555-4031-350

Meridian SuperNode

Commercial Systems

Translations Guide

MSL15 Standard 12.01 May 2001

NORTEL NETWORKS™

Meridian SuperNode

Commercial Systems

Translations Guide

Publication number: 555-4031-350
Product release: MSL15
Document release: Standard 12.01
Date: May 2001

Publication history

To comply with Nortel Networks Technical Documentation Standards, the Publication history contains updates for the current release and two prior releases.

May 2001

Version 12.01, MSL15, Standard release. This version represents an upissue of the standard release and provides revised, updated information on the Virtual Office Worker (VOW) feature.

November 2000

Version 11.01, MSL14,Standard release. This version represents an upissue of the standard release of this document.

May 2000

Version 10.01, MSL12, Standard release. This version represents the standard release of this document and includes some minor pagination and graphics differences from the previous version.

Contents

About this document

When to use this document

This document is applicable to Meridian SL-100 Commercial Systems customers, and contains translations information associated with the Meridian SL-100 (MSL-100) product computing load (PCL). This document provides guidelines to operating company personnel for administering translations.

> ***Note:*** The MSL15 software delivery is part of an on-going evolution. This books is one of several transitional documents. Use this document with the *DMS-100 Translations Guide*, 297-8001-350 for the full complement of documentation.

Disregard the signaling point (SP), Traffic Operator Position System (TOPS), and SuperNode Data Manager (SDM) information as it does not apply to the MSL-100 switch.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, 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 the document is revised but rereleased in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in the *Master Index of Publications*.

References in this document

Refer to the *Customer Data Schema Manual*, for more information on the data tables listed in this document.

The following documents are referred to in this document:

- *Customer Data Schema Manual*
- *Office Parameters Reference Manual*

What precautionary messages mean

The types of precautionary messages used in Nortel Networks documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION - Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER - Possibility of personal injury

DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING - Possibility of equipment damage

WARNING
Damage to the backplane connector pins
Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION - Possibility of service interruption or degradation

CAUTION
Possible loss of service
Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

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

```
>BSY
```

Commands and fixed parameters

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

```
>BSY CTRL
```

Variables

Variables are shown in lowercase letters:

```
>BSY  CTRL  ctrl_no
```

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.

FP 3 Busy CTRL 0: Command passed.
```

1 Introduction to data tables

The translations database contains numerous data tables. Each table has a specific purpose and contains a certain type of data. Datafilling is the term used to describe the process of entering the specific data into a table. The following section describes the composition of data tables.

Data associated with hardware and software systems of the Digital Multiplex System (DMS) switch are stored in the form of two-dimensional entities called tables.

A table consists of rows and columns. A row is called a *tuple*. Columns represent *fields* in a tuple. Refer to Figure 1-1 on page 1-2 for examples of a table, subtable, and sub-subtable.

Each field has a unique field name consisting of a maximum of eight characters. The field name is used as a prompt for data input.

A field is either a single-element field or a multiple-element field with subfields. A field or subfield contains data expressed in the form of numbers or alphanumeric strings.

Tuple properties

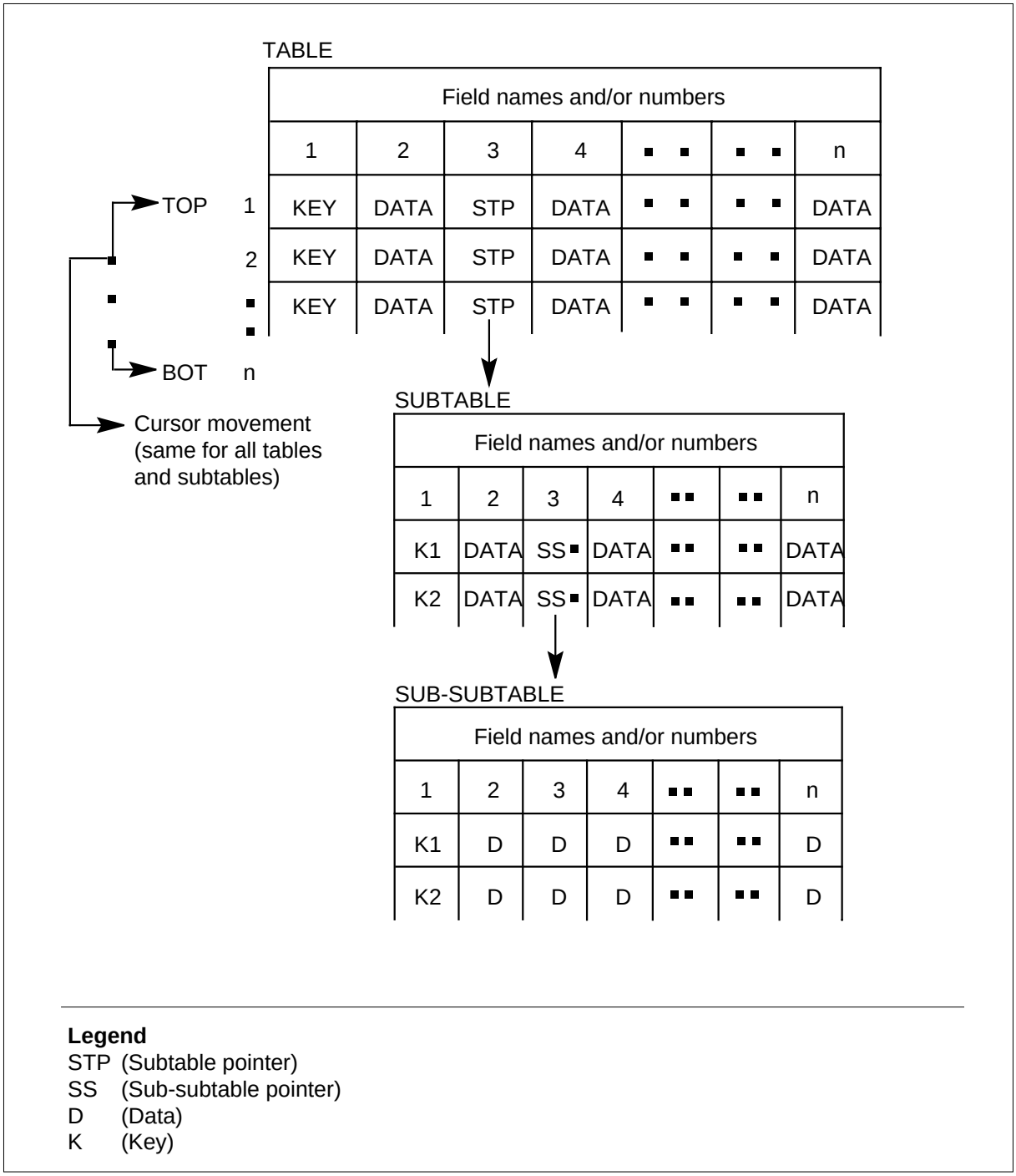
Each tuple is identified by a unique key.

A key always contains the first field. For most tables, the key comprises only one field. In other tables, more than one field of data is required to make the key unique. In this case, the first field plus one or more subsequent fields in the tuple are used to make up the key.

Tuples are referenced either by their key or by the table editor (TE) cursor. The cursor is an internal pointer to a tuple of a table. It can be moved by using TE commands, such as POSITION, LIST, BOTTOM, and TOP. Refer to Table 1-1, "Editor commands" on page 1-5 for a description of TE commands.

The tuple the cursor points to, at any given time, is called the current tuple.

Figure 1-1 Examples of table, subtable, and sub-subtable



Legend
STP (Subtable pointer)
SS (Sub-subtable pointer)
D (Data)
K (Key)

Using the table editor

The TE is a set of commands used to modify the data contained in the DMS switch control tables. The commands are entered at the MAP terminal.

Note: Only two subtable levels are supported.

The TE allows users to perform the following functions:

- add, delete, or change tuples or fields in a table or subtable
- list one or more tuples of a table or subtable
- move the cursor to display any tuple in a table or subtable
- display specified valid field values
- search for tuples containing specified field values

Procedures for datafilling any system

The datafill procedures in this section list the field and subfield names of the key tables that must be datafilled for any system. Explanations of each field and subfield are also provided. Examples of field entries are provided for most fields and subfields. The examples correspond to the example configuration shown in the previous table and to examples of tuples displayed at the end of each procedure.

Input prompts and prompting mode

A prompt is the system way of notifying the user the data entered is not complete or is not in defined parameters. When a prompt occurs, the user is provided the name of the required field or parameter. The user has the following options:

- input correct data entirely on the current line
- enter ABORT to exit the command and to exit the input and prompt mode
- enter invalid data, which causes the system to provide additional information about the field or parameter

If the tuple being datafilled has multiple list items, prompting continues until the maximum list length is reached or until a single dollar sign ($) is entered.

Nonprompting mode

DANGER

Possible loss of service if using the NONPROMPT mode

In tables containing fields with multiple entries such as OPTCARD, EXECTAB, CSLINKTAB, and PSLINKTAB, do not use the NONPROMPT datafill mode. All field entries must be entered at once when using the NONPROMPT mode. Entries not datafilled in the NONPROMPT mode are deleted from the table. Users are not prompted for additional entries in a field unless they are in the PROMPT mode, which steps through each individual value. The PROMPT mode is the only mode that should be used for datafill changes to multiple entry fields.

All commands are initially processed in the nonprompt mode. After recognizing a valid command, one field value is processed at a time until either the end of the input line is reached ($) or an error is found.

A tuple can be added all at once by stringing subsequent field values together, leaving a blank space between each value. Enter the continuation mark (+) in fields with multiple possible entries when more data is specified on the next line or when more records will be entered. This allows the contents of the current and next lines to be processed as a single input. Enter the end mark ($) after the last entry in fields with multiple possible entries.

See the following example for use of the end mark ($).

Figure 1-2 MAP display example for table RCCPSINV

```
RCCNAME
                                                    PSLNKTAB
-------------------------------------------------------
REM1        RCC   1
(0 DS30A) (1 NILTYPE) (2 DS1 DEFAULT N) (3 NILTYPE)
(4 DS30A) (5 DS30A) (6 DS30A) (7 DS30A) (8 DS30A)
(9 DS30A) (10 DS30A) (11 DS30A) (12 DS1 DEFAULT N)
(13 DS1 DEFAULT N) (14 DS1 DEFAULT N) (15 DS1 DEFAULT N)
(16 NILTYPE) (17 NILTYPE) (18 NILTYPE) (19 NILTYPE)$
```

Activating changes to tables

After the TE checks that input data is complete and valid, a data modification order (DMO) is created. The DMO is then applied to change the appropriate table data.

Table editor commands

The following table lists all TE commands and provides a description for and parameters of each command.

Table 1-1 Editor commands (Sheet 1 of 2)

Command	Description
TABLE *table name*	Opens the table *table name.*
ADD	Adds the tuple given as a parameter to the table or, if no parameters are given, prompts for each field for user input.
BOTtom	Positions the cursor at bottom of the table.
CHAnge	Changes the specified fields to the specified values. If no fields are specified, each field is prompted for user input.
COUNT condition	Counts the number of tuples in the table that meet specified conditions, and positions the cursor at the first tuple.
DELete KEY	Deletes the tuple containing the specified key. If no parameters are given, the current tuple is deleted.
DISplay	Displays the current tuple without the heading.
DOWn n	Moves the cursor down a specified number of tuples. A display of the tuple without the heading follows.
FIRST	Positions the cursor at the first tuple in the table or subtable, but does not display it.
HEADING	Displays the current tuple heading line or lines, showing tuple format.
HELp command name	Displays a brief description of the function of the desired TE command.
LAST	Positions the cursor at the last tuple in the table or subtable without displaying the tuple.
LIST n *or* all condition	Displays one or more tuples of the current table, as follows: • *n* is the number of tuples to be displayed, starting with the current tuple. • *all* includes all tuples of the current table displayed beginning at the first tuple, regardless of cursor position. • The condition command parameter is conditional and all tuples meeting the condition are listed. It is used in conjunction with the n and all parameters.
NEXT	Positions the cursor at the tuple following the current tuple but does not display it.

Table 1-1 Editor commands (Sheet 2 of 2)

Command	Description
OVErride	Cancels the prompt that occurs when the CPUs are out-of-sync or when the journal file is not available.
POSition KEY	Positions the cursor at a specified tuple and causes the tuple to be displayed.
QUIt all	Exits the user from the current table if QUIT is entered. The parameter *all* causes the system to quit all tables accessed during the table editor session and returns directly to the command interpreter (CI) level of the MAP terminal.
RANge field	Displays the parameter range for the fields of the current tuple.
RETurn	Returns from sub-subtable to subtable or from a subtable to a main table.
SUBtable field name or field#	Opens and enters the subtable from a main table. The main table must be entered first before its subtable(s) can be accessed. If there is more than one subtable, the field name or the field number associated with it must be specified. When no parameters are entered, only one field points to a subtable and that subtable is entered.
TOP	Positions the cursor at the first tuple in the table and displays the tuple field data.
UP	Moves the cursor up by the specified number of tuples and displays the field data without headings.
VERify ON or OFF	Sets a verify mode, which delays execution of subsequent commands and lets a user check the display, as follows: • ON causes the system to prompt the user to confirm that the tuple addition, change, replacement, or deletion data is correct. • OFF causes the system to execute the command as entered, without confirmation from the user.

Meridian Digital Terminal

Ordering codes

Functional group ordering code: not applicable

Functionality ordering code: MSL00003

Release applicability

MSL11 and up

Prerequisites

Meridian Digital Terminal has no prerequisites.

Description

Meridian digital terminals M3900 series and features include five integrated voice and data (IVD) sets, two expansion modules, soft key configuration, downloadable directory numbers and feature key assignments, and an enhancement to the handsfree feature called group listening. The following paragraphs describe these terminals and features.

Meridian digital provisioning and soft key configuration

Meridian digital provisioning and soft key configuration introduces five Meridian digital terminals. The following paragraphs describe the M3901, M3902, M3903, M3904, and M3905 Meridian digital terminals.

- The M3901 is a single directory number (DN) set with no display. It supports one DN and five programmable feature keys. It also includes fixed keys for line, feature, hold, goodbye, and volume.
- The M3902 is a single DN set with a two line display that supports the following features:
  - three self-labeled programmable feature keys
  - three fixed feature keys for message, transfer, and options; the message and transfer keys are permanently labeled but are not restricted to those features
  - fixed keys for hold, goodbye, mute (with LED), volume, handsfree (with LED)
  - four navigation keys (up, down, left, and right)
- The M3903 is a four DN set that supports the following features:
  - four self-labeled line or feature keys
  - four keys to access context sensitive soft keys

Meridian Digital Terminal (continued)

- — five keys are fixed feature or application: options, message, call log, applications, and a shift key used to page between the two layers of line or feature keys. The message key is permanently labeled but is not restricted to that feature.
- — fixed keys for hold, goodbye, mute (with LED), volume, headset (with LED), and handsfree (with LED)
- — four navigation keys (up, down, left, right)
- — copy and quit keys for applications and features

- The M3904 is a professional set with the following features:
  - — a five line display that supports six self-labeled programmable line or feature keys
  - — a shift key to page between the two layers of line and feature keys
  - — four context sensitive soft keys used to access context sensitive features
  - — five fixed feature or application keys for message, options, directory/log (call log), applications, and shift
  - — fixed keys for hold, goodbye, mute (with LED), volume, headset (with LED), and handsfree (with LED)
  - — four navigation keys (up, down, left, right) and copy and quit keys for applications and features
- The M3905 is an ACD set that supports the following features:
  - — eight self-labeled programmable line or feature keys with a four line display
  - — four context sensitive soft keys used to access context sensitive features
  - — six fixed feature or application keys for ACD features: supervisor, emergency, not ready, make busy, in calls, and headset which are permanently labeled but are not restricted to those features
  - — fixed keys for hold, goodbye, mute (with LED), volume, headset (with LED), and supervisor observe (with LED)
  - — four navigation keys (up,down, left, right) and copy and quit keys for applications and features

Meridian digital terminal key based access expansion module

The Meridian digital key based access (KBA) expansion module is an optional, add-on module for Meridian digital terminal models M3904 and M3905. The KBA expansion modules are equipped with 22 keys which can be used as additional keys beyond the currently available physical and

soft-labeled programmable feature keys on the Meridian digital sets. These additional keys are used as DN or feature keys.

There are 32 keys on the M3904 and M3905 Meridian sets. The M3904 and M3905 support up to 2 KBA expansion modules with 22 keys each, for a total of up to 76 keys. On sets with one KBA expansion module, the keys are numbered from 1 to 54. On sets with two KBA expansion modules, the keys are numbered from 1 to 76.

Meridian digital terminal display based access expansion module

The optional Meridian digital terminal display based access (DBA) expansion module is available for models M3904 and M3905. The module is physically attached to a Meridian digital terminal. It adds 24 programmable feature keys, for a total of 56 keys. The DBA expansion module is assigned to keys 33 through 56.

The module contains a display, eight self labeled programmable line feature keys, and a shift key. The display shows a set of eight self feature labels next to each of the keys. When a user shifts through pages of the display, the labels change according to the features programmed for the next logical set of feature keys. The display has a total of three pages.

The SERVORD command provisions the DBA expansion module as a line option. When a DBA expansion module is added to a terminal, features and DNs can be assigned to the extra keys. The DBA expansion module keys are enabled according to their assignments through a key map downloaded from the switch to the terminal. The expansion module firmware handles the self key labeling. A self key label can be up to ten characters long.

Meridian digital terminal and password protection

The group listening feature allows the user to turn on the set loudspeaker when the handset is in use. This allows a group of people to listen to the audio but only the handset can be used to transmit audio to the other party. Group listening differs from handsfree in that only the loudspeaker and not the handsfree microphone is enabled. The handset is off hook and its audio paths are on.

The group listening feature is only available when it is assigned to the terminal with the SERVORD command. When this feature is not available, it does not show up in the options menu lists. Also, because handsfree and group listening cannot be on at the same time, the group listening enable feature is not in the options list if there is an active call with handsfree enabled.

This activity provides the ability to enable M3902, M3903 and, M3904 terminals with group listening. When the terminals are provisioned through

Meridian Digital Terminal (continued)

the SERVORD command, the user then can access the group listening feature and password protection through the options key.

Meridian digital terminal download and feature key labeling

The Meridian digital series of terminals have a display area next to each of their keys. The purpose of this display area is to display the directory number associated with a DN key or the feature assigned to a feature key.

The directory number download occurs when new DNs are provisioned on the terminal. Feature key labeling occurs when new features are added to the terminal.

Operation

This section describes how to operate the Meridian Digital Terminal.

Group listening

Use the options mode to enable the group listening feature. The group listening icon is on when the group listening feature is enabled. Use the handsfree key to turn the speaker on or off (the handsfree indicator shows the status). Press the handsfree key a second time to turn the speaker off. The speaker only turns on if the handset is off-hook. The speaker automatically turns off when the handset is placed on-hook.

To activate handsfree when group listening is in use, the user must press and hold the handsfree key, place the handset on-hook and release the handsfree key. Alternately, the user can place the call on hold by pressing the hold key, placing the handset on-hook, and pressing the DN key associated with the held call.

Translations table flow

The Meridian Digital Terminal translations tables are described in the following list:

- Table OPTOPT is a read-only table that contains line option incompatibilities.
- Table LCCOPT is a reference table that lists the line options compatible with each line class code (LCC).

Meridian Digital Terminal (continued)

- Table IVDINV contains the hardware location and associated options for IVD sets.
- Table KSETKEYS contains feature key templates and key assignments for IVD sets.

CAUTION
Service may be affected
Tables IVDINV and KSETKEYS must be datafilled using SERVORD commands. Attempts to datafill these tables using the table editor can result in incompatible features being assigned to the line or cause data corruption.

The following flowchart shows the Meridian Digital Terminal translation process.

Note: Tables OPTOPT and LCCOPT are read-only reference tables. Tables IVDINV is datafilled using SERVORD commands. Datafill table KSETKEYS using admin commands.

Table flow for Meridian Digital Terminal

Meridian Digital Terminal (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for Meridian Digital Terminal

Datafill table	Example data
OPTOPT (Note 1)	KBA DBA $
	DBA KBA $
LCCOPT (Note 1)	M3904 KBA $
	M3904 DBA $
IVDINV (Note 1)	IPE2 02 0 08 30 M3904 Y KBA 1 $
	IPE1 01 0 00 30 M3905 DBA $
	IPE0 00 0 07 30 M3903 Y Y $
	IPE2 02 0 00 30 M3902 Y Y $
KSETKEYS (Note 1)	TMPLT1 M3903 BLK CWT $

Note 1: Tables OPTOPT and LCCOPT are read-only reference tables.

Note 2: Data fill table IVDINV using SERVORD commands. Data fill table KSETKEYS using admin commands. Attempts to datafill these tables using the table editor can result in incompatible features being assigned to the line or cause data corruption.

Limitations and restrictions

The following limitations and restrictions apply to Meridian Digital Terminal 3900 series.

- A maximum of one DBA expansion module can be assigned to a M3904 and one M3905 set.
- The DBA expansion module can only be used with M3904 and M3905 sets.
- A maximum of two KBA expansion modules can be assigned to M3904 and M3905 sets.
- The KBA expansion modules can only be used with M3904 and M3905 sets.
- KBA and DBA expansion modules cannot be simultaneously attached to a set. These features are mutually exclusive.
- Meridian digital terminal sets and features only function with the NT8D02 line card on an intelligent peripheral equipment (IPE) peripheral.

- The handsfree feature must be assigned to enable group listening.
- DN downloading and feature key labeling is only supported by M3900 series terminal sets equipped with a display. The Meridian digital terminals with a display are the M3902, M3903, M3904, and M3905 sets and the DBA expansion module.

Interactions

The following paragraphs describe the interactions between Meridian Digital Terminal and other functionalities.

The analog terminal adapter (ATA) functions with M3902, M3903, M3904, and M3905 sets.

The KBA and DBA expansion modules cannot be simultaneously attached to an Meridian digital set. These features are mutually exclusive.

The following line options are compatible with M3901 sets.

AAB, AAK, ACB, ACD, ACDNR, AEMK, AMATEST, AR, ASL, ATC, AUD, AUL, AUTODISP, AVT, BLF, BNN, CAG, CBE, CBI, CBU, CCW, CDC, CDE, CDI, CDU, CFB, CFD, CFDVT, CFF, CFGD, CFI, CFMDN, CFRA, CFS, CFTOD, CFU, CIF, CIR, CLI, CMCF, CNF, COT, CPU, CTD, CTW, CWD, CWI, CWO, CWR, CWT, CWX, CXR, DASK, DCBI, DCBX, DCF, DCPK, DCPU, DCPX, DIN, DLH, DND, DNH, DOR, DQS, DQT, DRING, DTM, EBO, EBX, ECM, EHLD, ELN, EMK, EMW, FNT, FTRGRP, FTRKEYS, FXR, ICM, IECFB, IECFD, INSPECT, JOIN, KSH, KSMOH, LCDR, LMOH, LNR, LNRA, LOB, LOD, LOR, LPIC, MCH, MDN, MDNNAME, MLH, MREL, MRF, MRFM, MSB, MSBI, MSMWI, MWT, NAME, NDC, NFA, NGTSRVCE, NOH, OBS, OLS, ONI, PBL, PCWT, PIC, PLP, PREMTBL, PRH, PRK, PRL, RAG, REASDSP, RINGTYPE, RMB, RSP, RSUS, SACB, SBLF, SCF, SCL, SCMP, SCS, SCU, SDY, SEC, SHU, SIMRING, SL, SLQ, SLU, SMDI, SMDR, SOR, SORC, SPB, SPR, SSAC, SUPPRESS, SUS, TES, TFO, TLS, 3WC, UCD, UCDLG, UCDSD, VOW, VOWDN, WUCR

The following line options are compatible with M3902 sets.

AAB, AAK, ACB, ACD, ACDNR, AEMK, AMATEST, AR, ASL, ATC, AUD, AUL, AUTODISP, AVT, BCLID, BLF, BNN, CAG, CBE, CBI, CBU, CCW, CDC, CDE, CDI, CDU, CFB, CFD, CFDVT, CFF, CFGD, CFMDN, CFRA, CFS, CFTODCFI, CFU, CIF, CIR, CLI, CLSUP, CMCF, CNF, COT, CPU, CTD, CTW, CWD, CWI, CWO, CWR, CWT, CWX, CXR, DASK, DCBI, DCBX, DCF, DCPK, DCPU, DCPX, DIN, DLH, DMCT, DND, DNH, DOR, DQS, DQT, DRING, DTM, EBO, EBX, ECM, EHLD, ELN, EMK,

Meridian Digital Terminal (continued)

EMW, FAA, FNT, FTRGRP, FTRKEYS, FXR, HANDSFREE, ICM, IECFB, IECFD, ILB, IMB, INSPECT, IRR, JOIN, KSH, KSMOH, LCDR, LINEPSAP, LMOH, LNR, LNRA, LOB, LOD, LOR, LPIC, MBK, MBSCAMP, MCH, MDN, MDNNAME, MEMDISP, MLAMP, MLH, MREL, MRF, MRFM, MSB, MSBI, MSMWI, MWIDC, MWQRY, MWT, NAME, NAME24, NDC, NFA, NGTSRVCE, NOH, OBS, OLS, ONI, PBL, PCWT, PIC, PLP, PREMTBL, PRH, PRK, PRL, QBS, QCK, RAG, REASDSP, RMB, RPA, RSP, RSUS, SACB, SBLF, SCF, SCL, SCMP, SCS, SCU, SDY, SEC, SHU, SIMRING, SL, SLQ, SLU, SMDI, SMDR, SOR, SORC, SPB, SPR, SSAC, SUPPRESS, SUPR, SUS, TES, TFO,TLS, TRKDISP, 3WC, UCD, UCDLG, UCDSD, VOW, VOWDN, WML, WUCR

The following line options are compatible with M3903 sets.

AAB, AAK, ACB, ACD, ACDNR, ACRJ, AEMK, AMATEST, AR, ASL, ATC, AUD, AUL, AUTODISP, AVT, BCLID, BLF, BNN, CAG, CBE, CBI, CBU, CCW, CDC, CDE, CDI, CDU, CFB, CFD, CFDVT, CFF, CFGD, CFK, CFMDN, CFRA, CFS, CFTODCFI, CFU, CIF, CIR, CLI, CLSUP, CMCF, CNF, COMMUNICTR, COT, CPU, CTD, CTW, CWD, CWI, CWO, CWR, CWT, CWX, CXR, DASK, DCBI, DCBX, DCF, DCPK, DCPU, DCPX, DIN, DLH, DMCT, DND, DNH, DOR, DQS, DQT, DRING, DTM, DTMK, EBO, EBX, ECM, EHLD, ELN, EMK, EMW, FAA, FNT, FTRGRP, FTRKEYS, FXR, GIAC, GIC, HANDSFREE, ICM, IECFB, IECFD, ILB, IMB, INSPECT, IRR, JOIN, KSH, KSMOH, LCDR, LINEPSAP, LMOH, LNR, LNRA, LOB, LOD, LOR, LPIC, MBK, MBSCAMP, MCH, MDN, MDNNAME, MEMDISP, MLAMP, MLH, MREL, MRF, MRFM, MSB, MSBI, MSMWI, MWIDC, MWQRY, MWT, NAME, NAME24, NDC, NFA, NGTSRVCE, NOH, OBS, OLS, ONI, PBL, PCWT, PIC, PLP, PREMTBL, PRH, PRK, PRL, QBS, QCK, RAG, REASDSP, RMB, RPA, RSP, RSUS, SACB, SBLF, SCF, SCL, SCMP, SCS, SCU, SDY, SEC, SHU, SIMRING, SL, SLQ, SLU, SMDI, SMDR, SOR, SORC, SPB, SPR, SSAC, SUPPRESS, SUPR, SUS, TES, TFO, TLS, TRKDISP, 3WC, UCD, UCDLG, UCDSD, VOW, VOWDN, WML, WUCR

The following line options are compatible with M3904 sets.

AAB, AAK, ACB, ACD, ACDNR, ACRJ, AEMK, AMATEST, AR, ASL, ATC, AUD, AUL, AUTODISP, AVT, BCLID, BLF, BNN, CAG, CBE, CBI, CBU, CCW, CDC, CDE, CDI, CDU, CFB, CFD, CFDVT, CFF, CFGD, CFI, CFK, CFMDN, CFRA, CFS, CFU, CIF, CIR, CLI, CLSUP, CFTOD, CMCF, CNF, COMMUNICTR, COT, CPU, CTD, CTW, CWD, CWI, CWO, CWR, CWT, CWX, CXR, DASK, DBA, DCBI, DCBX, DCF, DCPK, DCPU, DCPX,DIN, DLH, DMCT, DND, DNH, DOR, DQS, DQT, DRING, DTM, DTMK, EBO, EBX, ECM, EHLD, ELN, EMK, EMW, FAA, FNT, FTRGRP, FTRKEYS, FXR, GIAC, GIC, HANDSFREE, ICM, IECFB, IECFD, ILB,

Meridian Digital Terminal (continued)

IMB, INSPECT, IRR, JOIN, KBA, KSH, KSMOH, LCDR, LINEPSAP, LMOH, LNR, LNRA, LOB, LOD, LOR, LPIC, MBK, MBSCAMP, MCH, MDN, MDNNAME, MEMDISP, MLAMP, MLH, MREL, MRF, MRFM, MSB, MSBI, MSMWI, MWIDC, MWQRY, MWT, NAME, NAME24, NDC, NFA, NGTSRVCE, NOH, OBS, OLS, ONI, PBL, PCWT, PIC, PLP, PREMTBL, PRH, PRK, PRL, QBS, QCK, RAG, REASDSP, RMB, RPA, RSP, RSUS, SACB, SBLF, SCF, SCL, SCMP, SCS, SCU, SDY, SEC, SHU, SIMRING, SL, SLQ, SLU, SMDI, SMDR, SOR, SORC, SPB, SPR, SSAC, SUPPRESS, SUPR, SUS, TES, TFO, TLS, TRKDISP, 3WC, UCD, UCDLG, UCDSD, VOW, VOWDN, WML, WUCR

The following line options are compatible with M3905 sets.

AAB, AAK, ACB, ACD, ACDNR, ACRJ, AEMK, AMATEST, AR, ASL, ATC, AUD, AUL, AUTODISP, AVT, BCLID, BLF, BNN, CAG, CBE, CBI, CBU, CCW, CDC, CDE, CDI, CDU, CFB, CFD, CFDVT, CFF, CFGD, CFI, CFK, CFMDN, CFRA, CFS, CFU, CIF, CIR, CLI, CLSUP, CFTOD, CMCF, CNF, COMMUNICTR, COT, CPU, CTD, CTW, CWD, CWI, CWO,CWR, CWT, CWX, CXR, DBA, DASK, DCBI, DCBX, DCF, DCPK, DCPU, DCPX, DIN, DLH, DMCT, DND, DNH, DOR, DQS, DQT, DRING, DTM, DTMK, EBO, EBX, ECM, EHLD, ELN, EMK, EMW, FAA, FNT, FTRGRP, FTRKEYS, FXR, GIAC, GIC, HANDSFREE, ICM, IECFB, IECFD, ILB, IMB, INSPECT, IRR, JOIN, KBA, KSH, KSMOH, LCDR, LINEPSAP, LMOH, LNR, LNRA, LOB, LOD, LOR, LPIC, MBK, MBSCAMP, MCH, MDN, MDNNAME, MEMDISP, MLAMP, MLH, MREL, MRF, MRFM, MSB, MSBI, MSMWI, MWIDC, MWQRY, MWT, NAME, NAME24, NDC, NFA, NGTSRVCE, NOH, OBS, OLS, ONI, PBL, PCWT, PIC, PLP, PREMTBL, PRH, PRK, PRL, QBS, QCK, RAG, REASDSP, RMB, RPA, RSP, RSUS, SACB, SBLF, SCF, SCL, SCMP, SCS, SCU, SDY, SEC, SHU, SIMRING, SL, SLQ, SLU, SMDI, SMDR, SOR, SORC, SPB, SPR, SSAC, SUPPRESS, SUPR, SUS, TES, TFO, TLS, TRKDISP, 3WC, UCD, UCDLG, UCDSD, WML, WUCR

Activation/deactivation by the end user

Meridian Digital Terminal requires no activation or deactivation by the end user.

Billing

Meridian Digital Terminal does not affect billing.

Station Message Detail Recording

Meridian Digital Terminal does not affect Station Message Detail Recording.

Meridian Digital Terminal (continued)

Datafilling office parameters

Meridian Digital Terminal does not affect office parameters.

Datafill sequence

The following table lists the tables to datafill to implement Meridian Digital Terminal M3900 series.

Note: Table OPTOPT and LCCOPT are read-only reference tables. Datafill tables IVDINV using SERVORD commands. Datafill table KSETKEYS using admin commands.

CAUTION
Service may be affected
Datafill table IVDINV using SERVORD commands. Datafill table KSETKEYS using admin commands. Attempts to datafill these tables using the table editor can result in incompatible features being assigned to the line or cause data corruption.

The following table is included for informational purposes only.

Datafill tables required for Meridian Digital Terminal (Sheet 1 of 2)

Table	Purpose of table
OPTOPT (Note 1)	The incompatible options table contains line option incompatibility lists for the DBA and KBA features.
LCCOPT (Note 1)	The line class code compatible options table contains lists of line options that are compatible with the M3901, M3902, M3903, M3904, and M3905 line class codes.

Note 1: Tables OPTOPT and LCCOPT are read-only reference tables.

Note 2: Datafill table IVDINV using SERVORD commands. Datafill table KETKEYS using admin commands. Attempts to datafill these tables using the table editor can result in incompatible features being assigned to the line or cause data corruption.

Meridian Digital Terminal (continued)

Datafill tables required for Meridian Digital Terminal (Sheet 2 of 2)

Table	Purpose of table
IVDINV (Note 2)	The integrated voice and data set inventory table contains the hardware location and associated options for M3901, M3902, M3903, M3904, M3905, DBA, and KBA terminals.
KSETKEYS (Note 2)	The business set feature keys table contains feature key templates and key assignments for M3901, M3902, M3903, M3904, M3905, and KBA terminals. M3901/M3902 use the M2006 template in table KSETKEYS. M3903/M3904 use the M3903 template in table KSETKEYS.

Note 1: Tables OPTOPT and LCCOPT are read-only reference tables.

Note 2: Datafill table IVDINV using SERVORD commands. Datafill table KETKEYS using admin commands. Attempts to datafill these tables using the table editor can result in incompatible features being assigned to the line or cause data corruption.

Translation verification tools

Meridian Digital Terminal does not use translation verification tools.

SERVORD

Service orders are used to add, change, and delete M3900 series terminals and features. SERVORD commands access the table editor and datafill the tables as if the entries were made directly.

To perform a service order command, log on to the maintenance and administration position (MAP) workstation and access the SERVORD system. For a general explanation of SERVORD commands, refer to the *Service Order Reference Manual*.

The SERVORD commands that can be used for Meridian digital M3900 series terminals and features:

- new (NEW)
- new automatic call distribution set (NEWACD)
- add option (ADO)
- delete option (DEO)
- establish new group (EST) command is used to add a new ACD group
- add new line to existing group (ADD) command is used to add a member to a multiline hunt group

Meridian Digital Terminal (continued)

- change feature (CHF) SERVORD command can also be used with KBA expansion modules and the group listening feature
- query line equipment number (QLEN), query directory number (QDN), query working (QLENWRK) commands display LENs and DNs for Meridian digital terminal sets, DBA, and KBA expansion modules

SERVORD limitations and restrictions

The CHF command is only used to change the KBA expansion module and the group listening feature.

The following table lists LCC to line option compatibilities for Meridian digital sets.

Meridian digital terminal LCC to line option compatibility

LCC	Group listen	KBA	DBA	Password Reset
M3901	N	N	N	N
M3902	Y	N	N	N
M3903	Y	N	N	Y
M3904	Y	Y	Y	Y
M3905	N	Y	Y	Y

Context sensitive soft keys are only supported on M3903, M3904, and M3905 terminals.

The group listening feature can only be assigned to lines that have the handsfree feature. Removing the handsfree feature from a line with group listening assigned will remove both features from the line.

Meridian Digital Terminal (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign, delete, add, or change Meridian Digital Terminal M3900 series and features.

SERVORD prompts for Meridian Digital Terminals M3900 series

Prompt	Valid input	Explanation
LCC_ACC	M3901 M3902 M3903 M3904 M3905	Used with the NEW command to indicate the LCC access code of the Meridian digital terminal.
LCC	M3901 M3902 M3903 M3904 M3905	Used with the EST and NEWACD commands to indicate the line class code of the terminal.
LINE_ CLASS	M3901 M3902 M3903 M3904 M3905	Used with the ADD command to indicate the line class of the Meridian digital terminal.
OPTKEY	1	Indicates the option key with which the KBA option is associated. Enter 1.
OPTION	DBA or KBA	Indicates the name of the line option. Enter DBA for display based access expansion modules. Enter KBA for key based access expansion modules.
OPTION	GLISTEN	Used with the CHF command to add group listening to a line with the handfree feature already enabled.
KBA_ COUNT	1 or 2	Indicates the number of KBA expansion modules attached to the terminal. Enter 1 for one module. Enter 2 for two modules.
GROUP_ LISTEN	Y or N	Indicates whether the group listening feature is assigned to the line. Enter Y to assign group listening. Enter N to remove group listening.

SERVORD example for adding a Meridian Digital terminal

The following SERVORD example shows how to add a M3900 series terminal using the NEW command.

Meridian Digital Terminal (continued)

SERVORD example for adding a new M3900 series terminal in prompt mode

