 | /var/log/customerlog | MateSyncErrState             | None  | processingError  | Mate sync error state.         | request for mate synchronisation received in state XXX.              |
| CICM605 | /var/log/customerlog | GWRegBadState                | None  | equipment        | GW Reg in Bad State.           | Gateway registration received in state XXX.                          |
| CICM606 | /var/log/customerlog | PremSlaveGWReg               | None  | equipment        | Premature reg slave gw.        | Premature registration of the slave gateway.                         |
| CICM607 | /var/log/customerlog | SwactReqRemoteMGM            | None  | equipment        | Swact Request from Remote MGM. | Swact request received from the remote MGM.                          |
| CICM608 | /var/log/customerlog | RetransRUDPMessagesThrottled | None  | communications   | Retransmitted RUDP messages.   | Retransmitted XXX RUDP messages, XXX retransmissions were throttled. |
| CICM609 | /var/log/customerlog | RetransRUDPMessages          | None  | communications   | Retransmitted RUDP messages.   | Retransmitted XXX RUDP messages.                                     |
| CICM610 | /var/log/customerlog | LossOfLogs                   | None  | communications   | Loss of logs.                  | XXX logs have been lost due to buffering.                            |
| CICM610 | /var/log/customerlog | LossOfTraps                  | None  | communications   | Loss of traps.                 | XXX traps have been lost due to buffering.                           |
| CICM611 | ALARM_TRAP_to_IEMS   | ThresholdReached             | Major | qualityOfService | Resource Threshold Crossed     | Resource XXX is near or above its threshold of XXX                   |
| CICM611 | ALARM_TRAP_to_IEMS   | ThresholdReachedClear        | None  | qualityOfService | Threshold Crossed              | Resource XXX is near or above its threshold value of XXX             |
| CICM612 | /var/log/customerlog | AuditStart                   | None  | environmental    | Start Audit.                   | Starting the daily audit.                                            |
| CICM612 | /var/log/customerlog | AuditEnd                     | None  | environmental    | Audit Complete                 | Daily audit completed.                                               |
| CICM614 | /var/log/customerlog | MsgFromInvalidComponent      | None  | equipment        | Message from invalid component | Message received from invalid component type = 0x XXX                |