```
>NEW
SONUMBER:    NOW  99  1 13 AM
>
DN:
> 9729975010
LCC_ACC:
> M3904
HANDS_FREE:
> Y
GROUP_LISTEN:
> Y
GROUP:
> RICH1
SUBGROUP:
> 0
NCOS:
> 0
KEY:
> 1
RINGING:
> Y
LTG:    0
>
LEN_OR_LTID:
>IPE2 02 0 00 16
OPTKEY:
> $
```

SERVORD example for adding a new M3900 series terminal in no-prompt mode

```
> NEW $ 9729975010 M3904 Y Y RICH1 0 0 1 Y 0 IPE2 02 0 00 16 $
```

SERVORD example for adding an M3900 series terminal to an ACD group

The following SERVORD example shows how to add Meridian Digital Terminal M3900 series to an ACD group using the EST command.

Meridian Digital Terminal (continued)

SERVORD example for adding a M3900 series terminal to an ACD group in prompt mode

```
>EST
SONUMBER:    NOW  99  1 13 AM
>
GROUPTYPE:
> MLH
PILOT_DN:
> 9729975010
LCC:
> M3905
HANDS_FREE:
> Y
GROUP_LISTEN:
> Y
GROUP:
> RICH1
SUBGROUP:
> 0
NCOS:
> 0
KEY:
> 1
RINGING:
> Y
LTG:    0
>
PILOT_LEN:
>IPE2 02 0 00 16
> Y
MEM_LEN:
> $
OPTION:
> $
GROUPSIZE:
> 3
```

SERVORD example for for adding a M3900 series terminal to an ACD group in no-prompt mode

```
> EST $ MLH 9729975010 M3905 Y Y RICH1 0 0 1 Y 0 IPE2 02 0 00 16 $ $
3
```

Meridian Digital Terminal (continued)

SERVORD example for adding a M3900 series terminal to a multiline hunt group

The following SERVORD example shows how add a M3900 series terminal to a multiline hunt group using the ADD command.

SERVORD example for adding an Meridian digital terminal to a multiline hunt group in prompt mode

```
>ADD
SONUMBER:    NOW  99  1 13 AM
>
GROUPTYPE:
> MLH
LINK_LEN:
> IPE2 02 0 08 16
KEY:
> 1
MEM_LEN:
> IPE2 02 0 00 14
LINE_CLASS:
>  M3904
KEY:
> 1
HANDS_FREE:
> Y
GROUP_LISTEN:
> Y
MEM_LEN:
> $
OPTION:
> $
GROUPSIZE:
> 3
```

SERVORD example for adding a M3900 series terminal to a multiline hunt group in no-prompt mode

```
> ADD $ MLH IPE2 02 0 08 16 1 IPE2 02 0 00 14 M3904 1 Y Y $ $ 3
```

SERVORD example for adding a M3900 series terminal as an ACD set

The following SERVORD example shows how to add a M3900 series terminal to an existing ACD group using the NEWACD command.

Meridian Digital Terminal (continued)

SERVORD example to add a M3900 series terminal as an ACD set in prompt mode

```
>NEWACD
SONUMBER:    NOW  99  1 13 AM
>
DN:
> 9975010
ACDSETTYPE:
> AGENT
LCC:
> M3905
HANDS_FREE:
> Y
GROUP_LISTEN:
> Y
GROUP:
> RICH1
SUBGRP:
> 0
NCOS:
> 0
SNPA:
> 972
LATANAME:
> NILLATA
LTG:    0
>
LEN_OR_LTID:
> IPE2 02 0 00 16
ACDGRP:
> ACDGRP1
ACDSGRP:
> 0
IDNUM:
> Y
POSID:
> 1111
TEMPLATE:
> SUPER
TEMPLATE:
> $
OPTKEY:
> $
```

Meridian Digital Terminal (continued)

SERVORD example to add a M3900 series terminal as an ACD set in no-prompt mode

```
> NEWACD $ 9975010 AGENT M3905 Y Y RICH1 0 0 972 NILLATA 0 IPE2
02 0 00 16 ACDGRP1 0 Y 1111 (SUPER) $ $
```

SERVORD example for changing Meridian Digital Terminal M3900 series features

Handsfree is a prerequisite for group listening. The system ensures that handsfree is enabled before enabling group listening. If the set is datafilled with the handsfree option, use the CHF command to enable group listening.

The following SERVORD example shows how to use the CHF command to change terminal datafill to enable group listening.

SERVORD example for changing Meridian digital terminal features in prompt mode

```
>CHF
SONUMBER:    NOW  99  1 13 AM
>
DN_OR_LEN:
> 9975000
OPTKEY:
> 1
OPTION:
> GLISTEN
GROUP_LISTEN:
> Y
OPTKEY:
> $
```

SERVORD example for changing Meridian digital terminal features in no-prompt mode

```
> CHF $ 9975000 1 GLISTEN Y $
```

SERVORD example for adding a DBA expansion module

The following SERVORD example shows how a DBA expansion module is added to an existing M3900 series terminal using the ADO command.

Note: The DBA expansion module cannot be added to a M3904 or M3905 terminal with an attached KBA expansion module.

SERVORD example for adding a DBA expansion module in prompt mode

```
>ADO
SONUMBER:    NOW  99  1 13 AM
>
DN_OR_LEN:
> 9975010
OPTKEY:
> 1
OPTION:
> DBA
OPTKEY:
> $
```

SERVORD example for adding a DBA expansion module in no-prompt mode

```
> ADO $ 9975010 1 DBA $
```

SERVORD example for adding a KBA expansion module

The following SERVORD example shows how to use the ADO command to add a KBA expansion module to an existing M3904 or M3905 terminal.

Note: The KBA expansion module cannot be added to a M3904 or M3905 terminal with an attached DBA expansion module.

SERVORD example for adding a KBA expansion module in prompt mode

```
>ADO
SONUMBER:    NOW  99  1 13 AM
>
DN_OR_LEN:
> 9975000
OPTKEY:
> 1
OPTION:
> KBA
KBA_COUNT:
> 1
OPTKEY:
> $
```

Meridian Digital Terminal (continued)

SERVORD example for adding a KBA expansion module in no-prompt mode

```
> ADO $ 9975000 1 KBA 1 $
```

SERVORD example for deleting a DBA expansion module

The following SERVORD example shows how to use the DEO command to delete a DBA expansion module from an existing M terminal.

SERVORD example for deleting a DBA expansion module in prompt mode

```
>DEO
SONUMBER:    NOW  99  1 13 AM
>
DN_OR_LEN:
> 9975000
OPTKEY:
> 1
OPTION:
> DBA
OPTKEY:
> $
```

SERVORD example for deleting a DBA expansion module in no-prompt mode

```
> ADO $ 9975000 1 DBA $
```

Error messages

If a M3900 series terminal is datafilled with a feature other than the one labeled, the following messages are displayed. When the messages are displayed on the terminal, the actual key numbers appear in place of the octothorpes shown in these examples.

The following message displays if the transfer key is datafilled with a feature other than call transfer:

```
Transfer is recommended for key: #
```

The following message displays if the message waiting key is datafilled with a feature other than message waiting on an M3902 set:

```
Message Waiting is recommended for Key: #
```

Meridian Digital Terminal (continued)

The following messages display if the message waiting key is datafilled with a feature other than message waiting on M3903, M3904, and M3905 sets:

```
Message Waiting is recommended for Key: #

Key 17 is recommended for Message Waiting
```

The following messages display if the wrong feature is assigned to a context sensitive soft key on M3903, M3904, and M3905 sets:

```
Key 18 is reserved for Call Transfer

Key 19 is reserved for Conference Calling

Key 20 is reserved for Call Forwarding (CFU/CFI)

Key 21 is reserved for Ring Again

Key 22 is reserved for Call Park

Key 23 is reserved for Call Pickup

Key 24 is reserved for SCS, SCL, and SCU

Key 25 is reserved for Privacy Release
```

The following messages display if a context sensitive key feature is assigned to an incorrect key on M3903, M3904, or M3905 sets:

```
Call Transfer must be assigned to key 18

Conference Calling must be assigned to key 1 or key 19

Call Forwarding must be assigned to key 1 or key 20

Ring Again must be assigned to key 21

Call Park must be assigned to key 1 or key 22

Call Pickup must be assigned to key 1 or key 23

Privacy Release must be assigned to key 25
```

The following message displays if SCS, SCL, or SCU is assigned to an incorrect key on an M3903 set:

```
SCS, SCL, and SCU must be assigned to Key 24 or keys 1-4
```

Meridian Digital Terminal (end)

The following message displays if SCS, SCL, or SCU is assigned to an incorrect key on an M3904 set:

SCS, SCL, and SCU must be assigned to key 24 or keys 1-12

The following message displays if SCS, SCL, or SCU is assigned to an incorrect key on an M3905 set:

SCS, SCL, and SCU must be assigned to key 24 or keys 1-8

The following message displays if an attempt is made to assign a feature or DN to an invalid key:

Keys # through # are invalid

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)

Ordering codes

Functional group ordering code: NI000004

Functionality ordering code: Not applicable

Release applicability

MSL03 and up

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) was introduced in BCS36.

Prerequisites

To operate, NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) requires the functional groups (FG) listed. Former NTX codes and names are also listed.

- BAS00003 BAS Generic
  - NTX142AA DS-1 64 kbps Clear
  - NTX143AA DS 1 ESF
  - NTXE01AA Enhanced Network-Basic
- NI000004 NI0 NI-2 DWS
  - NTXS08AA Enhanced Time Switch
  - NTXS25AA DWS Base
  - NTXS26AA DWS PRI Base
  - NTXS27AA DWS PRI Test Tools
- NI000007 NI0 ISDN Base
  - NTXS36AA XPM PLUS on DTCI
- NI000022 NI0 ISDN PRI Base
  - NTX790AC ISDN Primary Rate Access Base

Description

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) implements DWS for the MSL-100 market according to current standards. It provides access to customer premises equipment (CPE) through ISDN primary rate interface (PRI). The PRI link uses an extension of standard Q.931 ISDN signaling.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) features applicable to the initial release of MSL-100 DWS consist of the following:

- AD4421 - LEC DWS Trunk Selection and OMs
- AD4449 - LEC DWS PRI

Operation

The process of routing a wideband call on a PRI trunk, as with a narrowband call, requires four main steps:

- origination
- translations
- trunk selection
- termination

Origination

To establish a wideband call, the CPE sends a SETUP message to the MSL-100 switch through a PRI trunk. The SETUP message contains the number called and the bandwidth desired for the wideband call.

Translations

Existing translations methods currently provided on PRI trunk groups are used for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) .

Trunk selection

DWS uses three trunk selection methods:

- fixed
- floating
- flexible

Further information on all three methods can be found in the “Introduction to ISDN DWS Translations” section within this document.

Termination

The termination procedure for a wideband call is identical to that of a narrowband ISDN call.

Translations table flow

The NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) translation process is shown in the flowchart that follows. This is an example only, and not necessarily the only way to provide translations for DWS. To route a call, the MSL-100 switch accesses the tables in the flowchart. Call processing in the

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

MSL-100 switch begins with the trunking tables that define the attributes of the PRI trunk group.

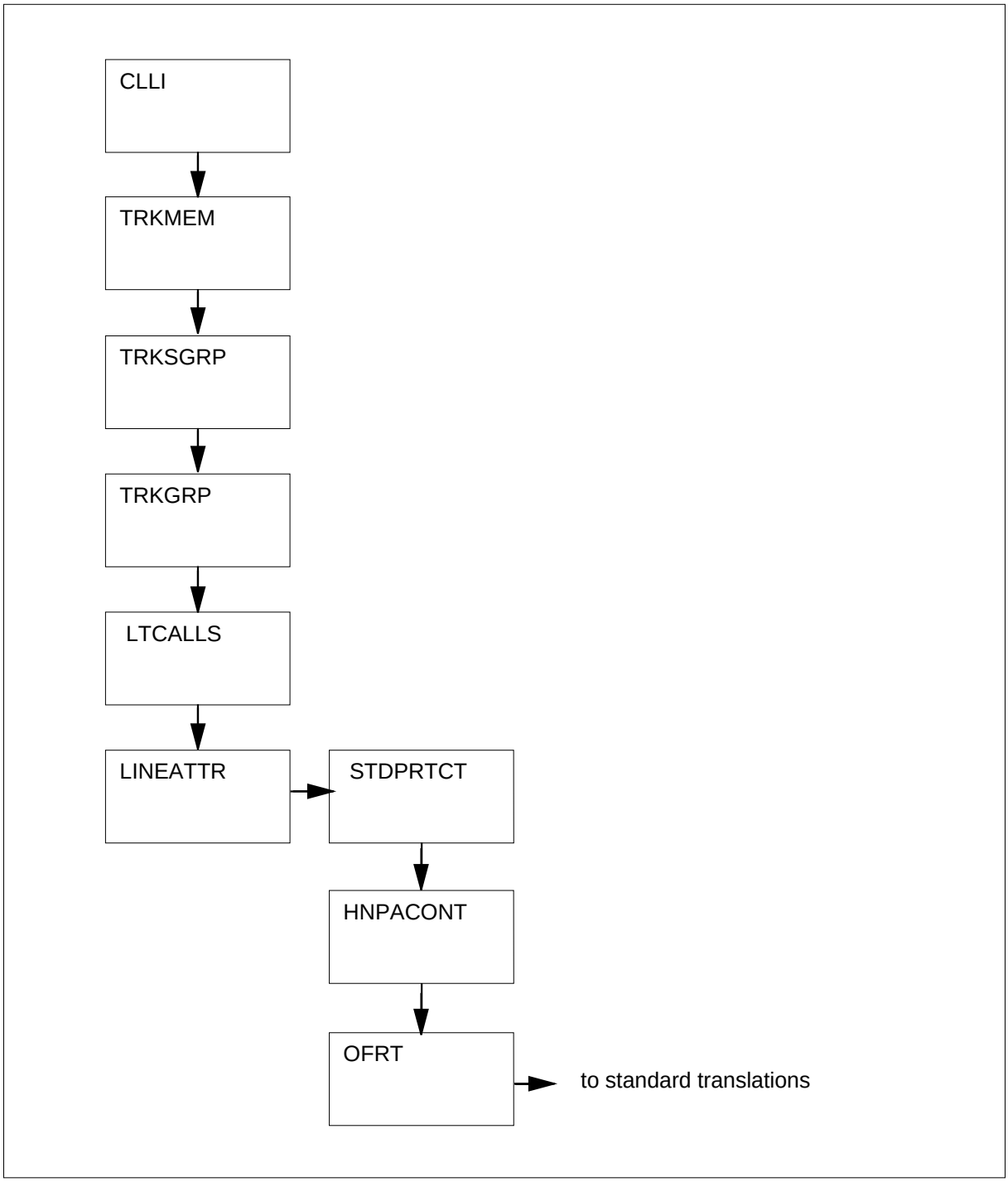
For the originating PRI call, table CLLI identifies the trunk group, and table TRKMEM determines the physical location of the circuit carrying the call. The trunk identifier (CLLI) is used to access table TRKSGRP that defines the signaling protocol used by the trunk, and table TRKGRP that provides the LTID of the trunk group. The LTID field and the call type are used to access table LTCALLS.

Table LTCALLS provides the line attribute index used to access table LINEATTR. This table provides the standard pretranslator table name (PRTNM) and the serving translation scheme (STS) for the originating trunk group.

The PRTNM value is used to access table STDPRTCT that contains the list of standard pretranslation tables. The STS value is then used to access table HNPACONT that lists the home numbering plan areas. This table provides a route reference index. The index is used to access table OFRT, which provides the information necessary to route the call to the terminating trunk group.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Table flow for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)



NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

The following table lists the datafill content for digits dialed 214-640-0222 used in the flowchart.

Datafill example for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)

Datafill table	Example data
TRKGRP	PRIFLT1DF PRA 0 NPDGP NCIT WIDEBAND DSEQ FLOATING FIRSTFIT N ISDN 104 $
LTCALLS	ISDN 104 PUB XLALEC 602 EA BNR Y $
LINEATTR	602 1FR NONE NT NSCR 0 214 SSWB LSWB NONE 0 NIL NILSFC LATA3 0 NIL NIL 00 N $
STDPRTCT	SSWB 1 0
HNPACONT	214 500 1 42 1 47 0
OFRT	601 S D PRIFLX0AF $

Limitations and restrictions

The following limitations and restrictions apply to the initial release of MSL-100 DWS PRI:

- IBN agent interworking and IBN translations are not supported.
- All the B-channels used on an incoming or outgoing wideband call must reside on the same physical PRI facility and be in the same trunk group.
- Wideband and narrowband calls should not share the same T1 facility.
- To change an existing narrowband trunk group to a wideband trunk group requires that all trunk group members be deleted.
- The DWS PRI product currently supports only the existing Bellcore Automatic Message Accounting (AMA) billing system. Station Message Detail Record (SMDR) billing is not currently supported for DWS.
- INBAND DTMF digit collection (PIN digits, account codes, authorization codes, etc.) is not supported. Wideband calls routed to an operator receive the ORIGINATION_DENIED treatment.
- Offhook and onhook queueing are not supported for wideband trunk groups.
- Satellite hop is not supported.
- Internal echo canceller control is not supported.
- B-channel negotiation is not supported.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

- Testing and support for the AT&T P41449 or ANSI T1.607 protocols are not provided.
- BERT testing is supported on individual DS-0 channels but not on a group of channels.
- Wideband test calls are not supported.
- Continuity testing is not supported for wideband trunk group agencies.

Interactions

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) has no functionality interactions.

Activation/deactivation by the end user

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) requires no activation or deactivation by the end user.

Billing

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) uses existing Bellcore automatic message accounting (AMA) billing record, field DATA RATE INDICATOR, to produce billing for DWS calls routed over PRI trunks.

The DATA RATE INDICATOR field records the total bandwidth used for a given wideband call. From this value, you can determine the number of B-channels that were grouped together to form the wideband call. For example, if the DATA RATE INDICATOR value is 384 Kbps, the number of B-channels used for that wideband call is 6 (384 ÷ 64).

Datafilling table CRSFMT

Table CRSFMT must be datafilled to activate AMA billing for wideband calls over PRI trunks. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

To activate the AMA billing system, the billing format for the AMA tuple must be datafilled to BCFMT (Bellcore Format).

Datafilling table CRSFMT

Field	Subfield or refinement	Entry	Explanation and action
FORMAT		BCFMT	Billing format. Enter BCFMT.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafill example for table CRSFMT

The following example shows sample datafill for table CRSFMT.

MAP display example for table CRSFMT