| CICM615 | /var/log/customerlog | NodeForcedMaster             | None  | equipment        | Node forced to master          | Node is being forced to become master.                               |
| CICM615 | /var/log/customerlog | NodeForcedSlave              | None  | equipment        | Node forced to slave           | Node is being forced to become slave.                                |
| CICM617 | /var/log/customerlog | MibSyncPollFail              | None  | equipment        | Mib Sync Poll Failure          | Network status remote state query returned hr=0x XXX.                |

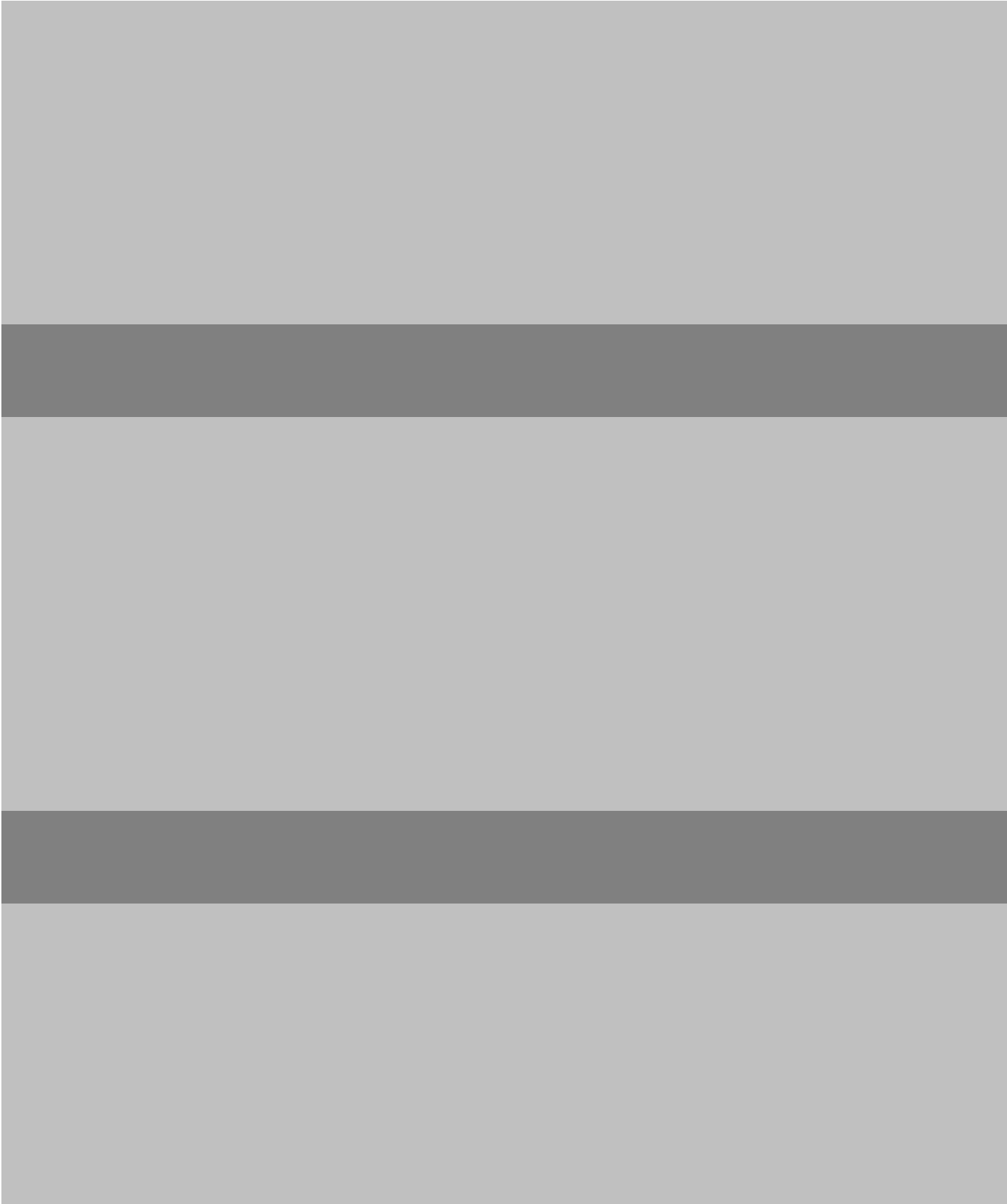


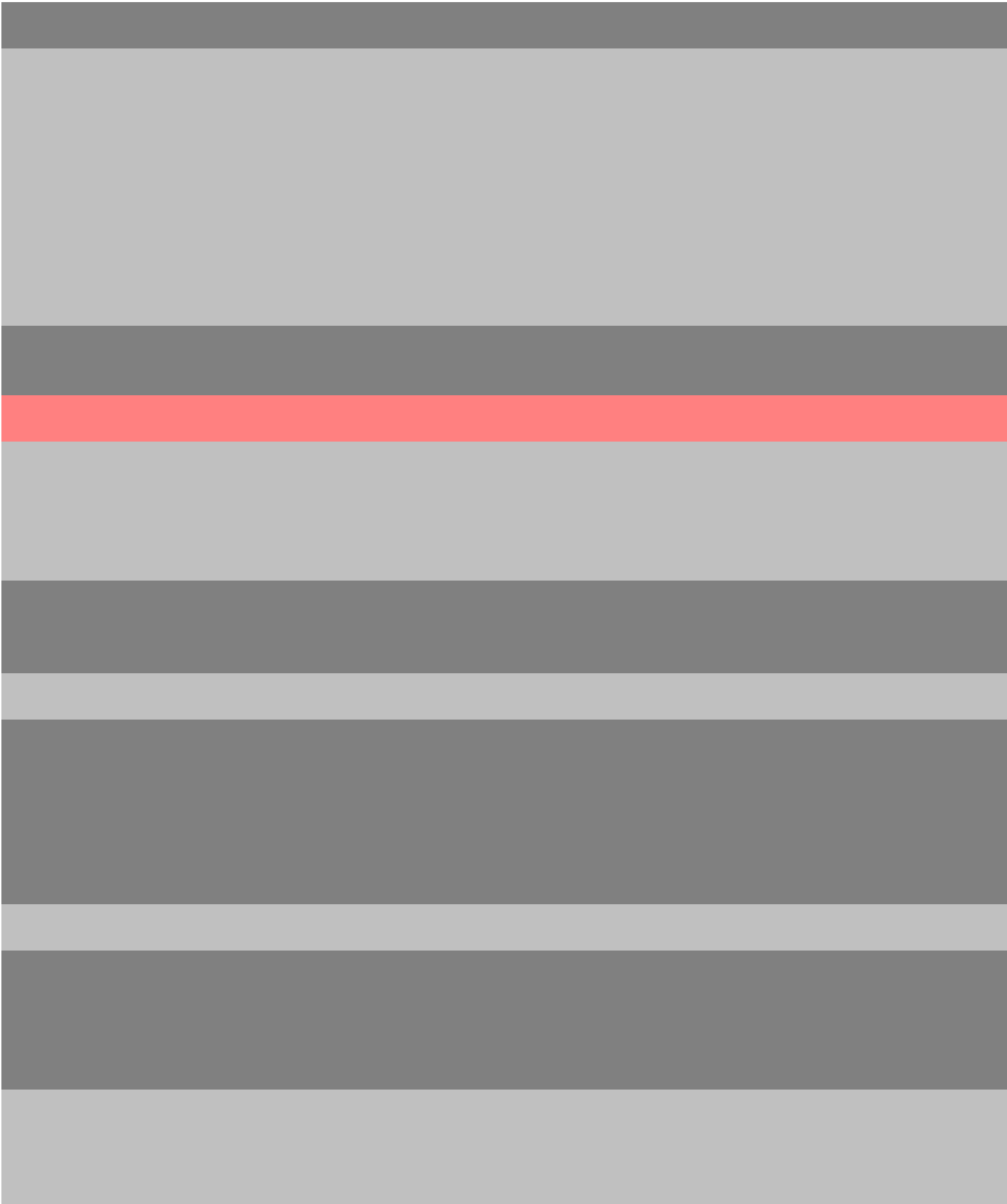
|         |                          |                     |      |           |                                               |                                                                                                                    |
|---------|--------------------------|---------------------|------|-----------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| CICM618 | /var/log/customer<br>log | NoLineID            | None | equipment | No Line ID                                    | User XXX has no LineID attribute in the mib.                                                                       |
| CICM619 | /var/log/customer<br>log | NoToneset           | None | equipment | No Toneset Found                              | Toneset XXX not found A standard tone will be used in place of all toneIDs                                         |
| CICM620 | /var/log/customer<br>log | InvalidToneIndex    | None | equipment | Invalid Tone Component Index                  | Invalid tone component index toneset XXX toneid XXX                                                                |
| CICM621 | /var/log/customer<br>log | NoVolume            | None | equipment | Invalid Volume Datafilled                     | No volume datafilled for toneset XXX toneid XXX                                                                    |
| CICM622 | /var/log/customer<br>log | Invalidtone         | None | equipment | Invalid Tone Frequency                        | Invalid tone frequency count toneset XXX toneid XXX                                                                |
| CICM623 | /var/log/customer<br>log | NoFrequency         | None | equipment | Invalid Frequency Datafilled                  | No frequency datafilled for toneset XXX toneid XXX                                                                 |