```
KEY FORMAT DATADUMP CDRSRCH ALARMS TIMERDMP TIMERVAL
_____________________________________________________
AMA BCFMT        N   NIL_FM     N        N        0
```

Station Message Detail Recording

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) . For more information about office parameters, refer to the *Office Parameters Reference Manual*.

Office parameters used by NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)

Table name	Parameter name	Explanation and action
OFCENG	MAX_NUM_WIDEBAND_CALLS	The parameter specifies the number of wideband extension blocks that are engineered for a switch. The number of extension blocks chosen indicates the maximum number of active wideband calls that can exist on a switch at one time. The default for this parameter is 0. The parameter value ranges from 0 to 4096. ***Note:*** A cold restart is required to decrease the value of this parameter.
OFCOPT	LAMA_OFFICE	The parameter specifies whether the switching unit has Local Automatic Message Accounting (LAMA) feature. Set this parameter to Y (yes).

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI). The tables are listed in the order in which they are to be datafilled.

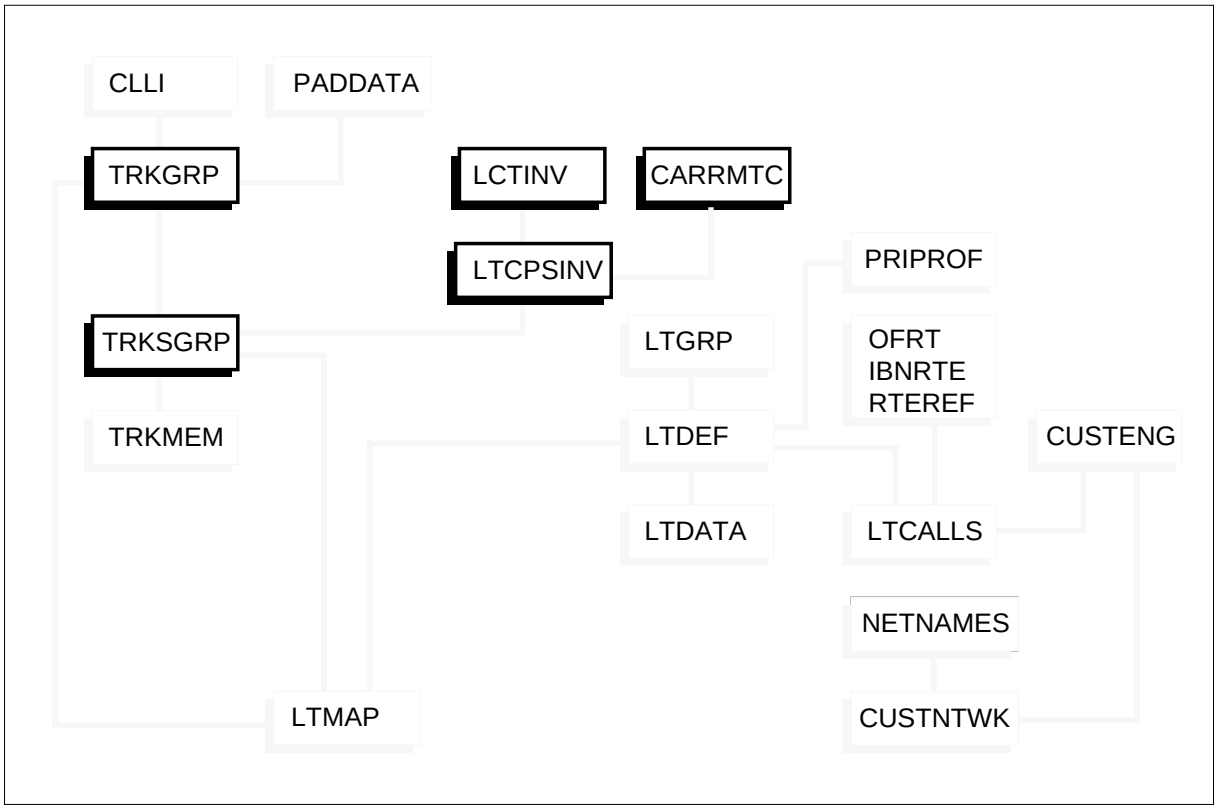
Datafill tables required for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)

Table	Purpose of table
LTCINV	Contains the inventory data for various peripheral modules.
CARRMTC	Allows the MSL-100 switch administration to datafill maintenance control information in peripheral modules.
LTCPSINV	Contains the assignment of the P-side links for the peripheral modules.
TRKGRP	Lists the customer-defined data associated with each trunk group existing in the switching unit.
TRKSGRP	Lists supplementary information for each subgroup assigned to one of the trunk groups listed in table TRKGRP.

Figure 1-1 shows the datafill dependencies between the MSL-100 tables that are used for PRI. For example, table TRKGRP is dependent on data in tables CLLI and PADDATA, so tables CLLI and PADDATA must be datafilled before table TRKGRP. The tables described in this chapter are bolded in the illustration. Refer to the appropriate sections in this *Translations Guide* for a description of other PRI tables.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

-1PRI datafill dependencies



Datafilling table LTCINV

The following table shows the datafill specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) for table LTCINV. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

Table LTCINV lists the inventory for DTCI peripheral modules in the MSL-100 switch. For each DTCI used by wideband dedicated trunk groups,

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

table LTCINV must be datafilled with the optional card required for wideband service.

Datafilling table LTCINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LTCNAME			Peripheral module name. Enter the name of the peripheral module, DTCI, followed by its number (0 to 255).
ADNUM			External administrative number. Enter a unique external administrative number (1 to 4095) associated with the peripheral module.
FRTYPE			Frame type. Enter the Meridian cabinet (MCTM) or frame type (DTEI) on which the peripheral module equipment is mounted.
FRNO			Frame number. Enter the cabinet or frame number (0 to 511) on which the peripheral module is mounted.
SHPOS			Shelf position. Enter the shelf position (18, 32, 51, 65) where the peripheral module is located.
FLOOR			Floor. Enter the floor (0 to 99) on which the peripheral module cabinet or frame is located.
ROW			Row. Enter the row on the floor where the peripheral module cabinet or frame is located.
FRPOS			Frame position. Enter the bay position (0 to 99) of the peripheral module cabinet or frame.
EQPEC			Equipment product engineering code. Enter the product engineering code (PEC) of the peripheral module.
LOAD			Load. Enter the name of the load required for the peripheral module.
EXECTAB			Executive table. This vector is made up of subfields TRMTYPE, EXEC, and CONTMARK.
	TRMTYPE		Terminal type. Enter the type of peripheral module terminal used.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table LTCINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	EXEC		Executive program. Enter the set of executive programs required for the peripheral module specified in the TRMTYPE entry. Enter PRAB DTCEX.
	CONTMARK		Continuation mark. A plus sign (+) indicates that the vector continues on the next line. A dollar sign ($) indicates the end of the vector.
CSLNKTAB			C-side link table. This field is made up of subfields ENSHELF, ENSLOT, ENLINK, ENDS30, and CONTMARK.
	ENSHELF		ENET shelf number. Enter the shelf number (0 to 7) to which the peripheral module is assigned.
	ENSLOT		ENET slot number. Enter the crosspoint slot number to which the peripheral module is assigned, corresponding to C-side links.
	ENLINK		ENET link number. Enter the link on the crosspoint (0 to 18) to which the peripheral module is assigned, corresponding to C-side links 0 to 18 of the peripheral module.
	ENDS30		ENDS30. This field defaults to 0 when the link is a DS30. All entries must be contiguous from 0. No entry can be duplicated.
	CONTMARK		Continuation mark. A plus sign (+) indicates that the vector continues on the next line. A dollar sign ($) indicates the end of the vector.
OPTCARD			Optional card. This field is a vector that may have up to 10 entries separated by plus signs (+); the vector ends with the dollar sign ($). Enter DCTAX78.
TONESET			Tone set. Enter NORTHAM, the tone set for the switch datafilled.
PECS6X45			6X45 Equipment product engineering code. Enter the two product engineering codes of the 6X45 card. One PEC is required for each unit of the XPM.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table LTCINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
E2LOAD			Electrically erasable programmable read only memory. Enter the EEPROM load name. If the shelf is equipped with a processor different from NTXM77, this field is automatically datafilled with NILLOAD.
OPTATTR			Optional attribute. Enter a dollar sign ($).
PEC6X40			6X40 Equipment product engineering code. Enter 6X40AC, 6X40CA, or 6X40FA, the version for ISDN of the 6X40 EQPEC card in the peripheral module.

Datafill example for table LTCINV

The following example shows sample datafill for table LTCINV.

MAP display example for table LTCINV

```
   LTCNAME      FRTYPE
EXECTAB
                        OPTCARD
_____________________________________________________________________
   DTCI 0   1003    DTEI    0 18 0 D 0 6X02AA DTI35CR1
(ABTRK DTCFX) (PRAB DTCEX) (AVPRATRK ADTCIX) $
(0 32 1 0) (0 32 1 1) (0 32 1 2) (0 32 1 3) (0 32 1 4) (0
32 1 5) (0 32 1 6) (0 32 1 7) (0 32 1 8) (0 32 1 9) (0 32 1
10) (0 32 1 11) (0 32 1 12) (0 32 1 13) (0 32 1 14) (0 32 1
15) $ (UTR15) (MSG6X69) (ISP16) (DCTAX78) $ NORTHAM 6X45BA
6X45BA NILLOAD $ 6X40AC
```

Datafilling table CARRMTC

The following table shows the datafill specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) for table CARRMTC. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For

a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

Datafilling table CARRMTC

Field	Subfield or refinement	Entry	Explanation and action
TMPLTNM			Template name. Enter DWS.
CARD			Card. Enter NT6X50AB.
FF			Frame format. Enter ESF.
ZLG			Zero logic. Enter B8ZS.

Datafill example for table CARRMTC

The following example shows sample datafill for table CARRMTC. The first example shows the DTCI default tuple; the second example shows the DTCI tuple specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) . The fields that have to change are highlighted in bold.

MAP display example for table CARRMTC

```
CMSTYPE TMPLTNM RTSML RTSOL ATTR
_____________________________________________________________
DTCI DEFAULT 255 255 DS1 NT6X50AB MU_LAW SF B8ZS BPV NILDL
N 250 1000 50 50 150 1000 3 6 864 100 17 511 4 255
_____________________________________________________________
DTCI DWS 255 255 DS1 NT6X50AB MU_LAW ESF B8ZS BPV NILDL N
250 1000 50 50 150 1000 3 6 864 100 17 511 4 255
```

Datafilling table LTCPSINV

The following table shows the datafill specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) for table LTCPSINV. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Table LTCPSINV contains the assignment of the P-side links for the peripheral modules. The DS-1 links on the DTCI that carry wideband calls must be datafilled as B8ZS and ESF.

Datafilling table LTCPSINV

Field	Subfield or refinement	Entry	Explanation and action
LTCNAME			Link trunk controller name. Enter the peripheral module type (DTCI) followed by its number (0 to 255).
PSLNKTAB			P-side link table. This field is a vector made up of subfields PSLINK, PSDATA, and CONTMARK. PSLNKTAB may have up to 20 entries.
	PSLINK		P-side link. Enter a number (0 to 19) to indicate the P-side port number for the DS-1.
	PSDATA		P-side data. Enter DS1PRA.
	CARRIDX		Carrier index. Enter DWS, the template name defined in table CARRMTC, if the DS-1 link carries wideband calls. Otherwise, enter DEFAULT.
	ACTION		Action. Enter Y (yes) to indicate that the carrier is removed from service when the out-of-service limit for frame, slip, errored-second, or severe-errored-second is exceeded. Otherwise, enter N (no).
	IID		Interface identifier. Enter an IID (0 to 31) that has been datafilled in the equipment that terminates the DS-1.
	LINEEQ		Line length from DS-1 circuit to first DS-1 office repeater. Enter NIL.
	CONTMARK		Continuation mark. A plus sign (+) indicates that the vector continues on the next line. A dollar sign ($) indicates the end of the vector.

Datafill example for table LTCPSINV

The following example shows sample datafill for table LTCPSINV. In the example, DS-1 links 1 and 3 to 17 are datafilled as wideband.

MAP display example for table LTCPSINV

```
LTCNAME PSLNKTAB

_____________________________________________________________
DTCI 1 (0 DS1PRA DEFAULT N 0 NIL) (1 DS1PRA DWS N 0 NIL) (2
DS1PRA DEFAULT N 0 NIL) (3 DS1PRA DWS N 1 NIL) (4 DS1PRA
DWS N 2 NIL) (5 DS1PRA DWS N 0 NIL) (6 DS1PRA DWS N 1 NIL)
(7 DS1PRA DWS N 2 NIL) (8 DS1PRA DWS N 0 NIL) (9 DS1PRA DWS
N 1 NIL) (10 DS1PRA DWS N 2 NIL) (11 DS1PRA DWS N 0 NIL)
(12 DS1PRA DWS N 1 NIL) (13 DS1PRA DWS N 2 NIL) (14 DS1PRA
DWS N 0 NIL) (15 DS1PRA DWS N 1 NIL) (16 DS1PRA DWS N 2
NIL) (17 DS1PRA DWS N 0 NIL) (18 DS1PRA DEFAULT N 0 NIL)
(19 DS1PRA DEFAULT N 0 NIL) $
```

Datafilling table TRKGRP

The following table shows the datafill specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) for table TRKGRP. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

Table TRKGRP is used by wideband call processing and trunk maintenance to recognize, choose, and route idle trunks. When the selection sequence field (SELSEQ) is set to WIDEBAND, the following subfields are displayed:

- Wideband selection sequence (WBSELSEQ). This subfield specifies whether the DS-0 channels are chosen in ascending or descending order.
- Wideband grouping (WBGRPING). This subfield specifies the trunk selection method. FIXED, FLOATING, and FLEXIBLE are valid.
- Wideband search (WBSEARCH). This subfield specifies the search method used to find a group of channels. FIRSTFIT and BESTFIT are valid.

Datafilling table TRKGRP (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
GRPKEY			Trunk group name. Enter the trunk group name from table CLLI.
GRPTYP			Group type. Enter the type of trunk as PRA.
TRAFSNO			Trunk separation number. Enter the outgoing traffic separation number (0 to 127) assigned to the trunk group. If the number is not required, enter 0.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table TRKGRP (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
PADGRP			PAD group. Enter the name of the originating PAD group from table PADDATA (subfield PADGRP1).
NCCLS			Operational measurements no circuit class. Enter the operational measurements no circuit class to indicate which OM register is incremented when treatment GNCT occurs.
SELSEQ			Selection sequence. Enter WIDEBAND.
	WBSELSEQ		Wideband selection sequence. Enter ASEQ to specify ascending order, DSEQ for descending order.
	WBGRPING		Wideband grouping. Enter FIXED, FLOATING, or FLEXIBLE. ***Note:*** The FLEXIBLE selection method is present only when NI000027 DWS Flexible Acc (NTXR65AA Flexible DWS Access) is loaded.
	WBSEARCH		Wideband search. Enter FIRSTFIT to select the first available channels, BESTFIT to select the smallest segment of idle DS-0 channels among T1s in a trunk group that can carry the bandwidth specified.
BILLDN			Billing DN. Datafill BILLDN with the 10-digit directory number to which all calls will be billed, or with N if no single-billed directory number is required. If you enter N, the number billed will be the automatic number identification (ANI) provided by the CPE. It is recommended that you enter the 10-digit directory number to avoid billing irregularities.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table TRKGRP (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LTID			Logical terminal identifier. The LTID field is automatically updated by the system after you datafill the corresponding entry in table LTMAP. Enter a dollar sign ($).
BLOCKNB			Block narrow band. Enter Y to prevent narrowband calls from terminating to or originating from members within this trunk group. Enter N if narrowband blocking is not required.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP. In the example, NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) is assigned to PRI trunk WITSPRI1.

MAP display example for table TRKGRP

```
 GRPKEY                                          GRPINFO
-------------------------------------------------------------
WITSPRI1
     PRA 0 NPDGP NCIT WIDEBAND DSEQ FLEXIBLE
  FIRSTFIT N (ISDN 100) $   Y
```

Note: PRA is an internal software designation for PRI.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Error messages for table TRKGRP

The following error messages apply to table TRKGRP.

Error messages for table TRKGRP

Error message	Explanation and action
CANNOT CHANGE FROM WIDEBAND TO ASEQ	The value of SELSEQ cannot be changed from WIDEBAND to any other selection sequence. Delete the trunk group's entry and add a new one with the correct selection sequence.
CANNOT CHANGE WBGRPING.TUPLE IN TRKSGRP MUST BE DELETED FIRST.	The WBGRPING subfield can be changed only if no subgroup in table TRKSGRP is associated with the trunk group.

Datafilling table TRKSGRP

The following table shows the datafill specific to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) for table TRKSGRP. Only those fields that apply directly to NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

Table TRKSGRP specifies the recovery scheme for glare. Glare occurs when both ends of a trunk are seized at the same time. To minimize glare, the customer premises equipment B-channel glare field (BCGLARE) should be set to YIELD and the MSL-100 glare field should be set to STAND. If the CPE cannot yield, the MSL-100 can be made to YIELD.

Note: This setting increases blocking for calls that have already come across the network.

Table TRKSGRP also specifies the ISDN protocol version used for PRI trunks. This field must be set to UNISPEC20, an extension of standard Q.931 ISDN signaling.

Note: The order of the DS-0 datafill determines the order within the trunk group. For further information, consult “Circuit and network provisioning”

in the “Introduction to ISDN DWS Translations” section within this document.

Datafilling table TRKSGRP (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
SGRPKEY			Trunk group name and subgroup. Enter the name of the trunk group from table CLLI followed by 0, the only valid subgroup name for ISDN signaling.
CARCODE			Card code. Enter DS1SIG, the card code used for ISDN PRI.
SIGDATA			Signal protocol. Enter ISDN, the only valid protocol used for call processing.
PSPDSEIZ			Permanent signal or partial dial on seizure timing. Enter the time in seconds (2 to 30) that the trunk waits for reception of the first digit.
PARTDIAL			Partial dial timing. Enter the time in seconds (2 to 30) that the trunk waits for reception of each digit, excluding the first one.
VERSION			Protocol version. Enter UNISPEC20.
CRLENGTH			Call reference length. Enter the number of octets (1 or 2) in the call reference.
BCHNEG			B-channel negotiation. Enter N to disable B-channel negotiation.
BCHGLARE			B-channel glare. Enter STAND to allow the terminating call to complete. Enter YIELD to allow the originating call to proceed.
IFCLASS			Interface class. Enter USER if the PRA link is considered the user end of the protocol. Enter NETWORK if it is considered the network end. For MSL-100 DWS, the CPE is considered the USER and the switch is considered the NETWORK. Enter NETWORK in this field. ***Note:*** An invalid setting in field IFCLASS may result in D-channel communications problems even though the system indicates the D-channel is functioning properly.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table TRKSGRP (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
CONFIG			Configuration. If broadcast procedures are used on this interface, enter PT_MLT_PT (point-to-multipoint). Otherwise enter PT_PT (point-to-point).
LOCATION			Location. Enter the location used when creating CAUSE information elements. Enter USER for user location, PVTNET for private network location, LOCALEO for local end office (public network) location.
SAT			Satellite. Enter N, since the trunk group is not arranged to switch by satellite.
ECSTAT			Echo cancellor status. Enter the echo cancellor status (EXTERNAL, INNOTONE, or UNEQ). Internal echo cancellor control is not supported.
TRKGRDTM			Trunk guard timing. For outgoing or two-way trunk groups, enter the time, in 10-ms intervals (1 to 255), that the trunk waits, after sending on-hook to the far end, before putting the trunk in the idle queue.
L1FLAGS			Layer 1 flags. Enter Y to indicate that the DTCI sends layer 1 flags when the D-channel is in flagfill mode, N to indicate that it does not.
PARMNAME			ISDN parmname. Enter a 1 to 8 character string. This field specifies a name in table ISDNPARM and associates the information found in table ISDNPARM with the primary rate interface defined by the table TRKSGRP tuple. The default value is DEFAULT.
DCHNL			D-channel. This field defines the D-channel to be used for this interface. It is formed of subfields PMTYPE, DTCINO, DTCICKTNO, DTCICKTTS, DCHRATE, and HDLCTYPE.
	PMTYPE		Peripheral module type. Enter DTCI for the PM type.
	DTCINO		DTCI number. Enter the DTCI number (0 to 511).

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

Datafilling table TRKSGRP (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	DTCICKTNO		DS-1 circuit number. Enter the DS-1 circuit number (0 to 19).
	DTCICKTTS		D-channel time slot number. Enter the time slot number of the D-channel (1 to 24).
	DCHRATE		D-channel rate. Enter the data rate for the D-channel as 64K.
	HDLCTYPE		High level data link type. Enter HDLC.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP. In the example, NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) is assigned to trunk WITSPRI1.

MAP display example for table TRKSGRP

```
                SGRPKEY CARDCODE
                                                        SGRPVAR
-------------------------------------------------------------------------------
     WITSPRI1 0   DS1SIG
ISDN 15 15 UNISPEC20 2 N YIELD NETWORK PT_PT USER N UNEQ
160 PRANODE N DEFAULT DTCI 0 19 1 64K HDLC $
```

Translation verification tools

The following section provides information on the translation verification tools that can be used.

TRAVER

The translation verification (TRAVER) utility is a diagnostic tool that allows the operating company to simulate a telephone call in software and display the line, trunk, or position to which a call is routed, the translation and routing tables that the call accesses, and any additional tables accessed as a result of call screening enhancements. The following example shows the output from TRAVER when it is used to verify NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) .

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

The example shows a PRI-to-PRI call originating on trunk PRIFLT1DF and terminating on trunk PRIFLX0AF.

1. In lines 1 and 2 of the example, table TRKGRP is accessed with the trunk group PRIFLT1DF and provides the trunk group LTID, ISDN 104.
2. In lines 3 and 4, the LTID and the call type are used to access table LTCALLS, which provides the line attribute index 602.
3. In lines 6 and 7, the line attribute index 602 is used to access table LINEATTR, which provides the serving translation scheme 214 and the pretranslator name SSWB.
4. In lines 9 to 17, table STDPRTCT is accessed with the pretranslator name SSWB. Subtable STDPRT provides the pretranslator route selector N, which indicates that the next translations table is HNPACONT.
5. In lines 18 to 24, table HNPACONT is accessed with the serving translation scheme. Subtable HNPACODE is accessed with the digits 640 and provides the route reference index 2. Subtable RTEREF is then accessed with this index; this subtable provides the next translation table, OFRT, and another route reference index, 601.
6. In lines 25 and 26, table OFRT provides the terminating trunk name PRIFLX0AF.

In the TRAVER command shown in this example,

- TR indicates that a trunk name follows, and PRIFLT1DF is the trunk name;
- 2146400222 represents the incoming digits; and
- B indicates that the type of trace required is “both,” meaning that both a table trace and a digit trace are performed.

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

TRAVER output example for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)

```
traver tr priflt1df 2146400222 b
TABLE TRKGRP
PRIFLT1DF PRA 0 NPDGP NCIT WIDEBAND DSEQ FLOATING FIRSTFIT N (ISDN 104)
$ $
TABLE LTCALLS
ISDN 104 PUB XLALEC 602 (EA BNR Y) $
Originator is not an AIN agent
therefore AIN info is not processed on originator side
TABLE LINEATTR
602 1FR NONE NT NSCR 0 214 SSWB LSWB NONE 0 NIL NILSFC LATA3 0 NIL NIL
00 N $
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE STDPRTCT
SSWB ( 1) ( 0) 0
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.  CALL TYPE
DEFAULT IS NP.  PLEASE REFER TO DOCUMENTATION.
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   N NP 0 NA
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE N
TABLE HNPACONT
214 500 1 ( 42) ( 1) ( 47) ( 0) 0
 . SUBTABLE HNPACODE
 . 214 214 HNPA 0
 . 640 640 LRTE 2
 . SUBTABLE RTEREF
 .   2 T OFRT 601
. . TABLE OFRT
 . . 601 S D PRIFLX0AF
 . .     T RRTE 1
 . . . TABLE RRTE
 . . . . TABLE REROUTE
 . . . . 1 ( 1)
 . . . . . SUBTABLE NWMRROUT
```

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (end)

TRAVER output example for NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) (continued)

```
 . . . . . NOT ACTIVATED
 . .    S D PRIFIX0AB
 . .    S D PRIFLT1DF
 . . EXIT TABLE OFRT
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
TABLE LCASCRCN
214 LSWB ( 2) OPTL N
 . SUBTABLE LCASCR
 . TUPLE NOT FOUND. DEFAULT IS NON-LOCAL
TABLE PFXTREAT
OPTL NP N DD UNDT
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
TABLE EASAC
TUPLE NOT FOUND
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES

1 PRIFLX0AF          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA
2 PRIFLX0AB          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA
3 PRIFLT1DF          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 NODIAL1
2 *FRAO
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

SERVORD

NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI) does not use SERVORD.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc)

Ordering codes

Functional group ordering code: NI000004

Functionality ordering code: NI000027

Release applicability

MSL03 and up

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) was introduced in BCS36.

Prerequisites

To operate, NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) requires the following functional group (the former NTX code and name are listed):

- NI000004 NI0 NI-2 DWS
  - — NTXS25AA DWS Base

Description

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) is included in functional group NI000004 NI0 NI-2 DWS. It improves Dialable Wideband Service by allowing flexible wideband trunk selection on PRI trunks.

It can be used with the following functional group (former NTX code and name are listed):

- NI000004 NI0 NI-2 DWS
  - — NTXR49AA DWS PRI End Office

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) consists of the following features:

- AD3879 - Power - Nx64 Wideband Optionality
- AD4574 - LEC WSS Flexible Channel Assignments

Operation

The call routing process for NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) is identical to that of NI0 NI-2 DWS (NTXR49AA DWS PRI) for PRI trunks. This functionality allows the flexible trunk selection method on these trunks.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

The following conditions apply to the flexible trunk selection method:

- a call must remain within the boundary of a single T1
- full n by 64 wideband calls are supported (n = 2 to 24)
- noncontiguous channels can be selected
- channel order, using constant frame delay, must be maintained

For an illustration of flexible trunk selection, refer to “Flexible channel selection” in section “Introduction to ISDN DWS Translations” in this document.