| CICM624 | /var/log/customer<br>log | InvalidCadenceCount | None | equipment | Invalid Cadence Count                         | Invalid tone cadence count toneset XXX toneid XXX                                                                  |
| CICM625 | /var/log/customer<br>log | NoCadenceOff        | None | equipment | No Cadence Off                                | No Cadence off datafilled for toneset XXX toneid XXX                                                               |
| CICM625 | /var/log/customer<br>log | NoCadenceOn         | None | equipment | No Cadence On                                 | No Cadence on datafilled for toneset XXX toneid XXX                                                                |
| CICM627 | /var/log/customer<br>log | InvalidConnMap      | None | equipment | Connection mapped to invalid line             | Connection XXX is mapped to line XXX which isn't valid.                                                            |
| CICM628 | /var/log/customer<br>log | ConnNonE1           | None | equipment | Connection mapped not in E1_CONN state        | Connection XXX is mapped to line XXX which isn't in E1_CONNECTION state.                                           |
| CICM629 | /var/log/customer<br>log | ResetNoConn         | None | equipment | Reset Connection isn't in NO_CONNECTION state | Resetting connection for line XXX which isn't in NO_CONNECTION state.                                              |
| CICM630 | /var/log/customer<br>log | CreateConFail       | None | equipment | Create Connection Fail                        | Create connection failed. Call type = XXX, result = XXX                                                            |
| CICM631 | /var/log/customer<br>log | DelConFail          | None | equipment | Delete Connection Fail                        | Delete connection failed.                                                                                          |
| CICM632 | /var/log/customer<br>log | NoLineObject        | None | equipment | No line object                                | Create Connection: Could not find line object for conflicting connection XXX with lineid = XXX                     |
| CICM633 | /var/log/customer<br>log | CorruptConnMap      | None | equipment | Corrupt Connection Map                        | Connection map is corrupt, or media control is reusing handles, connection id XXX is already in use my lineid XXX. |
| CICM634 | /var/log/customer<br>log | NoConIDMap          | None | equipment | No Connection Id map                          | Connection map is corrupt, or media control is reusing handles, connection id XXX could not be found in the map.   |
| CICM635 | /var/log/customer<br>log | UnableChangeLoss    | None | equipment | Unable Change Rx Loss                         | Unable to change rx loss for connection XXX                                                                        |
| CICM636 | /var/log/customer<br>log | TooManyFeatures     | None | equipment | Too Many Features                             | Terminal type has too many features on the main set (max is XXX).                                                  |

|         |                      |                                                     |      |                 |                                                               |                                                                        |
|---------|----------------------|-----------------------------------------------------|------|-----------------|---------------------------------------------------------------|------------------------------------------------------------------------|
| CICM637 | /var/log/customerlog | TooManyFeaturesExt                                  | None | equipment       | Too Many Features                                             | Terminal type has too many features on the extension set (max is XXX). |
| CICM638 | /var/log/securitylog | AuthUserProblem                                     | None | equipment       | Auth User Failed                                              | User XXX                                                               |
| CICM639 | /var/log/securitylog | LogoutSuccess                                       | None | equipment       | Logout Success                                                | User XXX                                                               |
| CICM639 | /var/log/securitylog | LoginSuccess                                        | None | equipment       | Login Success                                                 | User XXX                                                               |
| CICM641 | /var/log/securitylog | ChangePassword                                      | None | equipment       | Change Password Attempt                                       | User XXX                                                               |