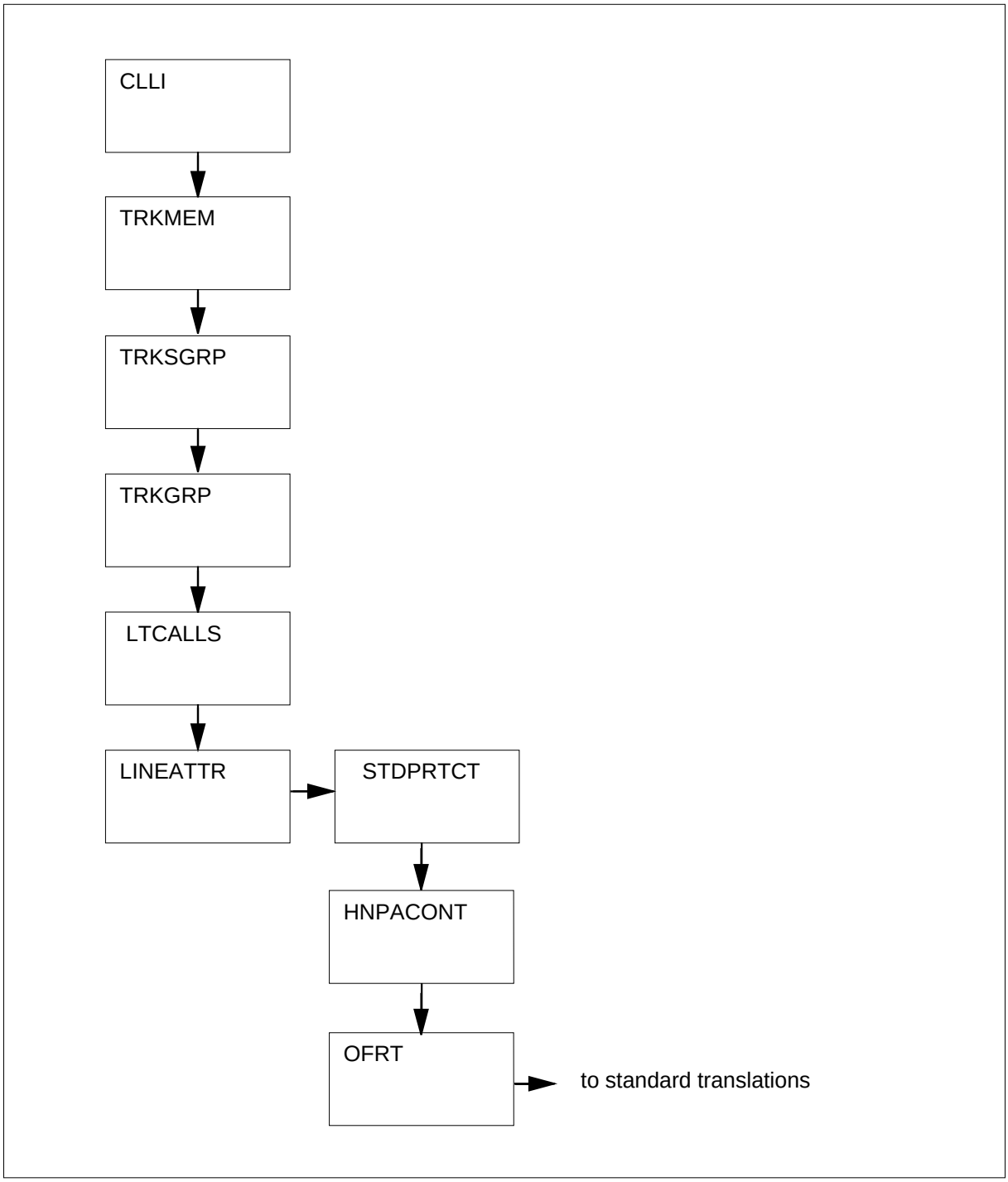
With this functionality, H0 and H11 traffic (384 kbit/s and 1.536 Mbit/s, respectively) may be routed over flexible trunks while traveling through the network.

Translations table flow

The NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) translations process for PRI trunks is identical to the NI0 NI-2 DWS (NTXR49AA DWS PRI) process as shown in the following flowchart.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

Table flow for NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc)



NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

Table TRKGRP is the only table that contains NI000027-specific data and is described in this section.

For descriptions of the other tables shown in the flowchart, refer to "Translations table flow" in section "NI000004 NI0 NI-2 DWS (NTXR49AA DWS PRI)" in this document.

Limitations and restrictions

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) has no limitations or restrictions.

Interactions

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) has no functionality interactions.

Activation/deactivation by the end user

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) requires no activation or deactivation by the end user.

Billing

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) does not affect billing.

Station Message Detail Recording

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) does not affect Station Message Detail Recording.

Datafilling office parameters

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc)

Table	Purpose of table
TRKGRP	Lists the customer-defined data associated with each trunk group existing in the switching unit.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

Datafilling table TRKGRP

The following table shows the datafill specific to NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) for table TRKGRP. Only those fields that apply directly to NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) are shown. For a description of the other fields, refer to the *Customer Data Schema Reference Manual*.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
SELSEQ			Selection sequence. Enter WIDEBAND.
	WBGRPING		Wideband grouping. This subfield specifies the selected method used by call processing. Enter FLEXIBLE.
BLOCKNB			Block narrow band. Enter Y to prevent narrowband calls from terminating to or originating from members within this trunk group. Enter N if narrowband blocking is not required.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP. In the example, NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) is assigned to a PRI trunk.

MAP display example for table TRKGRP

```
   GRPKEY                                          GRPINFO
_____________________________________________________________________
  WITSPRI1
       PRA 0 NPDGP NCIT WIDEBAND DSEQ FLEXIBLE
FIRSTFIT N (ISDN 100) $     Y
```

Note: PRA is an internal software designation for PRI.

Translation verification tools

The following section provides information on the translation verification tools that can be used.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

TRAVER

The translation verification (TRAVER) utility is a diagnostic tool that allows the operating company to simulate a telephone call in software and display the line, trunk, or position to which a call routes, the translation and routing tables that the call accesses, and any additional tables accessed as a result of call screening enhancements. The following example shows the output from TRAVER when it is used to verify NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc).

The example shows a PRI-to-PRI call originating on trunk PRIFLT1DF and terminating on trunk PRIFLX0AF.

1. In lines 1 and 2 of the example, table TRKGRP is accessed with the trunk group PRIFLT1DF and provides the trunk group LTID, ISDN 104.
2. In lines 3 and 4, the LTID and the call type provides access to table LTCALLS, which provides the line attribute index 602.
3. In lines 6 and 7, the line attribute index 602 provides access to table LINEATTR, which provides the serving translation scheme 214 and the pretranslator name SSWB.
4. In lines 9 to 17, table STDPRTCT is accessed with the pretranslator name SSWB. Subtable STDPRT provides the pretranslator route selector N, which indicates that the next translations table is HNPACONT.
5. In lines 18 to 24, table HNPACONT is accessed with the serving translation scheme. Subtable HNPACODE is accessed with the digits 640 and provides the route reference index 2. Subtable RTEREF is then accessed with this index; this subtable provides the next translation table, OFRT, and another route reference index, 601.
6. In lines 25 and 26, table OFRT provides the terminating trunk name PRIFLX0AF.

In the TRAVER command shown in this example,

- TR indicates that a trunk name follows, and PRIFLT1DF is the trunk name;
- 2146400222 represents the incoming digits; and
- B indicates that the type of trace required is “both,” meaning that both a table trace and a digit trace are performed.

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

TRAVER output example for NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc)

```
traver tr priflt1df 2146400222 b
TABLE TRKGRP
PRIFLT1DF PRA 0 NPDGP NCIT WIDEBAND DSEQ FLEXIBLE FIRSTFIT N (ISDN 104)
$ $
TABLE LTCALLS
ISDN 104 PUB XLALEC 602 (EA BNR Y) $
Originator is not an AIN agent
therefore AIN info is not processed on originator side
TABLE LINEATTR
602 1FR NONE NT NSCR 0 214 SSWB LSWB NONE 0 NIL NILSFC LATA3 0 NIL NIL
00 N $
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE STDPRTCT
SSWB ( 1) ( 0) 0
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.  CALL TYPE
DEFAULT IS NP.  PLEASE REFER TO DOCUMENTATION.
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   N NP 0 NA
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE N
TABLE HNPACONT
214 500 1 ( 42) ( 1) ( 47) ( 0) 0
 . SUBTABLE HNPACODE
 . 214 214 HNPA 0
 . 640 640 LRTE 2
 . SUBTABLE RTEREF
 .   2 T OFRT 601
. . TABLE OFRT
 . . 601 S D PRIFLX0AF
 . .     T RRTE 1
 . . . TABLE RRTE
 . . . . TABLE REROUTE
 . . . . 1 ( 1)
 . . . . . SUBTABLE NWMRROUT
```

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (end)

TRAVER output example for NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) (continued)

```
 . . . . . NOT ACTIVATED
 . .    S D PRIFIX0AB
 . .    S D PRIFLT1DF
 . . EXIT TABLE OFRT
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
TABLE LCASCRCN
214 LSWB ( 2) OPTL N
 . SUBTABLE LCASCR
 . TUPLE NOT FOUND. DEFAULT IS NON-LOCAL
TABLE PFXTREAT
OPTL NP N DD UNDT
TABLE LATAXLA
TUPLE NOT FOUND
ASSUMED TO BE DEFAULT INTRALATA, INTRASTATE, STD
TABLE EASAC
TUPLE NOT FOUND
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES

1 PRIFLX0AF          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA
2 PRIFLX0AB          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA
3 PRIFLT1DF          N CDN E164 NA 2146400222 NIL_NSF  BC 64k DATA

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 NODIAL1
2 *FRAO
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

SERVORD

NI000027 DWS Flexible Acc (NTXR65AA Flex DWS Acc) does not use SERVORD.

Automatic Set Relocation

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL04 and up

Automatic Set Relocation was introduced in BCS34.

Prerequisites

Automatic Set Relocation has no prerequisites.

Description

Automatic Set Relocation (ASR) allows a user to move IVD telephone sets from one location to another without the intervention of service personnel.

The ASR process involves two steps:

- The first step involves the Automatic Set Relocation Out (ASRO) process. Operating company personnel enter a special code and unplug the telephone set. Entering this code causes the switch to perform the equivalent of a Change Keyset Line Equipment Number (CKLN) service order command on the set. All directory numbers and features associated with the set are transferred from the old line equipment number (LEN) to a virtual LEN (temporary). All directory numbers and features are deleted from the old LEN, and the old LEN state is set to hardware assigned, software unassigned (HASU).
- The second step of the process, Automatic Set Relocation In (ASRI), requires the user to plug the set into any LEN in the HASU state that supports an IVD set. The user takes the telephone off-hook or presses the primary directory number (PDN) key and dials the special ASR In code. This causes the switch to perform the equivalent of a CKLN service order command on the set again. All directory numbers and features associated with the set are transferred from the virtual LEN to its new location.

Automatic Set Relocation (continued)

This feature provides three advantages over the previous system:

- It avoids the loss of telephone service due to service being in one location and the set in another location.
- It reduces the workload of operating company personnel.
- The service order command CKLN provides the operating company personnel the ability to complete the ASR In process.

Prior to invoking the ASR process, the following tasks must be accomplished to allow the ASR feature to function:

- Feature translators ASRI and ASRO must be added to tables IBNXLA and XLANAME.
- To use authorization codes, the codes must first be defined in tables AUTHCDE and AUTHPART.
- Table DNROUTE must be datafilled to accommodate up to 160 specific ASR DNs that may be added to the table.

To enable a user to relocate a telephone set back into the system, the system must be create a temporary datafill allowing the user to receive dial tone and the ASR In code. To accomplish this, the system must have a directory number and a customer group set aside for ASR In as follows:

- One DN must be set aside for ASR In use only. One DN must be set aside for each set that is relocated at the same time as other sets are relocated. Up to 1023 DNs may be relocated at the same time. Therefore, up to 1023 DNs must be set aside for ASR use.
- A special customer group must be identified for ASR In use only. Enter this customer group in the system like any other customer group. (This special ASR customer is identified in table OFCVAR for the entry ASR_CUSTGRP.) If the customer group is not identified for ASR_CUSTGRP, then no sets may perform the ASR In or ASR Out process.

  Note: It is recommended the customer group be established in order that the user may only dial the ASR In code. If the user is allowed to perform normal telephone operations with the temporary datafill, there is no incentive for the user to perform the ASR In process. If every user who performs the ASR Out process decides not to bring the set back in service by performing the ASR In process, the maximum number of sets in the ASR Out state would be exhausted quickly.

The customer group identified in ASR_CUSTGRP is used for the temporary datafill in table KSETLINE along with a subgroup of 0 and an NCOS of 0.

Automatic Set Relocation (continued)

The ASR feature is assigned on a customer group basis. Each customer group allowed to perform ASR has an entry in table CUSTHEAD identifying the ASR feature translator.

For successful relocation, the new location is equipped and datafilled with the appropriate card type (NT8X47BA) in table LNINV.

Translations table flow

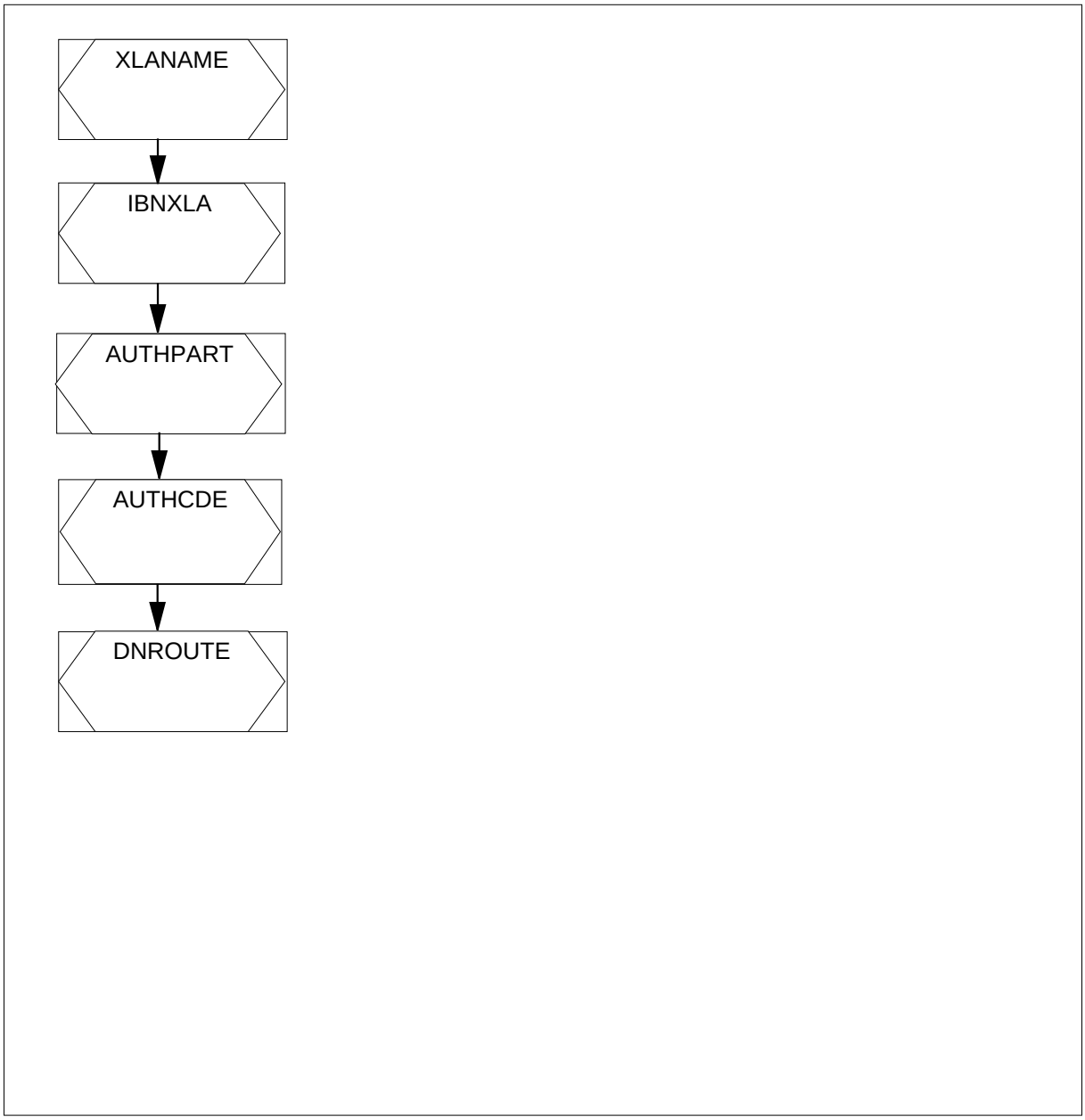
The Automatic Set Relocation translations tables are identified in the following list:

- Table XLANAME
- Table IBNXLA
- Table AUTHPART
- Table AUTHCDE
- Table DNROUTE

The Automatic Set Relocation translation process is shown in the flowchart that follows.

Automatic Set Relocation (continued)

Table flow for Automatic Set Relocation



Automatic Set Relocation (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for Automatic Set Relocation

Datafill table	Example data
XLANAME	CUSTXLA $ N N ASRO
	ASRXLA $ N N ASRI
IBNXLA	CUSTXLA 95 FEAT N N ASRO
	ASRXLA 96 FEAT N N ASRI
AUTHPART	BNRP IBN 5 20
AUTHCDE	BNRP 123456 IBN 0 N 2222 ASR
	BNRP 654321 IBN 0 N 1234 ASR
	BNRP 696969 IBN 0 N 7777 ASR
DNROUTE	805 866 2191 ASR

Limitations and restrictions

The following limitations and restrictions apply to Automatic Set Relocation:

- Relocation procedures must be originated from the primary directory number of the telephone set.
- Plug only an IVD set into a jack that is equipped with an IVD line card (8X47BA). If an IVD digital set is plugged into a jack equipped with a non-IVD line card, damage to the set or line card can result.
- The number of sets that can be in the ASR OUT state simultaneously is limited to 160.
- If a user performs the ASR OUT function and no DN has been set aside for ASR use, the user receives treatment and a log is generated.
- Auto Set Relocation on MADNs must comply with MADN distribution and engineering restrictions. When a user brings a set back into the system and this set is a MADN appearance, the MADN engineering rules are

Automatic Set Relocation (continued)

checked. If the MADN rules are violated, the user receives treatment and a log is generated indicating the reason for the failure.

- Data options (MADO and MPDA) are automatically relocated with their host set when using this relocation feature.
- During an image this feature is not available. The user is routed to treatment if an attempt to invoke this feature takes place during an image.
- When the maximum number of sets perform ASR OUT, a log is generated indicating no more sets can perform ASR OUT until sets have performed ASR IN.
- When certain attempts to perform ASR IN fail, a log is generated to indicate the reason for failure.
- Once ASR OUT is completed, only the switch personnel can go and correct the error if ASR OUT was performed on the incorrect set.
- When ASR OUT is performed and the state of the LEN is set to INB, the state may not be changed by the switch personnel, until the corresponding entry in table ASRTABLE is first deleted.
- No feature interactions are supported during the ASR process except Make Set Busy (MSB), Nightservice (NGTSRVCE), Controlled Interflow (CIF).
- During the process of performing ASR OUT, no calls can be active or on hold at any DN on the set. The set must be idle except for the ASR OUT function being performed on the PDN of the set.
- If a user dials into the switch through Direct Inward System Access (DISA) and attempts to invoke the ASR feature, the user receives treatment for Feature Not Allowed (FNAL).
- The ASR feature cannot be invoked on an automatic line.
- Entries for LENs in the ASR OUT state cannot be changed in any tables except for tables HUNTGRP, MDNGRP, and CFX.
- A message is displayed if a switch personnel attempts to remove an entry from table DNROUTE needed to perform ASR IN. The entry is not removed.
- Table DNROUTE can have 160 tuple entries for ASR DNs.
- Table ASR can have 160 tuple entries.
- If a user dials a DN that is set aside for ASR use, the user receives treatment for FNAL.

Automatic Set Relocation (continued)

- The customer builds a customer group specifically for the ASRI process. The ASR customer group allows the user to dial the ASRI code defined in table IBNXLA.
- The ASR customer group is defined in table OFCVAR by an office parameter.

The following options/features are supported by the ASR feature. If a set has an option/feature not found in the following list, the datafill for that set cannot be moved using the ASR process:

- Automatic Line
- Special Billing
- Denied Incoming
- Private Business Line
- Calling Line Identification
- Do Not Disturb
- Random Make Busy
- Requested Suspension
- Stop Hunt
- Security Code
- Datapath Closed User Group
- 3 Way Calling
- Ring Again
- Auto Dial
- 6 Port Conference
- Call Pickup
- Speed Calling Long
- Speed Call Short
- Speed Call User
- Station Call Park
- Directed Call Park
- Line Call Transfer
- Privacy Release
- Call Forward Universal

Automatic Set Relocation (continued)

- Make Set Busy All
- Malicious Call Hold
- Store Number Redial
- Executive Busy Overide Originate
- Group Intercom For IBN Lines
- Query Time and Date
- Auto Answerback
- Network Resource Selector
- Inspect Key
- Key Set Short Hunt
- Query Busy Station
- MADN Single Bridge Arrangement/Multiple Bridge Arrangement Privacy Option
- Line of Business
- ACD Not Ready
- Observe Agent
- ACD Emergency Key
- Agent Status Lamp
- Supervisor
- Display Queue Status
- ACD Night Service Key
- Display Queue Threshold
- Call Forward Intragroup
- Call Forward Busy
- Call Forward Don't Answer
- Station Origination Restrictions
- Cancel Call Waiting
- Control Interflow
- Terminating Billing Option
- Call Path Restoration
- AT&T Line Study

- Message Waiting
- Call Waiting
- Single Intercom

Interactions

The following paragraphs describe the interactions between Automatic Set Relocation and other functionalities.

The ASR feature requires features AD2491, IVD Auto Set Relocation Table Control, and AD2493, IVD Automatic Set Relocation XPM Interaction. The ASR feature will not work without these two features.

This feature depends on the functionality of the SERVORD command CKLN. The CKLN command allows the switch personnel to move the datafill for any IVD set from one LEN to another. The feature interactions supported by the CKLN command, outlined in DDOC AC0202, CLEN for EBS, are supported by the ASR function also.

Activation/deactivation by the end user

Activation/deactivation of Automatic Set Relocation by the end user

At your telephone

1. Go off-hook at the PDN on the set.

   Response:

   dial tone

2. Dial ASR OUT code.

   Response:

   special dial tone

3. Dial ASR authorization code.

   Response:

   Special dial tone for success. Dial tone for first invalid authorization code and treatment (reorder) for the second invalid authorization code.

4. Dial personal authorization code.

   Response:

   Special dial tone for success. Dial tone for first invalid authorization code and treatment (reorder) for the second invalid authorization code.

5. Dial a six-digit ID code.

   Response:

Automatic Set Relocation (continued)

Dial tone for duplicate ID code. Confirmation tone for success. After giving confirmation tone, the system disconnects the call. Following that, the LEN associated with the set and the LEN of the associated data device are taken out of service by setting the line state to INB.

6. Unplug the set.

   Response:

   No system action.

7. Take the set to its new location.

   Response:

   no system action

8. Plug the set into the properly assigned jack.

   Response:

   System recognizes the set. System datafills new LEN with temporary datafill.

9. Wait 30 seconds before taking next step.

   Response:

   None

10. Go off-hook on the set.

    Response:

    stuttered dial tone

    Note: If no dial tone is received, release the call and repeat the step. If no dial tone is received contact your system administrator.

11. Dial ASR IN code

    Response:

    special dial tone

12. Dial the six-digit ID code specified in step 5.

    Response:

Automatic Set Relocation (continued)

Confirmation tone for success. Dial tone for first invalid personal ID code and treatment (reorder) for the second invalid personal ID code.

13. Wait one minute before attempting to use the telephone set or the corresponding data service.

    Response:

    system is transfering datafill

    Task is complete.

ASR audit

If a user performs the ASR OUT process, takes the telephone set to an empty LEN, and plugs the set in, the ASR process creates the temporary datafill. If the user does not perform the ASR In process, the temporary datafill is deleted by an ASR audit that runs once a day. This audit searches table IVDINV for ASR created entries. When it finds one, it deletes the directory number and line information from the corresponding entry in table KSETLINE and then removes the ASR entry in table IVDINV.

To allow flexibility in executing this audit each day, the office parameter ASR_AUDIT_TIME in table OFCVAR is provided. It is recommended that this audit be executed during non-peak hours. It is also recommended that the ASR audit not be executed during the time of the CC REXX or XPM REXX tests. These tests may affect the audit. The default time for the audit is 1:00 a.m.

Billing

Automatic Set Relocation does not affect billing.

Station Message Detail Recording

Automatic Set Relocation does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Automatic Set Relocation. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Automatic Set Relocation

Table name	Parameter name	Explanation and action
OFCVAR	ASR_CUSTGRP	Allows activation of ASR feature.
OFCVAR	ASR_AUDIT_TIME	Allows flexibility in executing daily audit.

Automatic Set Relocation (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Automatic Set Relocation. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Automatic Set Relocation

Table	Purpose of table
XLANAME	List of Tranlator Names Table
IBNXLA	Integrated Business Network Translation
AUTHPART	Authorization Partition
AUTHCDE	Authorization Code
DNROUTE	Directory Number Route

Datafilling table XLANAME

The following table shows the datafill specific to Automatic Set Relocation for table Translator Name. Only those fields that apply directly to Automatic Set Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table XLANAME (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
XLANAME		alphanumeric (1 to 8 characters)	*Translator name* Enter the name that is assigned to the customer, feature, or preliminary translator.
DEFAULT		see subfield TRSEL in table IBNXLA	*Default data* This field is a vector that consists of translation selector subfield TRSEL and refinements dependent on this selector. It is identical to field RESULT in table IBNXLA.

Automatic Set Relocation (continued)

Datafilling table XLANAME (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DEFAULT (continued)			See table IBNXLA for a full description of field RESULT and refinements. ***Note:*** Due to the large number of TRSEL selector values and corresponding refinements, the RESULT refinement descriptions are not reproduced in this table description.
CONTMARK		+ or $	*Continuation mark* Enter + if additional information for this tuple is contained in the next record. Otherwise, enter $ to indicate the end of the tuple.
MAXDIG		0-9	*Maximum digit range* This field indicates the range of allowable values for the digilator portion of the specified translator's table IBNXLA key. Enter 9 to specify range of 0 to 9. This value is used for North America. Once field MAXDIG is datafilled for a particular tuple, the MAXDIG value can only be changed by deleting the entire tuple and reentering it with a new MAXDIG value. The default MAXDIG value is 9.

Datafill example for table XLANAME

The following example shows sample datafill for table XLANAME.

MAP display example for table XLANAME

```
XLANAME                    DEFAULT                    MAXDIGS
-------------------------------------------------------------
CUSTXLA                      $                          9  $
ASRXL                        $                          9  $
```

Automatic Set Relocation (continued)

Datafilling table IBNXLA

The following table shows the datafill specific to Automatic Set Relocation for table IBNXLA. Only those fields that apply directly to Automatic Set Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		See subfields.	Key. This field consists of subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the name that is assigned to the translator.
	DGLIDX	vector of up to 18 digits	Digilator index. Enter the digit or digits assigned as an ambiguous code. The range of this field depends on field MAXDIG in table XLANAME. The DGLIDX can accept overdecadic digits. The allowable values for the digilator portion of DGLIDX of table IBNXLA are as follows: MAXDIG value IBNXLA digilator values 9 digits 0 to 9 C digits 0 to 9 and B to C F digits 0 to 9 and B to F The allowable digit range for table IBNXLA digilator values is determined for each translator.
RESULT		See subfields.	Result. This field consists of subfields TRSEL, ACR, SMDR, VCDR, and FEATURE.
	TRSEL	FEAT	Translation selector. Enter the translation selector FEAT.
	ACR	Y or N	Account code entry. Enter Y (yes) if an account code entry is required for all calls to the special feature access code. Otherwise, enter N (no). Enter N when the feature is equal to SCPL or SCPS. See field FEATURE

Automatic Set Relocation (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SMDR	Y or N	Station Message Detail Recording. Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if no recording is required. ***Note:*** If field SMDR is set to Y, only the feature that originates a call is SMDR recorded. For features that do not originate a call this field has no effect and no SMDR record is produced. For dump and restore purposes an N must be datafilled after the SMDR field if field TRSEL is datafilled NET, ROUTE, TTTR, AMBI, EXTN, CUTTD, or FEAT. This N is the datafill for field VCDR. The Station Message Detail Recording fields (SMDR and SMDRB [TRKSEL= NET]) can only be set to Y if the switching unit has the option SMDR_OFFICE set to Y in table OFCOPT.
	SMDR (continued)		SMDR bills each leg of the call. The option must be turned on in IBN translations to generate SMDR billing. Turning on the option for one leg of the call does not carry over to another leg of the call. For example, when using virtual facility groups (VFG) for routing, SMDR must be turned on for the leg of the call that requires billing and must be routed through IBN translations. Neither SMDR nor SMDRB can be turned on for calls originating from plain old telephone service (POTS) VFGs.
	VCDR	Y or N	Variable call detail recording. Enter N. N is the only valid entry for translation selector FEAT.
	FEATURE	ASRO/ASRI	Feature to be identified with translator name.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

Automatic Set Relocation (continued)

MAP display example for table IBNXLA