| CICM642 | /var/log/securitylog | ReleaseAuth                                         | None | equipment       | Release Authentication                                        |                                                                        |
| CICM643 | /var/log/customerlog | InvalidFirmwareProtocol                             | None | equipment       | Invalid Firmware Protocol                                     | Invalid FirmwareProtocol for TerminalType= XXX                         |
| CICM644 | /var/log/customerlog | InvalidFWLevel                                      | None | equipment       | Invalid Firmware Level                                        | Invalid Firmware level for TerminalType= XXX                           |
| CICM645 | /var/log/customerlog | NoFWLevel                                           | None | equipment       | No Firmware Level                                             | Terminal has no firmware level recorded in the MIB                     |
| CICM646 | /var/log/customerlog | InvalidUFTPHost                                     | None | equipment       | Invalid UFTP Host                                             | Invalid UFTP host port                                                 |
| CICM647 | /var/log/customerlog | InvalidUnistimHost                                  | None | equipment       | Invalid Unistim Host                                          | Invalid Unistim host address                                           |
| CICM648 | /var/log/customerlog | InvalidFWTFTPAddr                                   | None | equipment       | Invalid Firmware TFTP Address                                 | Invalid Firmware TFTP Address for TerminalType=XXX                     |
| CICM649 | /var/log/auditlog    | ConfigDataChange                                    | None | processingError | Config Data Change.                                           | Admin reports a configuration data change.                             |
| CICM650 | /var/log/auditlog    | InitialisingAsMaster                                | None | communications  | Initialising as master                                        | Initialising as master                                                 |
| CICM650 | /var/log/auditlog    | InitialisingAsMasterNoSlave                         | None | communications  | Initialising as master (no slave)                             | Initialising as master (no slave)                                      |
| CICM650 | /var/log/auditlog    | InitialisingAsSlave                                 | None | communications  | Initialising as slave                                         | Initialising as slave                                                  |
| CICM650 | /var/log/auditlog    | StartingTakeover                                    | None | communications  | Starting takeover                                             | Starting takeover                                                      |
| CICM650 | /var/log/auditlog    | TakeoverSucceededNowSlave                           | None | communications  | Takeover succeeded, now slave                                 | Takeover succeeded, now slave                                          |
| CICM650 | /var/log/auditlog    | TakeoverSucceededNowMaster                          | None | communications  | Takeover succeeded, now Master                                | Takeover succeeded, now Master                                         |
| CICM650 | /var/log/auditlog    | ForcingTransitionFromSlaveToMaster                  | None | communications  | Forcing transition from slave to master                       | Forcing transition from slave to master                                |
| CICM650 | /var/log/auditlog    | ForcingTransitionFromMasterToSlave                  | None | communications  | Forcing transition from master to slave                       | Forcing transition from master to slave                                |
| CICM650 | /var/log/auditlog    | MateNodeRecoveredForcingtransitionFromSlaveToMaster | None | communications  | Mate Node Recovered - Forcing transition from slave to master | Mate Node Recovered - Forcing transition from slave to master          |
| CICM650 | /var/log/auditlog    | ProcessingSwact                                     | None | communications  | Processing Swact                                              | Processing Swact request                                               |
| CICM652 | /var/log/auditlog    | addGateway                                          | None | communications  | Adding a gateway                                              | Gateway XXX has been added.                                            |

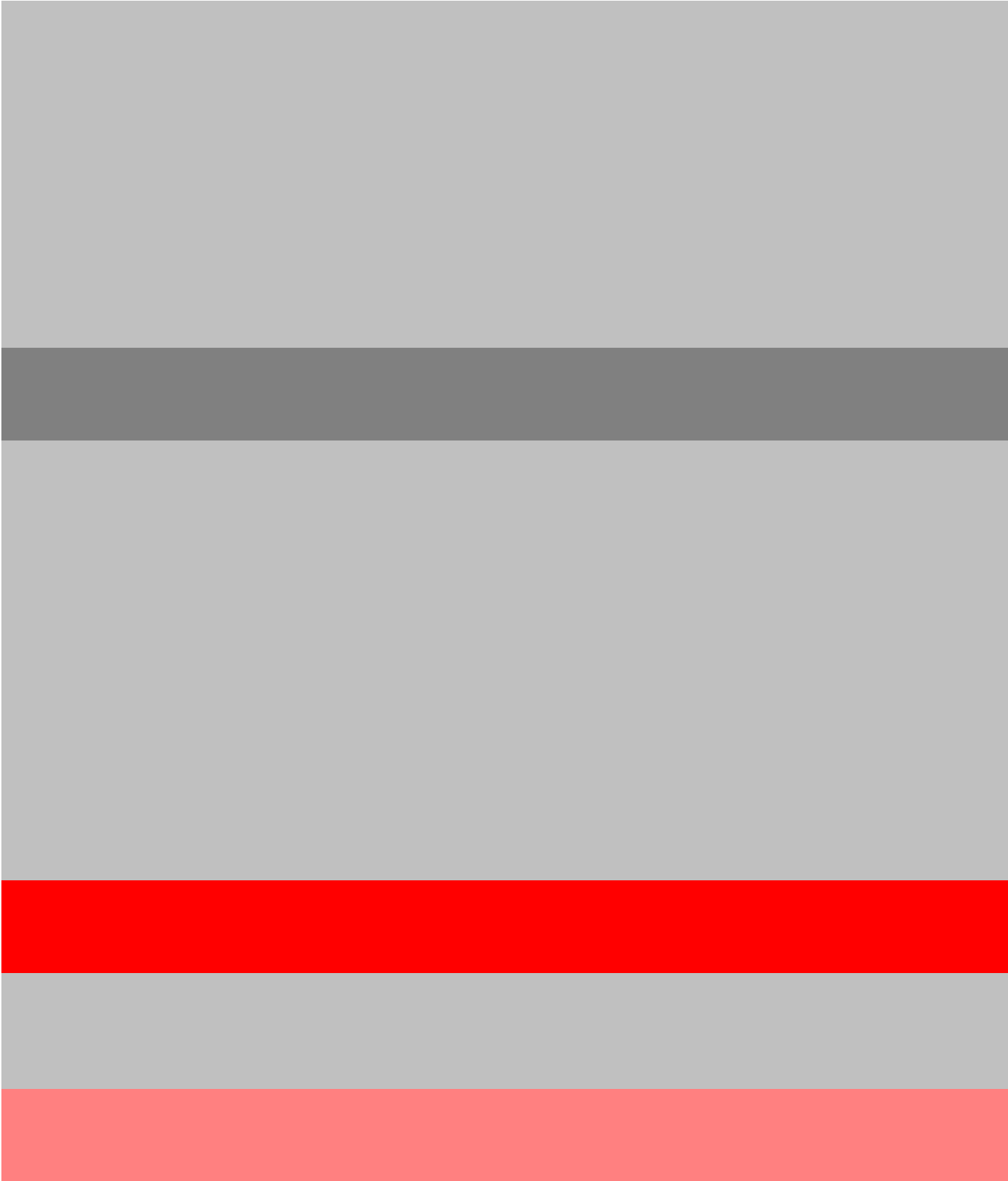