```
XLANAME        DGLIDX          TRSEL        ACR       SMDR        FEATURE
-------------------------------------------------------------------------
CUSTXLA          95            FEAT         N         N           ASRO
ASRXL            96            FEAT         N         N           ASRI
```

Datafilling table AUTHPART

The following table shows the datafill specific to Automatic Set Relocation for table AUTHPART. Only those fields that apply directly to Automatic Set Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling AUTHPART (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PARTNM		alphanumeric (1 to 16 characters)	*Partition name* Enter the partition name for the customer group or for the CFRA lines. This is the key of table AUTHPART.
FORMAT		CFRAEXEMP Tor IBN	*Format* Enter CFRA if the authorization code is assigned for the CFRA feature and is usable. Enter EXEMPT if authorization code (AC) are not used. Enter IBN if the AC is assigned to the customer group and is usable.

Datafilling AUTHPART (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LENGTH		2 to 10	*Length of authorization code* Enter the number of digits in each authorization code in the partition.
MAXSIZE		0 to 1000000	*Maximum size* Enter the maximum allowable number of authorization codes that can be accommodated in the partition. ***Note:*** The maximum number of authorization codes that can be entered depends on the number of digits entered in field LENGTH. For example, if the entry in field length is 3, the maximum number of codes is 999 Entries outside the entry range are invalid.

Datafill example for table AUTHPART

The following example shows sample datafill for table AUTHPART.

MAP display example for table AUTHPART

```
PARTNM       FORMAT                LENGTH          SIZE
------------------------------------------------------------
BNRP           IBN                   5              20
```

Datafilling table AUTHCDE

The following table shows the datafill specific to Automatic Set Relocation for table AUTHCDE. Only those fields that apply directly to Automatic Set

Automatic Set Relocation (continued)

Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AUTHCDE (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
AUTHPART		alphanumeric (1 to 16 characters)	*Partition name* This is the first part of the key to this table and must exist in table AUTHPART in field PARTNM. If field FORMAT is set to EXEMPT or IBN, enter the partition name assigned to the customer group.
AUTHCODE		0 to 9 (2 to 12 digits)	*Authorization code* This is the second part of the key to this table and must contain the same number of digits as defined in table AUTHPART, field LENGTH. If field FORMAT is set to EXEMPT or IBN, enter the authorization code for the customer group.
INFO		See subfield.	*Information* This field consists of subfield FORMAT and its refinements.
FORMAT		IBN	Enter IBN to assign the authorization code to the customer group (usable) and datafill refinements NCOS, ACCT, SECDIGS, AUTHTYPE, and OPTIONS.
NCOS		0 to 255	*Network class of service* Enter the network class of service associated with the authorization code as previously datafilled in table NCOS.
ACCT		Y or N	*Account option* Enter Y (yes), to indicate an account code is required. Otherwise, enter N (no).

Automatic Set Relocation (continued)

Datafilling table AUTHCDE (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SECDIGS		0 to 9(1 to 4 digits) or $	*Security code digits* If a nil security code is required, enter $. If a security code is required, enter a security code.
AUTHTYPE		ASRSSACSU PACor SW	*Authorization code type* Enter one of the following authorization code (AC) types. ASR (automatic set relocation), SSAC (station specific), SUPAC (super), SW (system wide).

Datafill example for table AUTHCDE

The following example shows sample datafill for table AUTHCDE.

MAP display example for table AUTHCDE

```
AUTHPART     AUTHCODE       FMT   NCOS    ACCT     SECDIGS     AUTHTYPE
-------------------------------------------------------------------------
BNRP         123456         IBN   0       N        2222          ASR
BNRP         654321         IBN   0       N        1234          ASR
```

Datafilling table DNROUTE

The following table shows the datafill specific to Automatic Set Relocation for table DNROUTE. Only those fields that apply directly to Automatic Set

Automatic Set Relocation (continued)

Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNROUTE (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 9999999 (1 to 7 digits)	*Area code* The area code identifies a major geographical area served by the switch. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits long.
OFCCODE		0 to 9999999 (0 to 7 digits)	*Office code digit register* The office code is a subregion of the area code. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits in length.
OFCCODE (continued)			The office code must be specified in table TOFCNAME. Tuples can be added if the value of field OFCCODE is $ as specified in table TOFCNAME. They cannot contain STNCODEs whose leading digits are an OFCCODE in the same area code.

Automatic Set Relocation (continued)

Datafilling table DNROUTE (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
STNCODE		0 to 99999999 (up to 8 digits)	*Station code* The station code identifies a unique station within the terminating office (TOFC). If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be one or four digits in length. If one digit is entered, it is treated as a D-digit, where the D-digit represents the fourth digit in the format ABC-DEFG. A D-digit is then given the appropriate DN result. For example, if area code 613 and office code 226 are entered, and if 5 is entered as the station code, any calls to a number beginning with 6132265 are automatically routed to the specified treatment. If 5 is the D-digit, and DNROUTE is datafilled as 613 226 5 D OPRT, any numbers for 6132265 are routed to the operator treatment as set in table TMTCNTL. Ambiguity within the STNCODEs of one TOFC is not permitted. For example, 8594 and 859 cannot be specified as STNCODEs within one TOFC. ***Note:*** STNCODE is in DEFG format.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
DN_KEY                              DIRECTORY NUMBER RESULT
------------------------------------------------------------
423 264 4355                        ASR
```

Automatic Set Relocation (continued)

Note: Table DNROUTE completes the datafill for the ASR feature. The following information introduces a new table developed for the ASR feature. Table ASR is not part of the datafill order.

Table ASR

Table ASR retains records of digital sets that are in the process of being relocated. This table retains a user's six-digit personal identification code, along with DN and LEN information pertaining to the set being relocated. Table ASR is updated dynamically as the ASR feature is invoked. During the ASR OUT process entries are added to the table. Upon completion of the set relocation and invoking the ASR IN process, entries are removed accordingly. Entries can be removed using the CKLN SERVORD command.

The following table shows the datafill specific to Automatic Set Relocation for table ASR. Only those fields that apply directly to Automatic Set Relocation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ASR (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
KEY		numeric (0 to 1022)	*Key* Enter the key for this table.
ID		numeric (6 digits)	*Personal identification code* Enter the personal identification code.
PDN		numeric (7 digits)	*Primary directory number* Enter the primary directory number (PDN).

Automatic Set Relocation (continued)

Datafilling table ASR (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
OLDLEN		See subfields.	*Old line equipment number* Enter the line equipment number (LEN) of the set being relocated. This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to more than 60 tables, it is documented in a single section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.
TEMPLEN		See subfields.	*Temporary line equipment number* Enter the temporary LEN of the set being relocated. This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to more than 60 tables, it is documented in a single section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.
MATE		See subfields.	*Mate* This field consists of subfields MATEBOOL and MATETEMP.

Automatic Set Relocation (continued)

Datafilling table ASR (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	MATEBOOL	Y or N	*Matebool* Enter Y (yes) if a MATE is used, and datafill refinement MATETEMP. Otherwise, enter N (no).
	MATETEMP	See subfields.	*Mate temporary line equipment number* Enter the mate temporary LEN of the set being relocated. This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to more than 60 tables, it is documented in a single section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.

Datafill example for table ASR

The following example shows sample datafill for table ASR.

MAP display example for table ASR

```
CODE     PDN          OLD LEN                        TEMP LEN
-------------------------------------------------------------------
123456   9974922       04 0 00 08                    06 0 00 04
```

Translation verification tools

Automatic Set Relocation does not use translation verification tools.

Automatic Set Relocation (end)

SERVORD

Automatic Set Relocation does not use SERVORD.

NSS DT Immediate

Ordering codes

Functional group ordering code: BAS00004

Functionality ordering code: does not apply

Release applicability

BCS34 and later versions

Requirements

NSS DT Immediate contains the following requirements:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC Standard, MDC00003

Description

The NSS DT Immediate feature allows dual-tone multifrequency (DTMF), or Digitone, pulsing with an immediate start to be a correct trunk signaling group. The DTMF or Digitone are each a correct trunk signaling group for incoming calls on a two-way MDC offnet dedicated access trunk (DAT). Trunks that use this signaling group must reside on a digital trunk controller (DTC) with a universal tone receiver (UTR). This group of Digitone pulsing and immediate start allows different types of customer premises equipment (CPE) to interact with the Network Services System (NSS).

Operation

Background

The NSS DT Immediate feature allows IBN two-way (IBNT2) trunk types to handle incoming calls that use Digitone pulsing and immediate start. Trunk subgroups that handle incoming calls with this signaling group are allowed only on NSS DATs.

The members in a trunk subgroup that use Digitone pulsing with immediate start must reside on a DTC. If this action does not occur, the signaling group does not operate. The DTC must be configured with a UTR. A maximum of 30 UTR channels are available on each DTC.

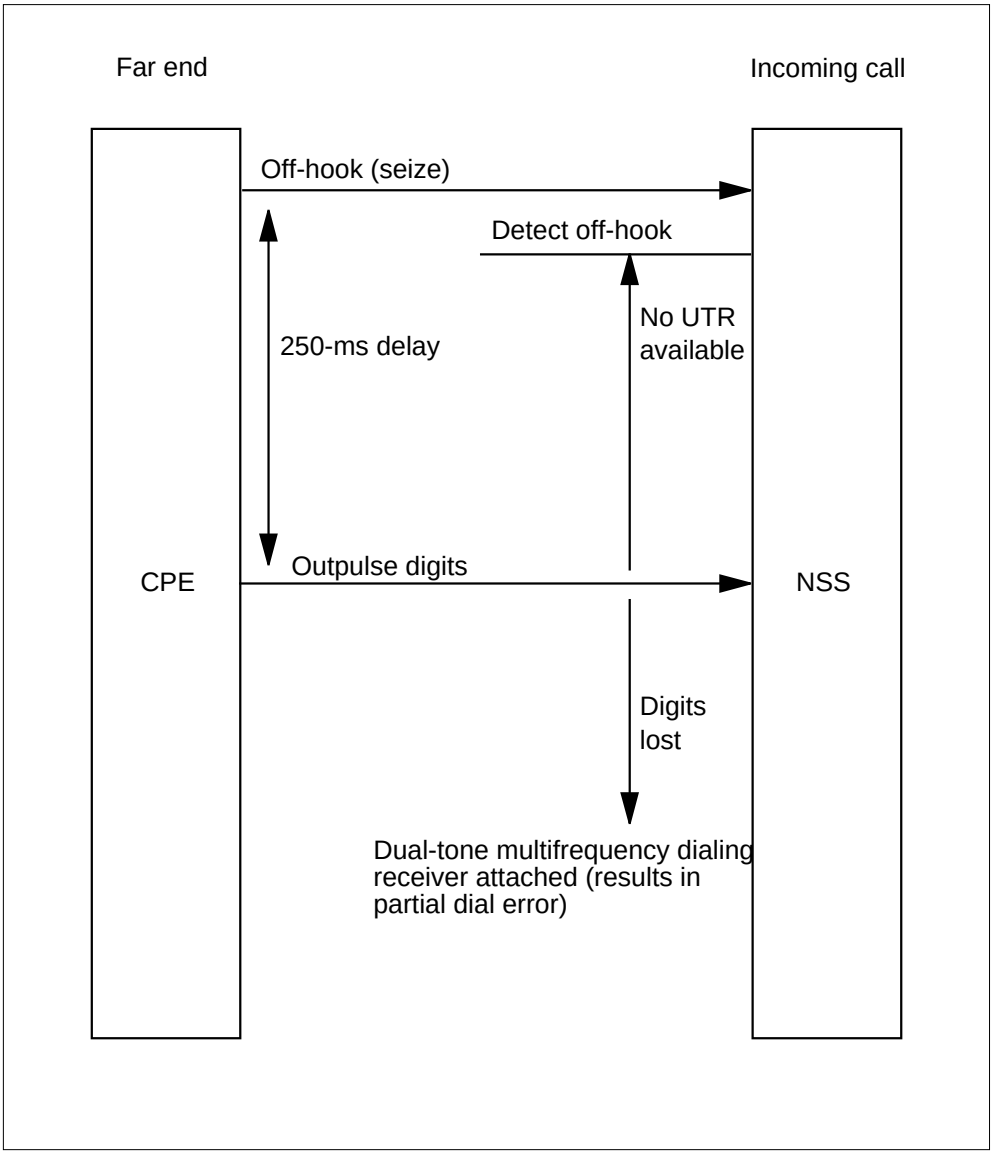
Trunk seizure

The CPE that uses Digitone pulsing and immediate start does not wait for a start signal from the NSS after the CPE seizes the trunk. The CPE outpulses the address digits after the CPE seizes the trunk.

NSS DT Immediate (continued)

The NSS recognizes the trunk seizure as an off-hook signal. The far end must be delayed a minimum of 250 ms after the off-hook signal is sent. If the far end is not delayed long enough before outpulsing the address digits, some digits can be lost. This condition causes a partial dial error. The trunk seizure process without a UTR in which digits are lost, appears in the following figure.

Trunk seizure and outpulsing of digits without UTR

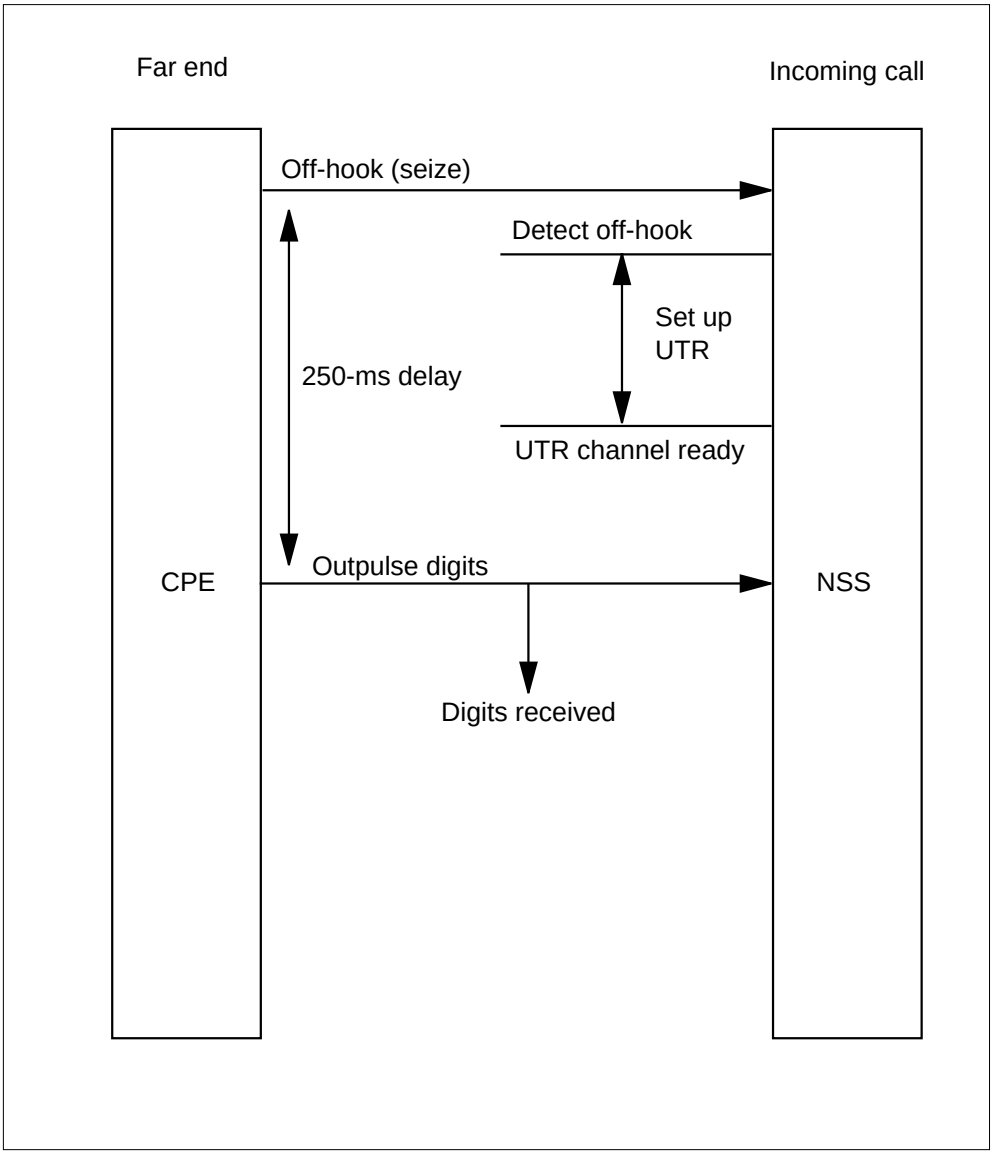


If a long enough delay at the far end occurs, an available UTR channel is set to receive the digits. The delay at the far end occurs between seizing the trunk

NSS DT Immediate (continued)

and outpulsing the address digits. The trunk seizure process with a UTR in which the NSS receives the digits, appears in the following figure.

Trunk seizure and outpulsing of digits with UTR



Trunk configuration

The trunks that use Digitone pulsing and immediate start on each DTC must be configured. These trunks must be configured to maximize the probability that a UTR channel is available during a trunk seizure. If a UTR channel is not available when the trunk seizure occurs, a partial dial error can result. This error occurs because a Digitone receiver cannot attach to the trunk before

outpulsing begins. Some address digits are lost when the far end delays for the recommended time before the far end outpulses digits.

User interface

The NSS DT Immediate does not affect user interface.

The NSS DT Immediate translations process appears in the flowchart in the following figure. The datafill tables accessed for an incoming call to an NSS appear in the flowchart and data.

Table TRKSGRP (Trunk Subgroup) defines the additional information for each trunk subgroup. You can access table TRKSGRP through field SGRPKEY.

Table TRKGRP (Trunk Group) defines the type of IBN trunk group. You can access table TRKGRP through field GRPKEY.

Translations table flow

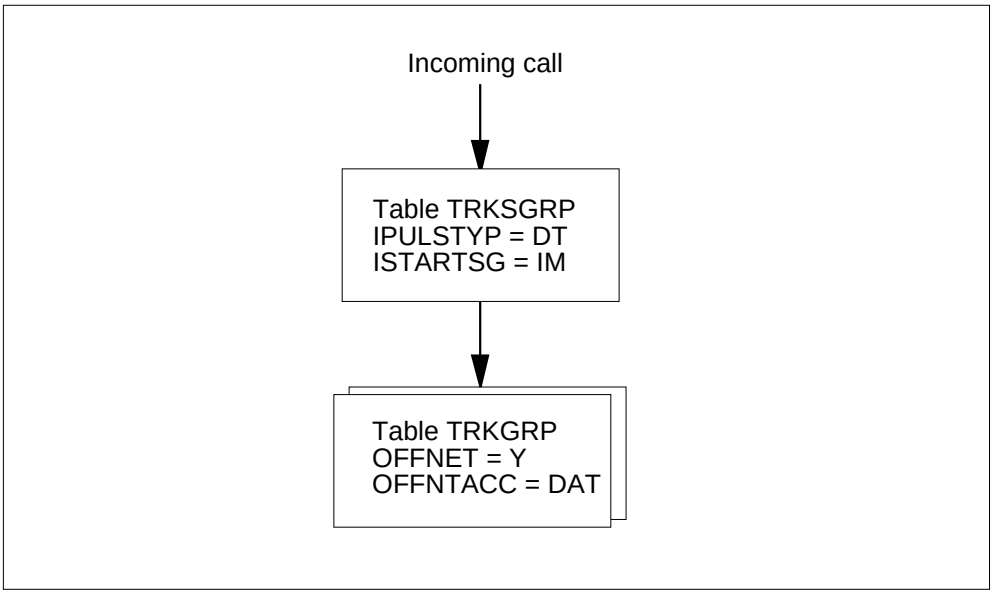
The following list contains the NSS DT Immediate translations tables:

- Table TRKSGRP (Trunk Subgroup) defines the additional information for each trunk subgroup. You can access table TRKSGRP through field SGRPKEY.
- Table TRKGRP (Trunk Group) defines the type of IBN trunk group. You can access table TRKGRP through field GRPKEY.

The NSS DT Immediate translation process appears in the following flowchart.

NSS DT Immediate (continued)

Translations data flow to activate NSS DT Immediate



The datafill content used in the flowchart appears in the following table.

Datafill example for NSS DT Immediate

Datafill table	Example data
TRKSGRP	DATTIE1 0 DSISIG STD IC DT IM N 10 10 EI EI N N Y M UNEQ
TRKGRP	DATTIE1 IBNT2 0 MIDL 0 9970000 ANSDISC 0 N N N N N Y Y 0 0 N 0 0 0 0 N N N N N N N Y Y DAT SEND1 $

Limits

The following limits apply to NSS DT Immediate:

- The system supports the NSS DT Immediate only on the DTC peripheral. The system does not support the NSS DT on an integrated services digital network digital trunk controller (DTCI).
- Members of a trunk subgroup that use this signaling group reside on the DTC. These members must use the executive line program DTCEX or DTCFX from Table LTCINV (Line Trunk Controller Inventory).
- Delay the far end 250 ms after you transmit the off-hook signal before outpulsing address digits. This delay is not always long enough to make sure a loss of digits does not occur.

NSS DT Immediate (continued)

- The trunk configuration for each DTC must minimize the probability that a UTR channel is not available when requested for a call. The call is on a trunk with Digitone pulsing and immediate start.
- A trunk in a subgroup that uses this signaling group can be seized at times when a UTR channel is not available. If this event occurs, a loss of address digits occurs, and a partial dial error occurs.
- An offnet DAT that uses this signaling group cannot support cut-through dialing. The dial plan entered for a trunk must be a senderized dial plan.
- Trunk subgroup members that use DTMF immediate start signaling and are on a DTC must have a UTR.
- Only IBNT2 trunk types with subfield OFFNET set to Y and subfield OFFNTACC set to DAT in Table TRKGRP. These types can have subfield IPULSTYP set to DT and subfield ISTARTSG set to IM in Table TRKSGRP. The DT indicates dual-tone multifrequency. The IM indicates immediate incoming start dial signal.

Interactions

The NSS DT Immediate does not have functionality interactions.

Activation/deactivation by the end user

The NSS DT Immediate does not require activation or deactivation by the end user.

Billing

The NSS DT Immediate does not affect billing.

Station Message Detail Recording

The NSS DT Immediate does not affect Station Message Detail Recording.

Datafilling office parameters

The NSS DT Immediate does not affect office parameters.

Datafill sequence

The tables that require datafill to start NSS DT Immediate appear in the following tables. The tables appear in the correct entry order.

NSS DT Immediate (continued)

Datafilling table TRKGRP

Datafill for NSS DT Immediate for table TRKGRP appears in the following table. The fields that apply directly to NSS DT Immediate appear. See the data schema section of this document for a description of the other fields.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP			Trunk Group Type This subfield specifies the trunk group type. Enter IBNT2.
GRPINFO			Group Information This field contains many subfields. Only subfield OFFNET applies to this feature.
	OFFNET		Offnet This subfield specifies if the trunk group is for off-network access. Enter Y.
	OFFNTACC		Offnet Access This subfield specifies the offnet access type. Enter DAT.

Note: If OFFNET is set to Y, subfield OFFNTACC requires datafill.

Datafill example for table TRKGRP

Sample datafill for table TRKGRP appears in the following example.

MAP example for table TRKGRP

```
TABLE: TRKGRP
 GRPKEY                                                    GRPINFO
_____________________________________________________________________
 DATTIE1
IBNT2 0 MIDL 0 9970000 ANSDISC 0 N N N N N Y Y 0 0 N 0 0
0 0 N N N N N N N Y Y DAT SEND1 $   DATTIE1
IBNT2 0 MIDL 0 9970000 ANSDISC 0 N N N N N Y Y 0 0 N 0 0
0 0 N N N N N N N Y Y DAT SEND1 $
```

Datafill procedure for Table TRKSGRP

Table TRKSGRP (Trunk Subgroup) contains the additional information for each subgroup assigned to a trunk groups listed in Table TRKGRP.

The datafill for Table TRKSGRP for this feature appears in the following procedure. Only fields that apply to this feature appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
SGRPVAR			*Variable Subgroup Data* This field contains subfield SIGDATA.
	SIGDATA		*Signaling Data* This subfield specifies the signaling type. Enter STD.
	PULSTYP		*Incoming Type of Pulsing* This subfield specifies the type of incoming pulsing. Enter DT for dual-tone multifrequency.
	STARTSG		*Incoming Start Dial Signal* This subfield specifies when to start the incoming dial signal. Enter IM for immediate.
Note: If SIGDATA is set to STD, many subfields require datafill. Only subfields IPULSTYP and ISTARTSG apply to this feature.			

Datafill example for table TRKSGRP

Sample datafill for table TRKSGRP appears in the following example.

MAP example for table TRKSGRP

```
TABLE: TRKSGRP
SGRPKEY      CARDCODE                              SGRPVAR
_____________________________________________________________
DATTIE1  0   DSISIG          STD IC DT IM N 10 10 EI
                            EI N N Y M UNEQ
```

Tools for verifying translations

The NSS DT Immediate does not use tools for verifying translations.

NSS DT Immediate (end)

SERVORD

The NSS DT Immediate does not use SERVORD.

Attendant console datafill

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL03 and up

Prerequisites

Attendant console datafill has no prerequisites.

Description

The attendant console provides a centralized location for the management and extension of calls to subscriber stations. Attendant consoles can receive station-to-attendant calls from either all telephones in their customer group or only from certain sets. The console discriminates in this manner by the use of a one-digit number (a subgroup number) datafilled for both consoles and stations.

The Meridian SL-100 system can support a maximum of 255 attendant consoles. The consoles can all serve one large customer group, or one or more consoles can be assigned to associated customer groups.