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|---------|----------------------|-----------------------------|---------|-----------------|-----------------------------------------|-------------------------------------------------------------------|
| CICM653 | /var/log/auditlog    | deleteGateway               | None    | communications  | Deleting a gateway                      | Deleting gateway XXX                                              |
| CICM654 | /var/log/auditlog    | addProfile                  | None    | communications  | Adding a profile                        | Adding a XXX profile for gateway XXX                              |
| CICM655 | /var/log/auditlog    | delProfile                  | None    | communications  | Deleting a profile                      | Deleting XXX profile for gateway XXX                              |
| CICM656 | ALARM_TRAP_to_IEMS   | maxRxRateExceeded           | Minor   | processingError | Max Rx Rate Exceeded.                   | Max rx rate of XXX has been exceeded by rate XXX.                 |
| CICM656 | ALARM_TRAP_to_IEMS   | maxRxRateExceededClear      | None    | processingError | Max Rx Rate Exceeded.                   | Clear max rx rate of XXX has been exceeded.                       |
| CICM657 | ALARM_TRAP_to_IEMS   | maxCreateAttempts           | Minor   | communications  | Max Creation Attempts.                  | Reached the max creation attempts for the session.                |
| CICM657 | ALARM_TRAP_to_IEMS   | maxCreateAttemptsClear      | None    | communications  | Max Creation Attempts.                  | Reached the max creation attempts for the session.                |
| CICM658 | /var/log/auditlog    | MateNodeRecovered           | None    | communications  | Mate node recovered                     | Mate node recovered                                               |
| CICM659 | /var/log/auditlog    | SlaveAdapterRecovered       | None    | communications  | Slave adapter recovered                 | Slave adapter XXX recovered                                       |
| CICM660 | /var/log/securitylog | SuccessfulPAMAuthentication | None    | environmental   | Successful PAM Authentication.          | User XXX has started a session on the CICM-EM                     |
| CICM661 | /var/log/securitylog | PAMAuthenticationFailure    | None    | processingError | PAM Authentication Failure.             | User XXX authentication failure                                   |
| CICM662 | /var/log/securitylog | UserRevoked                 | None    | environmental   | User Privileges Revoked.                | Privileges revoked                                                |
| CICM663 | /var/log/securitylog | UserUpgraded                | None    | environmental   | User Privileges upgraded.               | Privileges upgraded                                               |
| CICM664 | /var/log/securitylog | InactiveUserTMO             | None    | environmental   | Inactive User Timeout.                  | User XXX is no longer active on the CICM-EM                       |
| CICM665 | /var/log/auditlog    | NetworkElementHasRecovered  | None    | communications  | Network Element recovered               | Network Element XXX recovered                                     |
| CICM668 | ALARM_TRAP_to_IEMS   | MaxNoSessions               | Warning | processingError | Reached the maximum number of sessions. | Current number of active sessions has reached the maximum of XXX. |
| CICM668 | ALARM_TRAP_to_IEMS   | MaxNoSessionsClear          | None    | processingError | Reached the maximum number of sessions. | Current number of active sessions is below the maximum of XXX.    |
| CICM680 | /var/log/auditlog    | RegisterGatewaySucceeded    | None    | communications  | Register Gateway Succeeded              | Register Gateway XXX Succeeded                                    |
| CICM681 | /var/log/auditlog    | ConfigurationChange         | None    | communications  | Configuration change                    | XXX                                                               |
| CICM682 | /var/log/auditlog    | ProvisioningChange          | None    | communications  | Provisioning change                     | XXX                                                               |
| CICM749 | /var/log/securitylog | AccountDisabled             | None    | equipment       | Account Disabled                        | User XXX                                                          |
| CICM750 | /var/log/securitylog | ChangePasswordFail          | None    | equipment       | Change Password Attempt                 | User XXX                                                          |





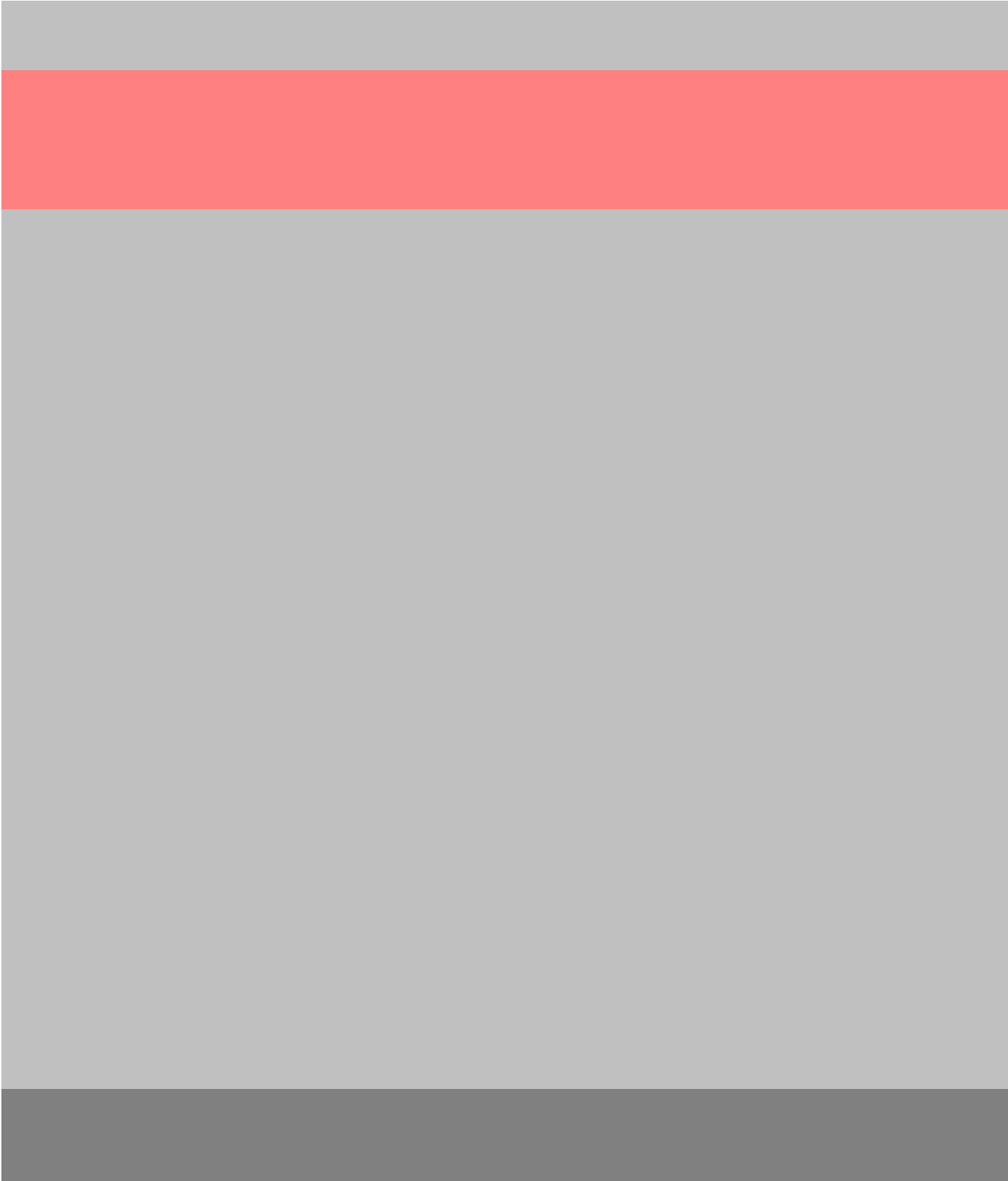


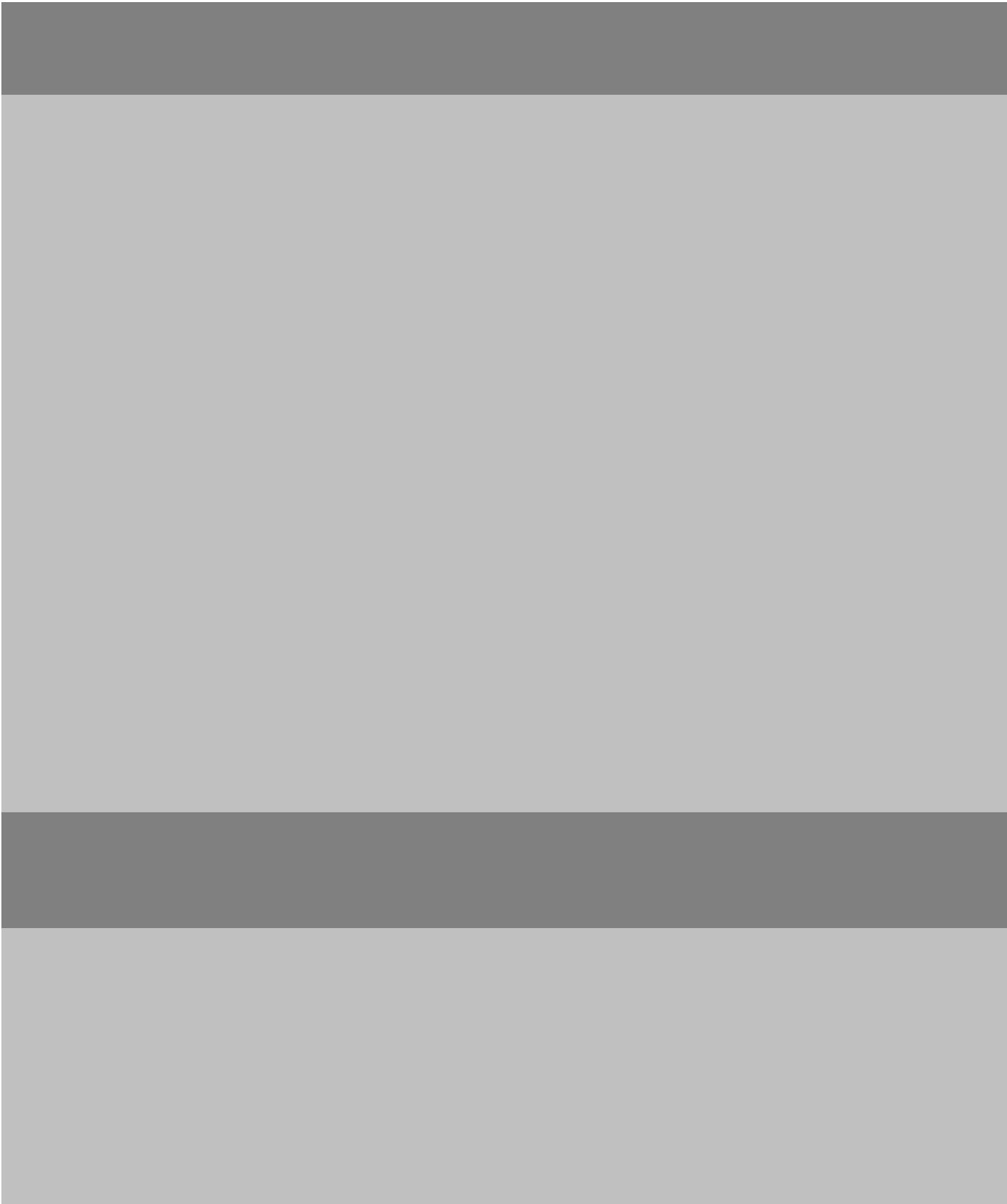






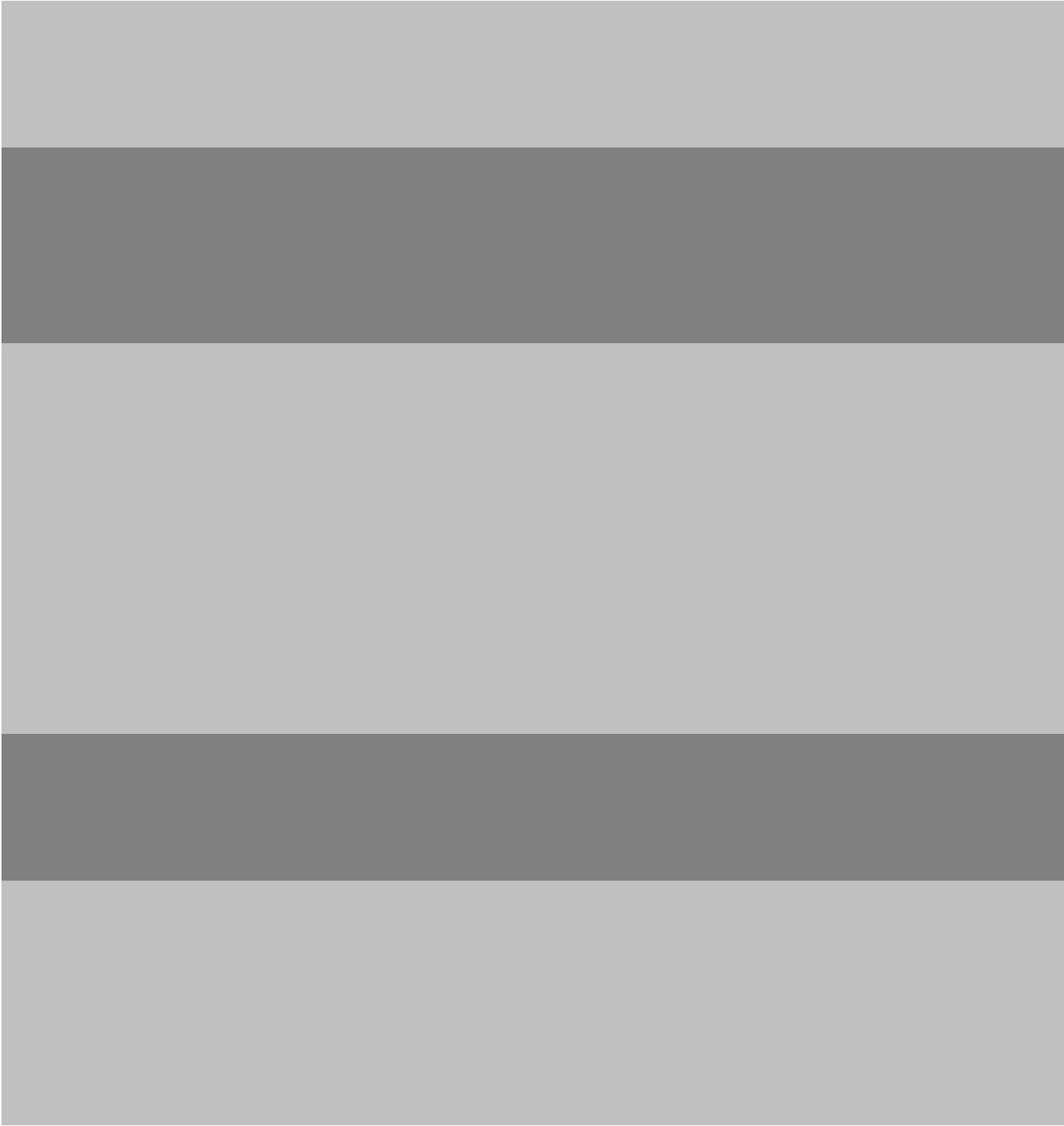








































Succession

## **OSS-affecting Features in iSN07**

### **Advance Feature Guide**

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