The attendant console is a self-contained unit with all user controls located on the front panel, except for volume controls that are located on the side of the console. The front panel of the console contains the following keys and indicators:

- a 12-button standard keypad
- six loop keys, each with an associated Source (S) lamp and Destination (D) lamp
- a Call Waiting (CW) lamp
- a Release key and its associated lamp
- a Hold key
- a Night Service key and its associated lamp
- a Console Test key and its associated lamp
- an Exclude Source key and its associated lamp
- an Exclude Destination (DEST) key and its associated lamp
- a Signal Source key

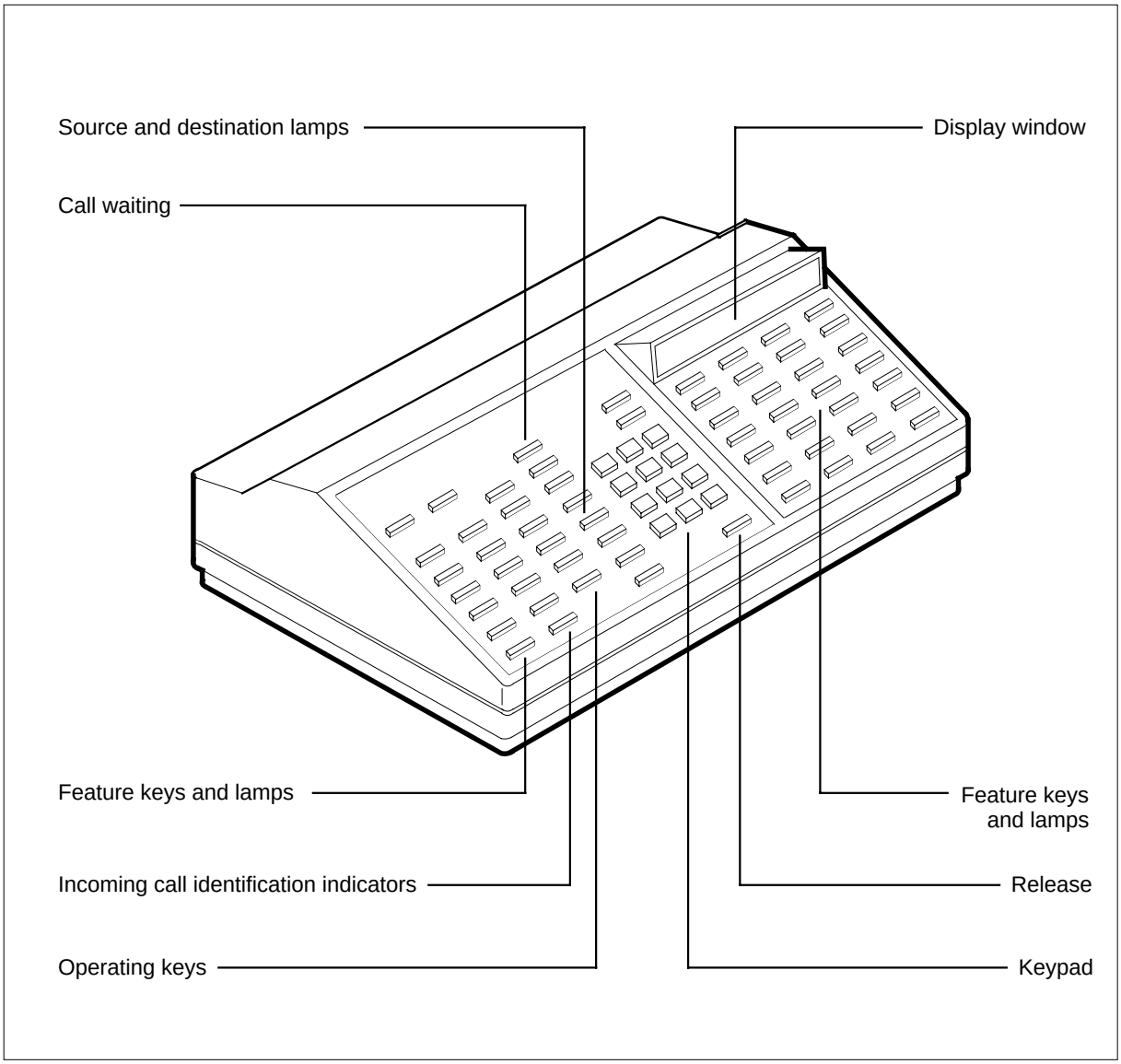
Attendant console datafill (continued)

- a Signal Destination (DEST) key
- a Release Source key
- a Release Destination (DEST) key
- 42 programmable feature keys and their associated lamps
- a 16-character alphanumeric display

The following figure shows the location of keys and lamps on the attendant console.

Attendant console datafill (continued)

Attendant console

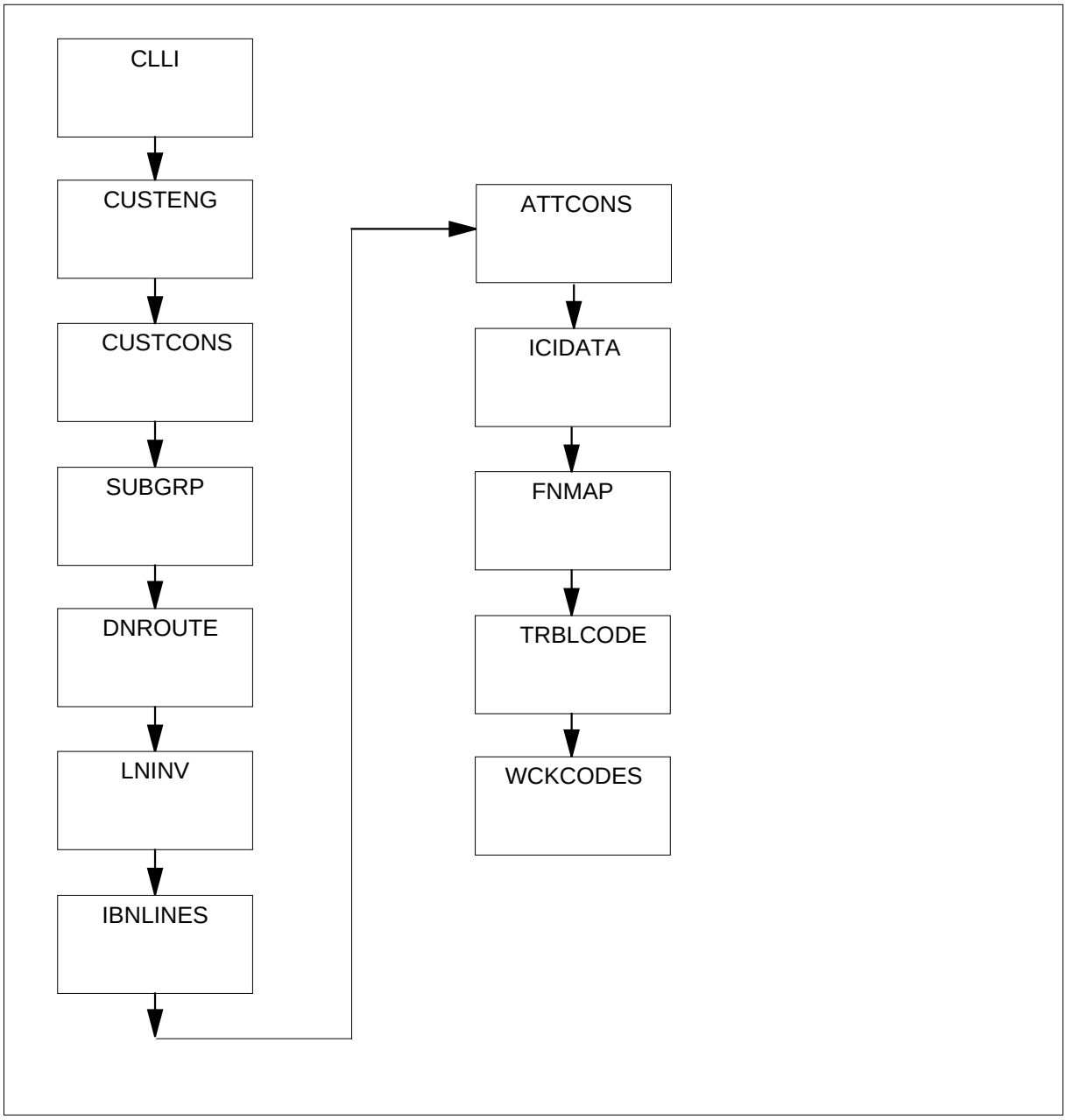


Translations table flow

The Attendant console datafill translation process is shown in the flowchart that follows.

Attendant console datafill (continued)

Table flow for Attendant console datafill



Limitations and restrictions

Attendant console datafill has no limitations or restrictions.

Interactions

Attendant console datafill has no functionality interactions.

Attendant console datafill (continued)

The following paragraphs describe the interactions between Attendant console datafill and other functionalities.

Activation/deactivation by the end user

Attendant console datafill requires no activation or deactivation by the end user.

Billing

Attendant console datafill does not affect billing.

Station Message Detail Recording

Attendant console datafill does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Attendant console datafill. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Attendant console datafill (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	MAXNUCS	Office parameter MAXNUCS allocates store for all nailed-up connections. The system requires nailed-up connections for attendant consoles. Increase the value of this parameter by (# of consoles x 3) if attendant consoles are used.

Attendant console datafill (continued)

Office parameters used by Attendant console datafill (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
OFCOPT	MAX_IBN_LINES	Office parameter MAX_IBN_LINES specifies the maximum number of Integrated Business Network (IBN) lines that can be assigned in Table IBNLINES.
OFCOPT	SMDR_OFFICE	Office parameter SMDR_OFFICE specifies whether a switching system with North American translations and IBN features uses Station Message Detail Recording (SMDR). Only calls originating from the attendant console can be recorded in SMDR format if SMDR_OFFICE has been set to “Y". When SMDR_OFFICE has been set to “Y", it affects the value of office parameter NO_OF_SMDR_REC_UNITS, Table OFCENG. (This office parameter specifies the number of SMDR units required in switching systems with North American translations and IBN features.)

Datafill sequence

The following table lists the tables that require datafill to implement Attendant console datafill. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Attendant console datafill (Sheet 1 of 2)

Table	Purpose of table
CLLI	Adds an attendant console name
CUSTENG	Confirms that CONSOLE field is set to “Y" (Yes)
CUSTCONS	Adds customer group name and applicable options
SUBGRP	Adds billing Directory Number (DN) for the console, if this is a new subgroup
DNROUTE	Adds listed Directory Number (DN) for the console subgroup
LNINV	Datafills three consecutive Line Equipment Numbers (LENs) or three LENs in the same Line Subgroup (LSG) that are Hardware Assigned, Software Unassigned (HASU)
IBNLINES	Reserves three LENs for an attendant console

Attendant console datafill (continued)

Datafill tables required for Attendant console datafill (Sheet 2 of 2)

Table	Purpose of table
ATTCONS	Adds attendant console name, assigns the console to a customer group and subgroup, and designates the console Network Class of Service (NCOS) and associated LENs
ICIDATA	Assigns definitions to Incoming Call Identifier (ICI) codes
FNMAP	Assigns key-lamp pairs to ICI codes or special features
TRBLCODE	Assigns a trouble code number, a corresponding alphanumeric message, and the alarm severity associated with a problem in the handling of a particular call
WCKCODES	Assigns access codes that correspond to wild card key special functions

Datafilling table CLLI

The following table shows the datafill specific to Attendant console datafill for table CLLI. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table CLLI (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CLLI		up to 16 characters	Common language location identifier. Enter up to a 16-character name for the attendant console.
ADNUM		number from 0 to one less than the size of Table CLLI	Administrative trunk group number. Enter a number from 0 to one less than the size of Table CLLI shown in Table DATASIZE. The ADNUM value must be unique. The system reponds during datafill whether this value is already in use. If so, edit the tuple using either the system-suggested value or a higher value. (The systems suggests the next unassigned value.) ***Note:*** Some downstream processors may not accept 0 as an identifier. The system uses ADNUM for downstream processors for SMDR purposes.

Attendant console datafill (continued)

Datafilling table CLLI (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
TRKGRSIZ		1	Trunk group size. Enter 1 to specify that the attendant console is not part of a trunk group.
ADMININF		up to 32 characters	Administrative information. Enter administrative information in this field (up to 32 characters). The system does not use this field. It is only used for customer administrative information.

Datafill example for table CLLI

The following example shows sample datafill for adding an attendant console with table CLLI.

MAP display example for table CLLI

```
CLLI          ADNUM     TRKGRSIZ     ADMININF

CONSOLE1        51          1        IBN_GRP1_ATT_CONS
```

Datafilling table CUSTENG

Table CUSTENG confirms a customer group's availability to be equipped with attendant consoles. The field CONSOLES specifies “Y” or “N” whether the customer group can be equipped with attendant consoles. If CONSOLES equals “Y,” then a corresponding tuple must be datafilled in table CUSTCONS.

The following table shows the datafill specific to Attendant console datafill for table CUSTENG. Only those fields that apply directly to Attendant console

Attendant console datafill (continued)

datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table CUSTENG

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
NONCOS		0 to 256	Number of network class of service numbers. Enter the highest-numbered NCOS, from 0 to 256, that is to be assigned to the customer group.
NOIBNTMT		0 to 63	Number of IBN treatments. Enter the number of IBN treatments required for the customer group from 0 to 63.
CONSOLES		Y or N	Attendant consoles. Enter “Y" if the customer group can be equipped with attendant consoles, otherwise enter “N".
DOMAIN			Domain. This field consists of subfields CUSTTYPE and FAMILY.
	CUSTTYPE	FAMILY, PRIVATE, or PUBLIC	Customer group type. Enter the type of customer group: “FAMILY", “PRIVATE", or “PUBLIC". If this field equals “FAMILY", datafill the subfield FAMILY.
	FAMILY	name of the family	Family. If CUSTTYPE equals “FAMILY", enter the name of the family to which the customer group belongs. The family name must be datafilled in Table CUSTFAM. If CUSTTYPE equals either “PRIVATE" or “PUBLIC", leave this subfield blank.
GROUPID		0 to 4095	Customer group identification number. Enter a unique number from 0 to 4095 to be assigned to the customer group. (The system sets the default value to 0.) Table CUSTSMDR, option AMACUST, uses this value for SMDR purposes.
OPTIONS		$	Options. Enter “$" to end Table CUSTENG datafill.

Attendant console datafill (continued)

Datafill example for table CUSTENG

The following example shows sample datafill for table CUSTENG.

MAP display example for table CUSTENG

```
CUSTNAME   NONCOS   NOIBNTMT   CONSOLES   DOMAIN     GROUPID    OPTIONS

GROUP1       25         10          Y       PRIVATE       0          $
```

Datafilling table CUSTCONS

Table CUSTCONS must be datafilled if one or more of the customer groups are equipped with attendant consoles. This table contains a tuple for every customer group that has a "Y" datafilled in the CONSOLES field in table CUSTENG. Table CUSTCONS assigns certain features to all consoles on a customer-group basis.

The following table shows the datafill specific to Attendant console datafill for table CUSTCONS. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table CUSTCONS

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
OPTIONS			Options. Enter the list of options and subfields assigned to the customer group.

Datafill example for table CUSTCONS

The following example shows sample datafill for table CUSTCONS.

Attendant console datafill (continued)

MAP display example for table CUSTCONS

```
CUSTNAME   OPTIONS
-------------------------------------------------------------------

GROUP1     (SGRPNUM 3) (ICINUM 29) (LPKEY 6) (HLDRECTO 30)
           (CWNATIM 12) (PEGLA 15) (NDSCTIM 60) $
```

Datafilling table SUBGRP

Table SUBGRP defines certain parameters and options for the attendant console that must be specified on a subgroup basis instead of a customer-group basis as is done in table CUSTCONS.

The following table shows the datafill specific to Attendant console datafill for table SUBGRP. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table SUBGRP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SGRPKEY		See subfields	Subgroup key. This field consists of subfields CUSTGRP and SUBGRPNO.
	CUSTGRP	1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
	SUBGRPNO	0 to 7	Subgroup number. Enter the subgroup number from 0 to 7. If there is only one subgroup, this field must be datafilled as 0.
SNPADN		See subfields	Serving NPA and directory number. This field consists of subfields SNPA and DN.
	SNPA	area code	Serving NPA. Enter the area code of the directory number under which all console calls are recorded in SMDR reports.
	DN	directory number	Directory number. Enter the directory number under which all console calls are recorded in SMDR reports.

Attendant console datafill (continued)

Datafilling table SUBGRP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CQOVTRMT		0 to 63	Call queue overflow treatment. Enter the tuple number from 0 to 63 from Table IBNTREAT to which a call routes if the attendant call queue is full.
CQFLTHR		0 to 255 in 4-second intervals	Call queue flashing threshold. Enter the amount of time, in 4-second intervals, that a call must wait in queue before the call queue lamp on the console begins to flash. This field can be datafilled from 0 to 255 as 4-second intervals, therefore, a value of “3" equals a 12-second call queue flashing threshold. A value of “0" specifies an infinite threshold.
CQDIVTHR		0 to 255 in 4-second intervals	Call queue diversion threshold. Enter the diversion threshold, from 0 to 255, in 4-second intervals. This field limits the number of calls that can be queued at any one time according to the following formula: CQDIVTHR = (# of consoles) x (divert threshold ÷ weighted avg. service time) A value of 0 in this field specifies an infinite threshold.
STNEXTLN		1 to 7 numbers	Station extension length. Enter the number of digits from 1 to 7 in the extension numbers assigned to the subgroup. This value determines the number of digits that display in the console key lamp display and identifies the calling party when an extension dials the attendant.
MINDIGSR		1 to 7 numbers	Minimum digits received. Enter the minimum number of digits from 1 to 7 that an attendant assigned to the subgroup can dial. The system uses this field to determine the number of digits dialed instead of using Table DIGCOL. The system always uses this value regardless of any leading digits.
OPTIONS			Options. Enter the list of options and subfields assigned to the customer group.

Attendant console datafill (continued)

Datafill example for table SUBGRP

The following example shows sample datafill for table SUBGRP.

MAP display example for table SUBGRP

```
CUSTGRP SUBGRPNO SNPA DN      CQOVTRMT CQFLTHR CQDIVTHR STNEXTLN MINDIGSR
-------------------------------------------------------------------------
GROUP1       0    214  7224500     7        5        6          5        5
```

Datafilling table DNROUTE

This table lists information for variable Directory Numbers (DNs) in the system, such as a DN that identifies a route instead of a Line Equipment Number (LEN). These DNs have no corresponding line cards (also no corresponding LEN). Table DNROUTE can be used to add a listed DN for the console subgroup.

The following table shows the datafill specific to Attendant console datafill for table DNROUTE. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table DNROUTE (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		area code	Serving numbering plan area. Enter the area code for the listed directory number.
OFCCODE		office code	Office code digit register. Enter the office code for the listed directory number.
STNCODE		station code	Station code. Enter the station code for the listed directory number.
DNRESULT		See subfields	Directory number results. This field consists of subfields DNSEL, CUSTGRP, SUBGRP, and ICI.
	DNSEL	M	Directory number selector. Enter “M" to indicate that the listed directory number belongs to an attendant console.

Attendant console datafill (continued)

Datafilling table DNROUTE (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	CUSTGRP	1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
	SUBGRP	0 to 7	Subgroup. Enter the subgroup, from 0 to 7, of the customer group to which the listed directory number belongs.
	ICI	26 to 255	Incoming call identification codes. Enter the ICI code assigned to the listed directory number. This value can be specified from 26 to 255. The first 25 ICI codes are reserved and cannot be assigned by the customer.
LDN_OM_ REPORT		Y or N	Listed directory number operational measurement report. Enter “Y" to indicate if the listed directory number is pegged for the Operational Measurement (OM) file, otherwise enter “N".

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE  OFCCODE  STNCODE  DNSEL  CUSTGRP  SUBGRP  ICI  LDN_OM_REPORT
___________________________________________________________________________
   214       722      4848     M    GROUP1      0     64        N
```

Datafilling table LNINV

This table provides an inventory of Line Equipment Numbers (LEN). Check table LNINV datafill for three consecutive LENs that are Hardware-Assigned, Software-Unassigned (HASU). These LENs must also belong to the same subgroup. These three LENs represent the connection between the line cards and the console corresponding to a voice path, transmit path, and receive path. The three LENs must be datafilled in table IBNLINES. For a description of the fields, refer to the data schema document.

Attendant console datafill (continued)

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

MAP display example for table LNINV

```
LEN          CODE     PADGRP   STATUS   GND   BNV   MNO   CARDINFO
-------------------------------------------------------------------

99 3 01 00   8D03AB   IPEONS    HASU     N     NL    Y       NIL
99 3 01 01   8D03AB   IPEONS    HASU     N     NL    Y       NIL
99 3 01 02   8D03AB   IPEONS    HASU     N     NL    Y       NIL
```

Datafilling table IBNLINES

Table IBNLINES contains line assignments for attendant consoles. The Central Processing Unit (CPU) accesses this table first to determine the customer group and Network Class of Service (NCOS). Normally the Service Order (SERVORD) utility places lines into service, which dynamically datafills Table IBNLINES. However, SERVORD cannot be used to place an attendant console into service, so table IBNLINES must be datafilled directly.

The following table shows the datafill specific to Attendant console datafill for table IBNLINES. Only those fields that apply directly to Attendant console

Attendant console datafill (continued)

datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IBNLINES (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		See subfields	Line equipment number. This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT.
	SITE	alphabetic site name for the remote location	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal “Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with “HOST". ***Note:*** If parameter USINGSITE equals “Y" and parameter UNIQUE_BY_SITE_NUMBERING equals “N", the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals “N", leave field SITE blank.
	FRAME	0 to 127	Frame number. Enter a frame number from 0 to 127.
	SHELF	0 to 3	Shelf number. Enter a shelf number from 0 to 3.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number for the Enhanced Digital Port Card from 0 to 31. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.
RESULT		See subfields	Result. This field consists of subfields SIGTYPE, FORMAT, ACNUM, and CARDTYPE.

Attendant console datafill (continued)

Datafilling table IBNLINES (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SIGTYPE	DP	Signal type. Enter “DP" to specify that the CPU expects dial pulse or Digitone pulsing from the line card. Enter “DP" for this field when datafilling for an attendant console.
	FORMAT	AC	Format. Enter “AC" to specify that an attendant console uses this line card.
	ACNUM	0 to 255	Attendant console number. Enter the attendant console number from 0 to 255. This subfield identifies to which console that a LEN has been assigned. Enter “0" for initial input. When Table ATTCONS is datafilled, a number is assigned to the console, and the system automatically updates this subfield.
	CARDTYPE	NIL_CARD_TYPE	Card type. Enter “NIL_CARD_TYPE" for each LEN when first placing the console into service. Table ATTCONS specifies the actual function of each LEN. The system subsequently updates this subfield to reflect the correct functions.

Datafill example for table IBNLINES

The following example shows sample datafill for table IBNLINES.

MAP display example for table IBNLINES

```
LEN          SIGTYPE   FORMAT   ACNUM   CARDTYPE
-------------------------------------------------

99 3 01 00     DP        AC       0     NIL_CARD_TYPE
99 3 01 01     DP        AC       0     NIL_CARD_TYPE
99 3 01 02     DP        AC       0     NIL_CARD_TYPE
```

Datafilling table ATTCONS

Table ATTCONS adds the attendant console name, assigns the console to a customer group and subgroup, and specifies the three LENs and their corresponding NCOSs. Table ATTCONS contains the same type of information for attendant consoles as table IBNLINES contains for stations.

Attendant console datafill (continued)

The Central Processing Unit (CPU) uses this table (instead of table IBNLINES) when a console originates a call.

The following table shows the datafill specific to Attendant console datafill for table ATTCONS. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table ATTCONS (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
CONSOLE		name of console CLLI	Console. Enter the console CLLI as assigned in Table CLLI.
CUSTNAME		1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
SUBGRP		1 to 7	Subgroup. Enter subgroup number from 1 to 7 to which the console is assigned.
NCOS		0 to 255	Network class of service. Enter the NCOS number (0 to 255) that determines dialing privileges or restrictions for this console.
CDR		Y or N	Call detail record. Enter “Y" if all calls originating from the console are to be recorded in SMDR format, otherwise enter “N".
CARDCODE		4X08AA, 4X08AB, or 4X08BA	Cardcode. Enter the cardcode that identifies the hardware contained in the console, using one of the following values: • “4X08AA" (receiving data at 300 baud) • “4X08AB" (receiving data at 1200 baud) • “4X08BA" (receiving data at 300 baud using A-law PCM format)
INLEN		See subfields	Incoming to switch line card. This field specifies the LEN for the line card that sends signals from the console keyboard to the CPU (transmit path). This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT.

Attendant console datafill (continued)

Datafilling table ATTCONS (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	SITE	alphabetic site name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal “Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with “HOST". ***Note:*** If parameter USINGSITE equals “Y" and parameter UNIQUE_BY_SITE_NUMBERING equals “N", the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals “N", leave field SITE blank.
	FRAME	0 to 127	Frame number. Enter a frame number from 0 to 127.
	SHELF	0 to 3	Shelf number. Enter a shelf number from 0 to 3.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number for the Enhanced Digital Port Card from 0 to 31. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.
OUTLEN		See subfields from field INLEN	Outgoing from switch line card. This field specifies the LEN for the line card that receives signals from the CPU (receive path). This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT, which are described for field INLEN.

Attendant console datafill (continued)

Datafilling table ATTCONS (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
TALKLEN		See subfields from field INLEN	Talking circuit line card. This field specifies the LEN for the line card that transmits and receives voice (voice path). This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT, which are described for field INLEN.
INSV		Y or N	In service status. Enter “Y" to bring the console back into service automatically after a cold restart or reload, otherwise enter “N" if the console is to remain offline.
OPTIONS		See subfields	Console options. This field consists of options BUZZ and LANG.
	BUZZ	BOTH, LONG, SHORT, and TONE	Buzz. Enter one of the following refinements for this option: • BOTH—Sends a buzz message to the console and an alert tone to the headset • LONG—Sends repeated, timed buzz messages to the console, but no alert tone to the headset • SHORT—Sends a short buzz message to the console • TONE—Sends no buzz message to the console, but sends an alert tone to the headset
	LANG	enter one of the languages specified in Table ACLANG	Language. Enter one of the languages specified in Table ACLANG. This field specifies the language to be displayed in the key lamp display. (The default is “ENGLISH”.) If no other language is required, enter “$”.

Datafill example for table ATTCONS

The following example shows sample datafill for table ATTCONS.

Attendant console datafill (continued)

MAP display example for table ATTCONS

```
CONSOLE   CUSTNAME SUBGRP NCOS CDR CARDCODE INSV INLEN      OUTLEN      TALKLEN     OPTIONS
-------------------------------------------------------------------------------------------

CONSOLE1 GROUP1     0     20   Y  4X08AA    Y   99 3 01 00 99 3 01 01 99 3 01 02 BUZZ SHORT
```

Datafilling table ICIDATA

Table ICIDATA assigns messages to specific ICI codes. The system then displays this message in the key lamp display when the attendant answers a call that has been assigned an ICI code. Table ICIDATA also allows assignment of several types of options (such as night service treatments or emergency indicators) to the ICI codes on an individual basis.

The following table shows the datafill specific to Attendant console datafill for table ICIDATA. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table ICIDATA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		See subfields	ICIDATA key. This field consists of subfields CUSTGRP and ICICODE.
	CUSTGRP	1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
	ICICODE	0 to 255	Incoming call identification code. Enter the code number from 0 to 255 to identify incoming calls. The value of option ICINUM in table CUSTCONS determines the number of codes that can be established. The system takes the ICINUM value and adds it to the reserved 26 codes (0-25). If any of the reserved codes are to be used, they must be datafilled in table ICIDATA also.

Attendant console datafill (continued)

Datafilling table ICIDATA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
NAME		enter the name (using characters A-Z, 0-9, and _) or $	KLD name. Enter the name associated with the ICI code that displays in the console key lamp display. The system accepts the following characters: A-Z, 0-9, and _ (underscore). The underscore appears on the display as a blank. Enter "$" when no key lamp display is required.
OPTIONS			Options. Enter the list of options and associated subfields that are assigned to the ICI code. Enter "$" if no options are required.

Datafill example for table ICIDATA

The following example shows sample datafill for table ICIDATA.

MAP display example for table ICIDATA

```
CUSTGRP   ICICODE   NAME      OPTIONS
_____________________________________
GROUP1       1      DIAL0     $
GROUP1       3      CMPONRC   $
GROUP1       5      CFW       $
GROUP1      35      DIRECT    $
```

Datafilling table FNMAP

To assign key-lamp pairs to Incoming Call Identification (ICI) codes or special features, the fields in table FNMAP must be datafilled. Each of the 42 assignable keys and lamps on the attendant console can be assigned by table FNMAP. Each of these keys can be used for one of the following purposes:

- To receive incoming calls—Incoming calls cannot be directly assigned to a key, but can be assigned to ICI codes, which are assigned to various keys.
- To activate certain features—The attendant can use the console keys to activate certain features.
- To identify a particular trouble—The Trouble Code feature can be assigned to a feature key by table FNMAP. A set of trouble codes, as datafilled

Attendant console datafill (continued)

through table TRBLCODE, allows the attendant to classify the trouble in the most appropriate category.

- To establish a wild-card key—This feature can be assigned to one key by table FNMAP. Because there are only 42 assignable keys, this feature helps to preserve special function keys. By pressing the Wild Card key and entering an access code, the attendant can use the same key to activate many different features. (Table WCKCODES specifies these access codes.)

The following table shows the datafill specific to Attendant console datafill for table FNMAP. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table FNMAP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		See subfields	Key. This field consists of subfields CONSCLLI and ACKEY.
	CONSCLLI	CLLI name	Console common language location identifier. Enter the CLLI name assigned to the console in table CLLI.
	ACKEY	2 to 43	Attendant console key. Enter the number of the attendant console key (2 to 43) that is assigned to the ICI code specified in field ICI.
RESULT		See subfields	Result. This field consists of subfields KEYSEL and ICI.
	KEYSEL	ICICODE or SPECL	Key selector. Enter one of the following selectors: • ICICODE—The ICI code is used to receive incoming calls. If “ICICODE” is entered, datafill the refinement ICI. • SPECL—The key activates special features. If “SPECL” is entered, datafill the refinement SPFN.

Attendant console datafill (continued)

Datafilling table FNMAP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	ICI		Incoming call identification code. Enter the ICI number assigned to the console key number defined in field ACKEY.
	SPFN		Special function. Enter the special function code for the key lamp display key. The Wild Card key can be set up with this subfield by entering “WC”.

Datafill example for table FNMAP

The following example shows sample datafill for table FNMAP.

MAP display example for table FNMAP

```
CONSCLLI     ACKEY    RESULT
-------------------------------------------------------------------

CONSOLE1       2      SPECL POS
CONSOLE1       3      ICICODE 1
CONSOLE1       4      SPECL PARK
CONSOLE1       5      SPECL UNPK
CONSOLE1       6      SPECL WC
CONSOLE1       7      ICICODE 35
CONSOLE1       8      ICICODE 3
CONSOLE1       9      ICICODE 5
               .
```

Datafilling table TRBLCODE

This table allows an attendant to indicate a problem in the handling of a particular call. A set of trouble codes, defined by the customer through table TRBLCODE, allows the attendant to classify the problem into the most appropriate category. Only trouble codes datafilled in this table can be used with the Console Trouble key feature. Each trouble code corresponds to a trouble code meaning and alarm severity. This feature can be assigned to an attendant console as a dedicated Special Function key (through table FNMAP) or as one of the different functions of the Wild Card key (through table WCKCODES).

The following table shows the datafill specific to Attendant console datafill for table TRBLCODE. Only those fields that apply directly to Attendant console

datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table TRBLCODE

Field	Subfield or refinement	Entry	Explanation and action
CODE		0 to 99	Code. Enter the trouble code number from 0 to 99.
MESSAGE		up to 16 characters	Message. Enter up to a 16-character message to describe the call-handling problem.
ALARM		CR, MJ, MN, or NA	Alarm. Enter one of the following alarm types: • CR—Critical alarm • MJ—Major alarm • MN—Minor alarm • NA—No alarm

Datafill example for table TRBLCODE

The following example shows sample datafill for table TRBLCODE.

MAP display example for table TRBLCODE

```
CODE    MESSAGE                ALARM
------------------------------------

00      MALICIOUS_CALL         MJ
01      WEAK_DESTINATION       NA
02      WEAK_SOURCE            NA
03      CALL_DROPPED           MN
50      BOMB_THREAT            CR
```

Datafilling table WCKCODES

This table provides the attendant with more than just the standard 42 function keys. Table FNMAP sets up the key itself (subfields KEYSEL and SPFN), but table WCKCODES actually identifies the access codes. Because special functions can be assigned to different access codes, the Wild Card key provides many different functions through just one key. Up to 100 access codes can be assigned to the Wild Card key

Attendant console datafill (continued)

By pressing the Wild Card key and entering an access code, any special feature normally available through the use of a feature key can be evoked by the Wild Card key, with the following exceptions:

- Incoming call identification
- Key lamp display
- Position busy
- Trunk access control
- Trunk group busy

The following table shows the datafill specific to Attendant console datafill for table WCKCODES. Only those fields that apply directly to Attendant console datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table WCKCODES

Field	Subfield or refinement	Entry	Explanation and action
WCKEY		See subfields	Wild card key. This field consists of subfields CUSTNAME and TABIDX.
	CUSTNAME	1 to 16 characters	Customer group name. Enter the 1- to 16-character name that is assigned to the customer group.
	TABIDX	00-99	Table index. Enter the wild card key access code (00-99) that is assigned to the feature.
VALUE		See subfields	Value. This field consists of subfield WCSPFN.
	WCSPFN		Wild card key special function. Enter the alphabetic code that represents the wild card key special function. The system may present additional subfields depending on the special function involved.

Datafill example for table WCKCODES

The following example shows sample datafill for table WCKCODES.

Attendant console datafill (end)

MAP display example for table WCKCODES

```
CUSTNAME   TABIDX   WCSPFN
________________________________________

GRP4         02     ACEES
GRP4         03     BVL Y 10
GRP4         04     BVT N N 10
GRP4         07     BUZZ
GRP4         14     LANG
```

SERVORD

Attendant console datafill does not use SERVORD.

Integrated voice and data datafill

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL03 and up

Prerequisites

Integrated voice and data datafill has no prerequisites.

Description

To implement the Integrated Voice and Data (IVD) feature, the tables associated with both the digital telephone and the Intelligent Peripheral Equipment (IPE) must be datafilled. The following pages provide descriptions of these tables and datafill examples for both the digital telephones and the IPE. Digital telephones and their respective data options (MADO [Meridian Asynchronous Data Option], TADO [Touch Asynchronous Data Option], and MCA [Meridian Communications Adapter]) can also be added through service orders that automatically update the data tables.

The Maintenance and Administration Position (MAP) workstation implements the IVD feature. To establish the IVD feature in the Meridian SL-100 software, logon to the MAP workstation and use Table Editor to datafill the tables associated with IVD.

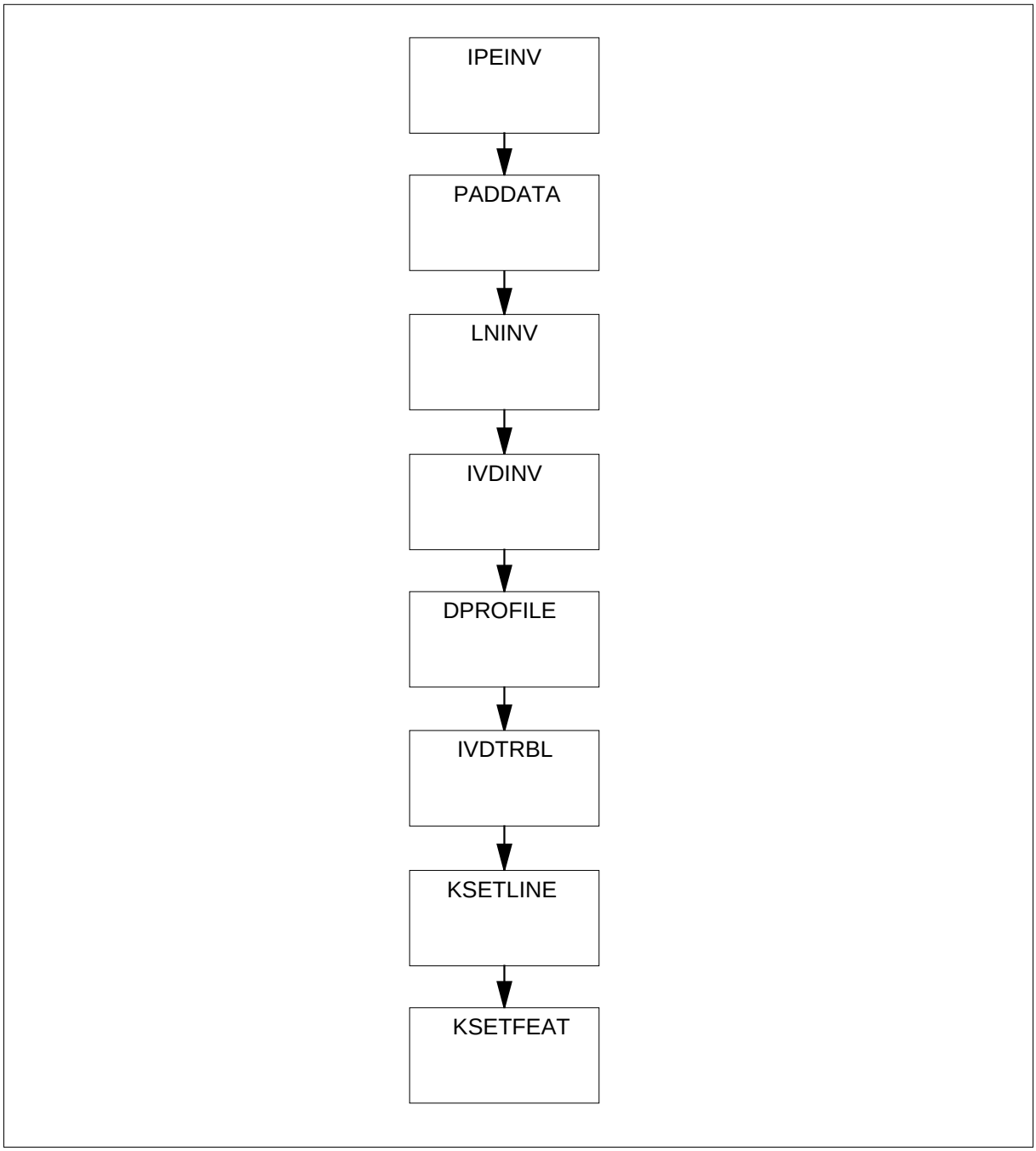
If XSMs are to be datafilled, table SLLNKDEV must be datafilled with a valid Extended System Monitor (XSM) datalink with the value "XSMDATA" in the field XFERS prior to the datafill of table IPEINV. A maximum of 64 datalinks can be defined in table SLLNKDEV. Therefore, a maximum of 64 XSM loops (master XSMs) can be configured in a single MSL-100 system.

Translations table flow

The Integrated voice and data datafill translation process is shown in the flowchart that follows.

Integrated voice and data datafill (continued)

Table flow for Integrated voice and data datafill



Limitations and restrictions

Integrated voice and data datafill has no limitations or restrictions.

Integrated voice and data datafill (continued)

Interactions

Integrated voice and data datafill has no functionality interactions.

Activation/deactivation by the end user

Integrated voice and data datafill requires no activation or deactivation by the end user.

Billing

Integrated voice and data datafill does not affect billing.

Station Message Detail Recording

Integrated voice and data datafill does not affect Station Message Detail Recording.

Datafilling office parameters

Integrated voice and data datafill does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Integrated voice and data datafill. The tables are listed in the order in which they are to be datafilled.

The datafill examples shown in this section are for illustrative purposes only and represent typical field entries. Actual datafill entry depends on switch configuration and other variables.

Datafill tables required for Integrated voice and data datafill (Sheet 1 of 2)

Table	Purpose of table
IPEINV	Assigns location characteristics associated with an IPE
PADDATA	Stores transmit and receive pad values
LNINV	Contains Line Equipment Number (LEN), equipment code, pad group, and line card status for each line card slot associated with an IPE
IVDINV	Contains digital telephone configuration information
DPROFILE	Contains optional profile information about data devices
IVDTRBL	Contains LENs of faulty IVD ports

Integrated voice and data datafill (continued)

Datafill tables required for Integrated voice and data datafill (Sheet 2 of 2)

Table	Purpose of table
KSETLINE	Contains information on directory number appearances
KSETFEAT	Lists the line features assigned to the digital telephone sets listed in table KSETLINE

Datafilling table IPEINV

Table IPEINV assigns location characteristics associated with an IPE. Table SLLNKDEV must be datafilled with a valid XSM datalink prior to datafilling table IPEINV, if XSMs are to be datafilled.

The following table shows the datafill specific to Integrated voice and data datafill for table IPEINV. Only those fields that apply directly to Integrated voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IPEINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
IPENM		See subfields	IPE name. This field consists of subfields SITE, FRAME, and SHELF.
	SITE	1- to 4-character alphabetic site name	Site name. Enter the 1- to 4-character alphabetic site name assigned to the remote location. If left blank, the default value is “HOST.”
	FRAME	0 to 511	IPE frame number. Enter the IPE frame number, from 0 to 511, specifying the IPEC in which the IPE is located. ***Note:*** It is strongly recommended that all IPEs residing in a given IPEC should have the same column number datafilled to avoid confusion.
	SHELF	0-3	IPE shelf number. Enter the IPE shelf number, from 0 to 3, numbered from the bottom. This number, in combination with the FRAME entry, produces a unique designation.
FRTYPE		IPEC	Frame type. Enter “IPEC” for the frame type, which specifies the type of frame on which the Peripheral Module (PM) is mounted.

Integrated voice and data datafill (continued)

Datafilling table IPEINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
SHPOS		04, 18, 38, or 52	Shelf position. Enter a value of "04," "18," "38," or "52" for the shelf position on which the PM equipment is mounted. (This value indicates inches above the floor.)
FLOOR		0 to 99	Floor. Enter a value from 0 to 99 to specify the floor on which the PM frame is located.
ROW		A to FF	Row. Enter a value of A to FF for the row on the floor where the PM frame is located.
FRPOS		0 to 99	Frame position. Enter a value of 0 to 99 to specify the frame position in the row of the PM frame.
EQPEC		8D037DC	Equipment product engineering code. Enter a value of "8D37DC" to specify the Product Engineering Code (PEC) of the PM.
LOAD		8-character alphanumeric value	Load name. Enter an 8-character alphanumeric value to specify the load name given to the issue of PM software.
CSPMNO		See subfields	C-side peripheral module number. This field consists of subfields PMTYPE and PMNO.
	PMTYPE	LGC, LTC, or RCC	Peripheral module type. Enter a value of "LGC," "LTC," or "RCC" to specify the type of PM to which the IPE or Remote IPE (RIPE) is attached.
	PMNO	0 to 63	Peripheral module number. Enter a value from 0 to 63 to specify the PM number to which this IPE or RIPE is attached.
IPEINFO		See subfields	IPE information. This field consists of subfields IPESELECTOR, XSMEQUIP, LOOPID, XSMID, MODULEID, and LKINFO.
	IPESELECTOR	HIPE	IPE selector. Enter "HIPE" to specify a host IPE selector.

Integrated voice and data datafill (continued)

Datafilling table IPEINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	XSMEQUIP	Y or N	XSM equipment. Enter "Y" to specify that the IPEC in which the IPE resides is equipped with an XSM. All IPEs residing in a given IPEC should have the same value datafilled for this selector. If this selector is set to "Y," the LOOPID, XSMID, and MODULEID subfields must also be datafilled. Enter "N" to specify that the IPEC is not equipped with an XSM.
	LOOPID	1 to 16 characters	Loop ID. Enter an alphanumeric value of 1 to 16 characters to specify the datalink (datafilled in table SLLNKDEV) where XSM reports are to be received.
	XSMID	0 to 63	XSM ID. Enter a value of 0 to 63 to specify the number of the XSM responsible for monitoring the IPE. This value must correspond to the DIP switch setting for the XSM in the IPEC pedestal. Enter "0" for master XSMs.
	MODULEID	0 to 3	Module ID. Enter a value of 0 to 3 to specify the address of the IPE within its IPEC. This value should correspond with the IPE position in its IPEC, where 0 refers to the IPE shelf closest to the floor, and 3 refers to the top shelf in an IPEC equipped with four IPEs. This value should also correspond with the shelf number (subfield SHELF in IPENM field) in the key for this tuple.
	LKINFO	0 to 19	Link information. Enter a value of 0 to 19 to specify the LGC/LTC links on which a host IPE is assigned. This subfield appears if subfield IPESEL equals "HIPE." The first two links are message links to the IPE. Up to six entries can be made. Enter "$" to end data entry for this table.

Datafill example for table IPEINV

The following example shows sample datafill for table IPEINV.

Integrated voice and data datafill (continued)

MAP display example for table IPEINV

```
SITE FRAME SHELF FRTYPE SHPOS FLOOR ROW FRPOS EQPEC  LOAD     PMTYPE PMNO IPESELECTOR
   XSMEQUIP LOOPID   XSMID MODULEID LKINFO
_____________________________________________________________________________
HOST 04    0     IPEC   04    2     B   16    8D37DC IPE32RTM RCC    0    HIPE
   Y        XSMLOOP1 0     0        12 13 14 $
```

Datafilling table PADDATA

Table PADDATA stores the transmit and receive pad values. Table PADDATA uses a two-part key that consists of two pad group names. The corresponding data consists of the pad values for connections between the specified pad groups. Table LNINV also specifies the pad group assigned to the line circuit in table PADDATA. (Table PADDATA must be datafilled before table LNINV.)

If a line is involved in the connection, the pad is generally set in the line card (receive direction). Note that a pad value of "6L" represents a loss of 6 dB. Of the possible 64 pad groups, 23 can be customer defined. Of the remaining pad groups, 36 of these have defined names.

Pad values for IVD sets on the IPE should be established in the DONS (Digital On-Premises Stations) pad group with a minimum of 6L (6 dB loss) for the outgoing and incoming line cards.

The following table shows the datafill specific to Integrated voice and data datafill for table PADDATA. Only those fields that apply directly to Integrated voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table PADDATA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PADKEY		See subfields	Pad data key. This field consists of subfields PADGRP1 and PADGRP2.
	PADGRP1	alphanumeric name	*Pad group name 1*. Enter an alphanumeric pad group name that is to be datafilled in field PADGRP in table LNINV.

Integrated voice and data datafill (continued)

Datafilling table PADDATA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	PADGRP2	alphanumeric name	Pad group name 2. Enter an alphanumeric pad group name that is to be datafilled in field PADGRP in table LNINV.
PAD1TO2		0 or 0L to 14L	*Pad value 1 to 2.* Enter a value of 0L to 14L or 0 to specify the value of the network or line pad for connection PADGRP1 to PADGRP2. Each entry value of 0L to 14L corresponds to a loss level) in decibels).
PAD2TO1		0 or 0L to 14L	Pad value 2 to 1. Enter a value of 0L to 14L or 0 to specify the value of the network or line pad for connection PADGRP2 to PADGRP1. Each entry value of 0L to 14L corresponds to a loss level) in decibels).

Datafill example for table PADDATA

The following example shows sample datafill for table PADDATA.

MAP display example for table PADDATA

```
PADGRP1    PADGRP2    PAD1TO2    PAD2TO1

DONS       DONS         6L         6L
DONS       ONS          6L          0
ONS        DONS          0         6L
```

Datafilling table LNINV

Table LNINV contains the following data for each line card slot associated with an IPE:

- the Line Equipment Number (LEN) for each line
- the Product Engineering Code (PEC) of the line card
- the pad group for the group
- the status of the line card

Integrated voice and data datafill (continued)

Table LNINV associates LENs with an IPE and establishes the PECs for the IPE line cards. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number that is one greater than the mate set.

The following table shows the datafill specific to Integrated voice and data datafill for table LNINV. Only those fields that apply directly to Integrated voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table LNINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		See subfields	Line equipment number. This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT.
	SITE	alphebetic site name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME	0 to 127	Frame number. Enter a frame number from 0 to 127.
	SHELF	0 to 3	Shelf number. Enter a shelf number from 0 to 3.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.

Integrated voice and data datafill (continued)

Datafilling table LNINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number for the Enhanced Digital Port Card from 0 to 31. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.
CARDCODE		8D02AA , 8D02AB, or 5D11AA	Card product engineering code. Enter "8D02AA," "8D02AB," or "5D11AA" for the line card Product Engineering Code (PEC).
PADGRP		NPDGP	Pad group. Enter "NPDGP" to specify the pad group assigned to the line circuit in Table PADDATA. IVD sets on the DLM and IPE must use the DONS pad group. Analog sets on the IPE are considered to be on-premise sets, but they have a different loss plan than the LCM analog lines. Users must establish a new loss pad group called IPEONS for the sets.
STATUS		HASU or RESERVED	Line inventory availability status. Enter "HASU" (Hardware Assigned, Software Unassigned) or "RESERVED."
GND		N	Ground. Enter "N" to specify that the line is a loop start for the IPE.
BNV		NL	Balanced network value. Enter "NL" for a non-loaded network for the IPE.
MNO		Y	Manual override. Enter "Y" for the on-hook balance network test to be prevented from updated field BNV in this table.

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

Integrated voice and data datafill (continued)

MAP display example for table LNINV

```
SITE   FRAME  SHELF  LSG  CIRCUIT  CARDCODE  PADGRP  STATUS  GND  BNV  MNO
HOST     00      2    3        2   8D02AB     DONS    HASU    N    NL    Y
```

Datafilling table IVDINV

Table IVDINV contains digital telephone configuration information required to datafill IVD sets on an IPE:

- the Line Equipment Number (LEN)
- the set type and ring type
- the optional features for a set

Table IVDINV can be datafilled at any time after datafilling table LNINV. However, a valid corresponding entry must exist in table LNINV. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.

The following table shows the datafill specific to Integrated voice and data datafill for table IVDINV. Only those fields that apply directly to Integrated

Integrated voice and data datafill (continued)

voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IVDINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
IVDLEN		See subfields	IVD line equipment number. This field consists of the subfields SITE, FRAME, SHELF, LSG, and CIRCUIT.
	SITE	alphabetic site name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME	0 to 127	Frame number. Enter a frame number from 0 to 127.
	SHELF	0 to 3	Shelf number. Enter a shelf number from 0 to 3.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number for the Enhanced Digital Port Card from 0 to 31. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.
SETDATA		See subfields	Set data. This field consists of subfields SET_TYPE and RING_TYPE.

Integrated voice and data datafill (continued)

Datafilling table IVDINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SET_TYPE	M2006, M2008, M2009, M2018, M2112, M2216ACD-1 M2216ACD-2 M2317, M2616, M3000, MADO, MCA, or TADO	Digital telephone set type. Enter one of the following values for the digital telephone set being datafilled: • M2006 • M2008 • M2009 • M2018 • M2112 • M2216ACD-1 • M2216ACD-2 • M2317 • M2616 • M3000 • MADO • MCA • TADO
	RING_TYPE	FH, FL, SH, or SL	Ring type. Enter the type of ringing desired: "FH" (Fast High), "FL" (Fast Low), "SH" (Slow High), or "SL" (Slow Low).
OPTION		See subfields	Option. This field consists of the CDC OWNER subfield.
	CDC OWNER	alphanumeric name	Customer data change owner. Enter an alphanumeric name for the CDC owner. This name must be datafilled first in table CDCLENS.

Datafill example for table IVDINV

The following example shows sample datafill for table IVDINV.

Integrated voice and data datafill (continued)

MAP display example for table IVDINV

```
SITE   FRAME   SHELF   LSG   CIRCUIT   SET_TYPE   RING_TYPE   OPTION   CDCOWNER

HOST     02      0      03     00        M2009       FH        $
HOST     02      0      03     01        MADO     $
```

Datafilling table DPROFILE

Table DPROFILE contains optional profile information about data devices and applies to digital telephones equipped with a Meridian Asynchronous Data Option (MADO), Touch Asynchronous Data Option (TADO), or Meridian Communications Adapter (MCA).

Datafill table DPROFILE after table IVDINV. Delete entries to table DPROFILE before deleting the corresponding entry from table IVDINV.

Table DPROFILE is only required if a profile is desired. The following telephones equipped with their respective data options do not require a profile to function: M2000 Digital Telephone, M3000 Touchphone, or Meridian Modular Telephone.

The following table shows the datafill specific to Integrated voice and data datafill for table DPROFILE. Only those fields that apply directly to Integrated

Integrated voice and data datafill (continued)

voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table DPROFILE (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
DPKEY		See subfields	Data unit profile key. This field, which is the key to this table, consists of subfields SITE, FRAME, SHELF, LSG, and CIRCUIT.
	SITE	alphabetic name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME	0 to 511	Frame number. Enter a frame number from 0 to 511.
	SHELF	0 to 3	Shelf number. Enter shelf number from 0 to 3.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number in the line subgroup to which the line card is assigned from 0 to 31.
CLASSDU		MADO or MCA	Class of data unit. Enter "MADO" for Meridian Asynchronous Data Option or "MCA" for Meridian Communications Adapter.

Integrated voice and data datafill (continued)

Datafilling table DPROFILE (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
DOWNLOAD		Y or N	Profile Download. Enter "Y" if profile downloading is allowed. Enter "N" if profile downloading is not allowed. The default is "N."
DATARATE		110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200	Data rate. Enter the data rate transmit and receive speed in bits per second (bps): "110," "150," "300," "600," "1200," "2400," "4800," "9600," or "19200."
CHARLEN		7 or 8	Character lengthEnter the number of bits in characters exchanged between the customer equipment and the data unit. Enter "7" if 7 bits plus parity is needed. Enter "8" if 8 bits plus no parity is needed.
PARITY		O, E, or N	Parity TreatmentEnter the code representing the type parity treatment applied to data exchanged between the customer equipment and the data unit: "O" (odd parity), "E" (even parity), or "N" (no parity). ***Note:*** If CHARLEN equals "7," this field must be "O" or "E." If CHARLEN equals "8," this field must be "N."
AUTOMODEM		Y or N	Automatic modem insertion. Enter "Y" if automatic modem insertion is required. Otherwise, enter "N." This field is valid only if CLASSDU equals "MADO."
HOTLINE		Y or N	Hotline. Enter "Y" if MCA is used in the hotline mode. Otherwise, enter "N." This field is valid only if CLASSDU equals "MCA."
VLL		Y or N	Virtual leased line. Enter "Y" if MCA is used as a virtual leased line. Otherwise, enter "N," This field is valid only if CLASSDU equals "MCA."
IDLETO		0 to 3	Idle timeout. Enter the code, from 0 to 3, to select the inactivity timeout period: "0" (no idle timeout), "1" (15 minutes timeout), "2" (30 minutes timeout), or "3" (60 minutes timeout). This field is valid only if CLASSDU equals "MPDA."

Integrated voice and data datafill (continued)

Datafilling table DPROFILE (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
KBDTPVAR		See subfield	Keyboard variable. This field consists of subfield KBDTYP.
	KBDTYP	SYMB, HAYES, or SL1	Type of keyboard dialing. Enter the code to select the required type of keyboard dialing: "SYMB" (symbolic), "HAYES" (Hayes compatible), or "SL1" (SL-1 compatible). This field is applicable only if keyboard dialing is required.
PROMPTS		Y or N	Keyboard dialing prompts. Enter "Y" if call progress prompts are required at the Data Terminal Equipment (DTE) terminating a call. Enter "N" to suppress these prompts at the terminating DTE. This field is applicable only when the field KBDTYP equals "SYMB."
		ADAPTRO, ASERTDTR, ATDCPI, AUTOBAUD, AUTOANS, AUTOORIG, or SPEEDRES	Options. The following options can be assigned to these units: • "ADAPTPRO" (Adaptive Profile—to allow the data unit to adapt its profile to that of the far-end data unit) • "ASERTDTR" (Assert Data Terminal Ready—to force local data terminal ready on) • "ATDCPI" (Audio Tone Detector for Call Progress Indication—to enable the data unit to connect an audio tone detector circuit into the call path during outgoing interswitch calls) • "AUTOBAUD" (Enable Autobauding—to enable automatic detection of baud rate) • "AUTOANS" (Automatic Answer—if data unit is able to answer calls automatically) • "AUTOORIG" (Automatic Originate—if data unit is able to originate calls automatically) • "SPEEDRES" (Enable Speed Restriction—to enable the speed restricted calling feature)

Datafill example for table DPROFILE

The following example shows sample datafill for table DPROFILE.

Integrated voice and data datafill (continued)

MAP display example for table DPROFILE

```
DPKEY      CLASSDU DOWNLOAD DATARATE CHARLEN PARITY HOTLINE VLL IDLETO KBDTYP DPOPTS
-------------------------------------------------------------------------------

00 0 03 03 MPDA    Y        19200    7       E      N       N   3      HAYES  AUTOBAUD
```

Datafilling table IVDTRBL

Table IVDTRBL contains the Line Equipment Numbers (LEN) of faulty IVD ports. Entry of a LEN in this table flags the port and prevents both this LEN and its mate LEN from being reassigned until the port card is replaced. A LEN pair consists of the voice line and data line LEN.

Datafill Table IVDTRBL at any time after datafilling table LNINV.

Maintenance personnel must delete port data entries for both the voice and data loops from table IVDINV, preceded by the corresponding entries from tables KSETFEAT, KSETLINE, and DPROFILE. The Service Order (SERVORD) command OUT removes the port's entries in all the data tables.

If an attempt is made to add a tuple to table IVDTRBL for a port for which a tuple still exists in table IVDINV, the system generates an error message. If a tuple exists in table IVDINV with the same LEN as that entered in table IVDTRBL, the system generates the following error message: THIS LEN CANNOT BE ASSIGNED IN IVDTRBL CONTEXT. If no tuple for the LEN exists in table IVDINV, but a tuple with the mate LEN exists, the system generates the following error message: CANNOT ASSIGN THIS LINE -- MATE STILL ASSIGNED IN TABLE IVDINV. The system rejects the tuple update to table IVDTRBL in both cases.

The following table shows the datafill specific to Integrated voice and data datafill for table IVDTRBL. Only those fields that apply directly to Integrated

Integrated voice and data datafill (continued)

voice and data datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IVDTRBL

Field	Subfield or refinement	Entry	Explanation and action
LEN		See subfields	Line equipment number. This field consists of subfields SITE, FRAME, UNIT, LSG, and CIRCUIT.
	SITE	alphabetic name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME	0 to 99	Frame number. Enter a frame number from 0 to 99.
	UNIT	0 to 9	Line module unit number. Enter a unit number from 0 to 9.
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 31	Circuit number. Enter a circuit number in the line subgroup to which the line card is assigned from 0 to 31.

Datafill example for table IVDTRBL

The following example shows sample datafill for table IVDTRBL.

MAP display example for table IVDTRBL

```
SITE   FRAME   UNIT   LSG   CIRCUIT

HOST     2       0     1       2
```

Datafilling table KSETLINE

Table KSETLINE contains information on directory number appearances. One entry is required for each directory number-related key on a business set and data unit. Directory numbers can only be assigned to keys 1 to 6 on the M3000 Touchphone.

Datafill for table KSETLINE is performed through the Service Order (SERVORD) utility. For a description of the fields, refer to the data schema document.

Datafilling table KSETFEAT

Table KSETFEAT lists the line features assigned to the digital telephone sets listed in table KSETLINE. The M3000 Touchphone features must be assigned to keys 7 to 19. For a description of the fields, refer to the data schema document.

The following table lists the keys for the features assigned to the M3000 Touchphone.

Key fetures for M3000 touchphone (Sheet 1 of 2)

Key	Feature
7	Call Pickup
8	Message Waiting
9	Speed Calling
10	Call Forwarding
11	Conference 6
12	Call Waiting

Integrated voice and data datafill (continued)

Key fetures for M3000 touchphone (Sheet 2 of 2)

Key	Feature
13	Call Transfer
14	Ring Again
15	Privacy Release
16	Make Set Busy
17	Call Park
18	Executive Busy Override
19	Automatic Answerback

SERVORD

Service orders add digital telephones and their respective data options: MADO (Meridian Asynchronous Data Option), TADO (Touch Asynchronous Data Option), or MPDA (Meridian Communications Adapter). Service orders also add, change, or delete the features assigned to these telephones and data options. Service orders access the Table Editor to datafill the customer tables as if entries were made directly into the tables.

To open a service order, log on to the Maintenance and Administration Position (MAP) workstation and access the SERVORD (Service Order) system. For an explanation of general SERVORD commands, refer to the *Service Order Reference Manual*.

Available line class codes

Line class codes distinguish M2000 Digital Telephones and MADO from other types of service. The following line class codes can be assigned:

- M2006—for M2006 modular sets
- M2008—for M2008 modular sets
- M2009—for M2009 digital sets
- M2018—for M2018 digital sets
- M2112—for M2112 digital sets
- M2216A—for M2216ACD-1 modular sets
- M2216B—for M2216ACD-2 modular sets
- M2317—for M2317 digital sets

- M2616—for M2616 modular sets
- M3000—for M3000 Touchphone sets
- MADO—for a data unit class (classdu) type added for Meridian Digital Telephones (M2009, M2018, M2112, and M2317)
- TADO—for a data unit class (classdu) type added for M3000 Telephones
- MCA—for a data unit class (classdu) type added for Meridian Modular Telephones (M2006, M2008, M2216A and B, and M2616)

Available ring types

The following ring types are available to the system:

- FH—Fast High
- FL—Fast Low
- SH—Slow High
- SL—Slow Low

The M3000 Touchphone does not prompt for ring type.

Feature restrictions

The features available to the M2000 Digital Telephone users and their operations are consistent with those available on Electronic Telephone Sets (ETSs) and Data Units (DUs), with the following exceptions:

- EXT—Extension is not offered.
- QTD—Query Time and Date is not offered.
- ACD—Automatic Call Distribution is not offered.
- DISP—Display is not offered.
- RINGTYPE—Ring type is offered for M2009, M2018, and M2112 sets.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Integrated voice and data datafill:

- The user may only enter 0 through 15 in the drawer (or line subgroup) position of the Line Equipment Number (LEN) on an Intelligent Peripheral Equipment (IPE).
- A voice line of a digital telephone can only be added to an even-numbered LEN. For example, the voice line can be added to LEN 2 0 1 4, but not to LEN 2 0 1 5.

Integrated voice and data datafill (continued)

- Conversely, the data option MADO, for example, can only be added to an odd-numbered LEN. For example, a MADO can be added to LEN 2 0 1 9, but not to LEN 2 0 1 8.
- This restriction is imposed because of the way the voice line and the data option are paired. The even LEN represents a digital telephone voice loop, and the odd LEN (one above the even LEN numerically) represents that M2000 Digital Telephone's MADO.
- Key 12 cannot be assigned for an M2112 set. This key is reserved for handsfree use. When establishing a digital telephone in the system, handsfree is automatically assigned to the twelfth key of an M2112 set.

SERVORD commands

All service orders applicable to Electronic Telephone Sets (ETS) and Data Units (DUs) are applicable to digital telephones and their data options (MADO, TADO, and MPDA). However, the following commands appear differently to the user when working with digital telephones and their respective data options:

- ADD
- ADO
- CHF
- CKLEN
- DEO
- EST
- NEW
- QLEN

ADD command (adding members to a hunt group)

The ADD command adds members to a hunt group. If the member added is a M2000 Digital Telephone, the system prompts for the LCC and the ring type of the digital telephone. This occurs for Multiline Hunt (MLH), Distributed Line Hunt (DLH), and Directory Number Hunt (DNH) groups.

When dealing with data hunt groups, if the member listed is a different data type than the pilot, the system prompts for the LCC and data profile information. This occurs for MLH, DLH, and DNH groups.

For example, when the pilot is a data unit and the member is a MADO, the system prompts for the LCC and the profile information. If the member is a MADO and the pilot is a MADO, the system copies the profile information for the pilot and re-uses the information for the member.

Integrated voice and data datafill (continued)

Data and voice loops cannot be mixed in hunt groups. If the pilot is voice, all members must be voice. If the pilot is data, all members must be data. This only occurs for MLH, DLH, and DNH hunt groups.

Adding a Meridian voice member to a hunt group

The following procedure adds a Meridian voice member to a hunt group with pilot LEN 2 0 0 6 and a member LEN 2 0 0 10.

SERVORD example in prompt mode (Sheet 1 of 2)

Prompt	Response
>	SERVORD
SO:	
>	ADD
SONUMBER: NOW 85 7 8 PM	
>	(press RETURN
GROUPTYPE:	
>	MLH
LINK_LEN:	
>	2 0 0 6
KEY:	
>	1
MEM_LEN:	
>	2 0 0 10
KEY:	
>	1
LINE_CLASS:	
>	M2112
RINGTYPE:	
>	SL
MEM_LEN:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 2)

Prompt	Response
>	$
OPTION:	
>	$
GROUPSIZE:	
>	10

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> add $ mlh 2 0 0 6 1 2 0 0 10 1 m2112 sl $ $ 10
```

ADO command (adding an option)

The ADO command adds features to feature keys of digital telephones or data options.

Even though the MADO, TADO, and MCA have no keys because all data option features are activated through keyboard dialing, table control requires key numbers to associate features with the correct data options. The keys are predefined to allow feature assignment. However, the user enters only the feature desired and the SERVORD system assigns the feature to the appropriate key.

Adding the Ring Again (RAG) option

The following procedure adds the Ring Again (RAG) option to a MADO, TADO, or MCA that is already in service.

SERVORD example in prompt mode (Sheet 1 of 2)

Prompt	Response
>	SERVORD
SO:	
>	ADO
SONUMBER: NOW 85 7 9 PM	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 2)

Prompt	Response
>	(press RETURN)
DN_OR_LEN:	
>	2345432
OPTION:	
>	RAG
OPTION:	
>	$

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> ado $ 2345432 rag $
```

CHF command (changing the ring type)

The CHF command changes the ring type of an M2000 Digital Telephone or Meridian Modular Telephone. This command allows the ring type of the IVD digital set to be changed without having to enter table IVDINV.

The RINGTYPE option can only be used on an IVD digital set voice line. This option must be associated with Key 1 of the set. The RINGTYPE option does not need to be datafilled in the data tables.

Note: The ring type can be changed for the primary Multiple Appearance Directory Number (MADN) appearance; however, the secondary MADN appearance always uses the default ring type.

The CHF command is not used with the M3000 Touchphone.

Integrated voice and data datafill (continued)

The following procedure changes the ring type.

SERVORD example in prompt mode

Prompt	Response
>	SERVORD
SO:	
>	CHF
SONUMBER: NOW 85 7 9 PM	
>	(press RETURN)
DN_OR_LEN:	
>	2345432
OPTKEY:	
>	1
OPTION:	
>	RING TYPE
RING_TYPE:	
>	FL
OPTION:	
>	$

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> chf $ 2345432 1 ring type fl $
```

CKLN command (check LEN)

The CKLN command provides the craftsperson the ability to complete an Automatic Set Relocation (ASR) In process. This service order moves the set datafill from the virtual LEN (old LEN) to the new LEN. This command also deallocates the virtual LEN and returns the resource to the system to be used again.

Integrated voice and data datafill (continued)

The CKLN command accepts an ASR LEN as the old LEN. When the command executes, the system completes the ASR process and deletes the corresponding entry in table ASRTABLE. If an ASR LEN is used for the new LEN of the CKLN command, the system generates an error message. The system also generates an error message if the ASR LEN (specified as the old LEN) is not the voice portion of the IVD set or if the ASR LEN is not found in table ASRTABLE.

DEO command (deleting an option)

The DEO command acts the opposite of the ADO command. The DEO command deletes features from keys on a digital telephone or data option.

The LEN, KEY, and OPTION to be deleted must be specified when deleting from a M2000 Digital Telephone, M3000 Touchphone, or Meridian Modular Telephone.

SERVORD does not prompt for a key when deleting a feature from a MADO, TADO, or MCA.

EST command (establishing a hunt group)

The EST command establishes a hunt group of digital telephones or data options. When prompted for Line Class Code (LCC), the user must specify the LCC that corresponds to the digital telephone type involved (M2009, M2112, M2018, M3000, or MADO). To establish Multiline Hunt (MLH) or Distributed Line Hunt (DLH), the same LCC can be used.

To add each subsequent hunt group member, a KEY, a DN, and an LEN must be specified by the user. If only the DN and LEN are specified for a digital telephone Directory Number Hunt (DNH) member, the system generates an error message with an explanation.

The EST command creates a pilot and up to 20 hunt members, but the pilot and these members must stay within the same customer group. If the user needs to add more than 20 loops in a hunt group, the ADD command is used.

If the member listed is a Meridian Modular Telephone, the system prompts for the LCC and the digital telephone ring type. This prompt only occurs for Multiple Line Hunt (MLH), Distributed Line Hunt (DLH), and Directory Number Hunt (DNH) groups.

If the member listed is a different data type than the pilot of a data hunt group, the system prompts for the LCC and data profile information. This prompt only occurs for MLH, DLH, and DNH groups.

Integrated voice and data datafill (continued)

For example, when the pilot is a data unit, the system prompts for the LCC and the profile information. If the member is an MPDA and the pilot is an MPDA, the system copies the profile information for the pilot and re-uses the information for the member.

Data and voice loops cannot be mixed in hunt groups. If the pilot is voice, all members must be voice. If the pilot is data, all members must be data. This only occurs for MLH, DLH, and DNH groups.

Establishing a DNH hunt group

The following procedure establishes a DNH group with pilot DN 7221001, pilot LEN 2 0 0 2, and a Meridian voice set as a DNH member with DN 7224000 on Key 1 and LEN 2 0 0 4.

SERVORD example in prompt mode (Sheet 1 of 3)

Prompt	Response
>	SERVORD
SO:	
>	EST
SONUMBER: NOW 85 7 8 PM	
>	(press RETURN)
GROUPTYPE:	
>	DNH
PILOT_DN:	
>	7221001
LCC:	
>	M2616
RINGTYPE:	
>	FL
GROUP:	
>	CUSGROUP2
SUBGRP:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 3)

Prompt	Response
>	0
NCOS:	
>	0
SNPA:	
>	613
KEY:	
>	1
RINGING:	
>	Y
PILOT_LEN:	
>	2 0 0 2
DN_LEN:	
>	7224000
LEN:	
>	2 0 0 4
KEY:	
>	1
LINE_CLASS:	
>	M2008
RINGTYPE:	
>	SH
DN_LEN:	
>	$
OPTION:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 3 of 3)

Prompt	Response
>	$
GROUPSIZE:	
>	10

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> est $ dnh 7221001 m2616 fl cusgroup2 0 0 613 1 + (CR)
    y 2 0 0 2  7224000 2 0 0 4 1 m2008 sh $  $ 10
```

Establishing a MLH hunt group

The following procedure establishes an MLH data hunt group with pilot DN 7221001, pilot LEN 4 0 0 1, and an MLH MADO member LEN 2 0 0 3.

SERVORD example in prompt mode (Sheet 1 of 3)

Prompt	Response
>	SERVORD
SO:	
>	EST
SONUMBER: NOW 85 7 8 PM	
>	(press RETURN)
GROUPTYPE:	
>	MLH
PILOT_DN:	
>	7221001
LCC:	
>	DATA
GROUP:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 3)

Prompt	Response
>	CUSGROUP2
SUBGRP:	
>	0
NCOS:	
>	10
SNPA:	
>	416
KEY:	
>	1
RINGING:	
>	Y
CLASSDU:	
>	OPEN
PILOT_LEN:	
>	4 0 0 1
MEM_LEN:	
>	2 0 0 3
LINE_CLASS:	
>	MADO
CLASSDU:	
>	MADO
DATARATE:	
>	19200
CHARLEN:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 3 of 3)

Prompt	Response
>	8
PARITY:	
>	NONE
STOPBIT:	
>	1
KBDTYP:	
>	SYMB
PROMPTS:	
>	N
DPOPTS:	
>	N
DPOPTS:	
>	AUTOBAUD
MEM_LEN:	
>	$
OPTION:	
>	$
GROUPSIZE:	
>	10

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> est $ mlh 7221001 data cusgroup2 0 10 + (CR)
     416 1 y open 4 0 0 1 2 0 0 3 mado mado 19200 + (CR)
     8 none 1 symb n autobaud $ $ $ 10
```

Integrated voice and data datafill (continued)

NEW command (adding a digital telephone or data option)

The NEW command can be used by the SERVORD user to enter a Line Class Code (LCC) to create a new digital telephone or data option loop. When the user enters an LCC for a digital telephone or data option, SERVORD prompts for additional items. The prompts are the same as for an ETS with the addition of a prompt for the type of ringing associated with the digital telephone.

The following table shows the Line Class Codes (LCC) for MADO, TADO, and MCA.

Line class codes

MADO	TADO	MCA
M2009	M3000	M2006
M2018		M2008
M2112		M2216A
M2317		M2216B
		M2616

Adding new digital telephone service

The following procedure adds new digital telephone service with DN 7221000 and LEN 2 0 0 0. The loop associated with Key 1 has ringing ability. The set is assigned Special Billing Option and special billing DN 2210048.

SERVORD example in prompt mode (Sheet 1 of 3)

Prompt	Response
>	SERVORD
SO:	
>	NEW
SONUMBER: NOW 85 7 8 PM	
>	(press RETURN)
DN:	
>	7221000
LCC:	

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 3)

Prompt	Response
>	M2009
RINGTYPE:	
>	FH
GROUP:	
>	CUSGROUP1
SUBGRP:	
>	4
NCOS:	
>	10
SNPA:	
>	613
KEY:	
>	1
RINGING:	
>	Y
LEN:	
>	2 0 0 0
OPTKEY:	
>	1
OPTION:	
>	SPB
SPBDN:	
>	2210048

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 3 of 3)

Prompt	Response
OPTKEY:	
>	$

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> new $ 7221000 m2009 fh cusgroup1 4 10 613 1 y 2 0 0 0
    1 spb 2210048 $
```

No additional prompts are needed for the MADO.

Adding new MADO service

The following procedure adds new MADO service with DN 7221001 and LEN 02 0 01 01. The loop associated with Key 1 has ringing ability. The set is assigned option Automatic Line (AUL).

SERVORD example in prompt mode (Sheet 1 of 3)

Prompt	Response
>	SERVORD
SO:	
>	NEW
SONUMBER: NOW 85 7 8 PM	
>	(press RETURN)
DN:	
>	7221001
LCC:	
>	MADO
GROUP:	
>	CUSGROUP1

Integrated voice and data datafill (continued)

SERVORD example in prompt mode (Sheet 2 of 3)

Prompt	Response
SUBGRP:	
>	4
NCOS:	
>	10
SNPA:	
>	613
RINGING:	
>	Y
CLASSDU:	
>	MADO
DATARATE:	
>	19200
CHARLEN:	
>	8
PARITY:	
>	NONE
STOPBIT:	
>	1
KBDTYP:	
>	SYMB
PROMPTS:	
>	N
DPOPTS:	
>	AUTOBAUD

Integrated voice and data datafill (end)

SERVORD example in prompt mode (Sheet 3 of 3)

Prompt	Response
DPOPTS:	
>	$
LEN:	
>	02 0 01 01
OPTION:	
>	AUL
AULDN:	
>	9876
OPTION:	
>	$

The same service can be added without prompts as described below:

SERVORD example in no-prompt mode

```
> new $ 7221001 mado cusgroup1 4 10 613 y mado 19200 + (CR)
    8 none 1 symb n autobaud $ 2 0 1 1 aul 9876 $
```

QLEN command (query a particular LEN)

The QLEN command provides the ability to query a particular Line Equipment Number (LEN) or Directory Number (DN) and view its associated attributes.

500/2500 analog set datafill

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL03 and up

Prerequisites

500/2500 analog set datafill has no prerequisites.

Description

Before the Meridian SL-100 system recognizes an Intelligent Peripheral Equipment (IPE) analog line, it must be identified by a Line Equipment Number (LEN). An LEN is defined by the SITE, FRAME, SHELF, LINE SUBGROUP (LSG), and CIRCUIT numbers. These LEN subfields identify an IPE analog line as specified below:

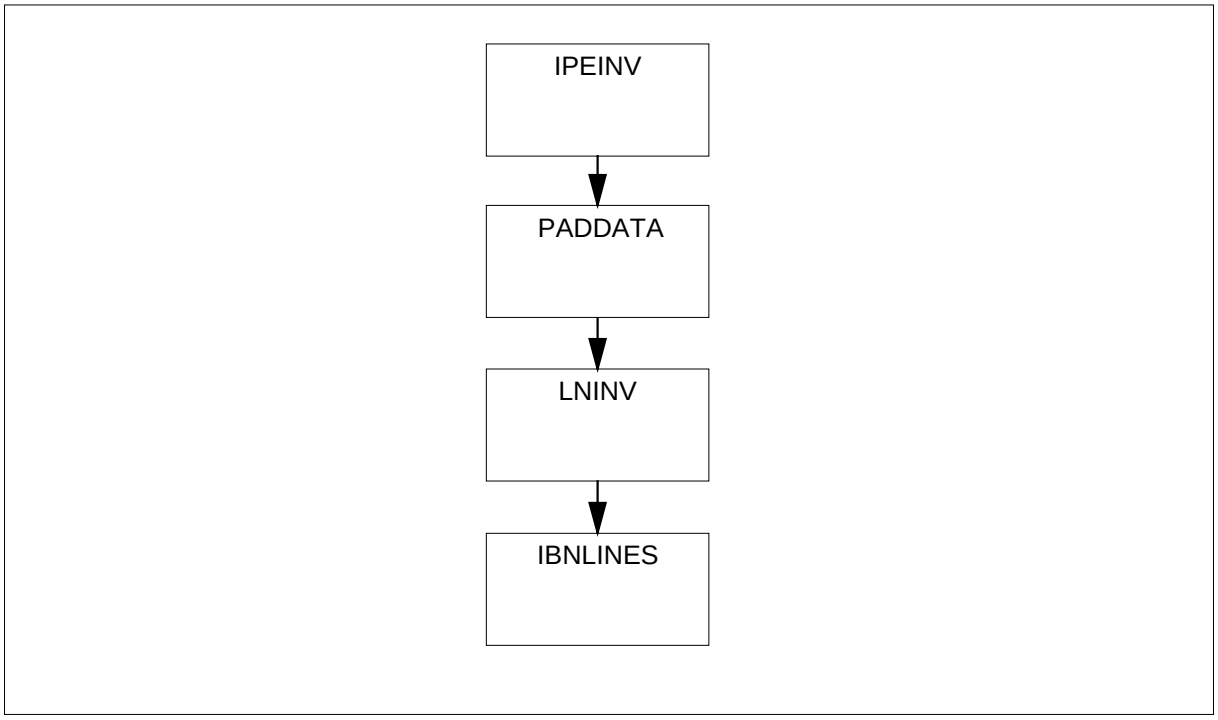
- SITE—The SITE subfield, used with other LEN subfields, fully identifies an IPE analog line. If the line is located at the host site, enter HOST or leave the field blank. If the line is remote from the host, enter the site name assigned to the remote location. Sites other than the host must be datafilled in the Table SITE.
- FRAME—The FRAME subfield refers to the IPE Column (IPEC) that houses the particular IPE module to which the analog line is attached. Each IPEC may house from one to four IPE modules.
- SHELF—The SHELF subfield refers to the particular IPE module to which the analog line is attached. This IPE module represents one of four possible IPE modules that may be housed in the IPEC. Shelves are numbered from bottom to top, so that SHELF 0 identifies the bottom IPE module and SHELF 3 identifies the uppermost IPE module.
- LSG—The LSG number subfield refers to the LSG to which the analog line is attached. For each IPE, there are 16 possible LSGs numbered 0 to 15. Each LSG corresponds to an IPE line card. The IPE supports two types of analog line cards: ALC (Analog Line Card) and MLC (Analog Message Waiting Line Card).
- CIRCUIT—The CIRCUIT subfield refers to the line card circuit to which the line is assigned. Each analog line card supports 16 circuits, numbered from 0 through 15.

500/2500 analog set datafill (continued)

Translations table flow

The 500/2500 analog set datafill translation process is shown in the flowchart that follows.

Table flow for 500/2500 analog set datafill



Limitations and restrictions

500/2500 analog set datafill has no limitations or restrictions.

Interactions

500/2500 analog set datafill has no functionality interactions.

Activation/deactivation by the end user

500/2500 analog set datafill requires no activation or deactivation by the end user.

Billing

500/2500 analog set datafill does not affect billing.

Station Message Detail Recording

500/2500 analog set datafill does not affect Station Message Detail Recording.

500/2500 analog set datafill (continued)

Datafilling office parameters

500/2500 analog set datafill does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement 500/2500 analog set datafill. The tables are listed in the order in which they are to be datafilled.

The datafill examples shown in this section are for illustrative purposes only and represent typical field entries. The actual datafill entry depends on the switch configuration and other variables.

Datafill tables required for 500/2500 analog set datafill

Table	Purpose of table
IPEINV	Assigns location characteristics associated with an IPE
PADDATA	Stores transmit and receive pad values
LNINV	Contains Line Equipment Number (LEN), equipment code, pad group, and line card status for each analog line card slot associated with an IPE
IBNLINES	Contains line assignments for IPE analog lines

Datafilling table IPEINV

Table IPEINV assigns location characteristics associated with an IPE. Table SLLNKDEV must be datafilled with a valid Extended System Monitor (XSM) datalink prior to datafilling table IPEINV, if XSMs are to be datafilled.

The following table shows the datafill specific to 500/2500 analog set datafill for table IPEINV. Only those fields that apply directly to 500/2500 analog set datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IPEINV (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
IPENM		See subfields	IPE name. This field consists of subfields SITE, FRAME, and SHELF.
	SITE	1 to 4 characters	Site name. Enter the 1- to 4-character alphabetic site name assigned to the remote location. If left blank, the default value is “HOST.”

500/2500 analog set datafill (continued)

Datafilling table IPEINV (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	FRAME	0 to 511	IPE frame number. Enter the IPE frame number, from 0 to 511, specifying the IPEC in which the IPE is located. ***Note:*** It is strongly recommended that all IPEs residing in a given IPEC should have the same column number datafilled to avoid confusion.
	SHELF	0-3	IPE shelf number. Enter the IPE shelf number, from 0 to 3, numbered from the bottom. This number, in combination with the FRAME entry, produces a unique designation.
FRTYPE		IPEC	Frame type. Enter "IPEC" for the frame type, which specifies the type of frame on which the Peripheral Module (PM) is mounted.
SHPOS		04, 18, 38, or 52	Shelf position. Enter a value of "04," "18," "38," or "52" for the shelf position on which the PM equipment is mounted. (This value indicates inches above the floor.)
FLOOR		0 to 99	Floor. Enter a value from 0 to 99 to specify the floor on which the PM frame is located.
ROW		A to FF	Row. Enter a value of A to FF for the row on the floor where the PM frame is located.
FRPOS		0 to 99	Frame position. Enter a value of 0 to 99 to specify the frame position in the row of the PM frame.
EQPEC		8D037DC	Equipment product engineering code. Enter a value of "8D37DC" to specify the Product Engineering Code (PEC) of the PM.
LOAD		8-character alphanumeric value	Load name. Enter an 8-character alphanumeric value to specify the load name given to the issue of PM software.
CSPMNO		See subfields	C-side peripheral module number. This field consists of subfields PMTYPE and PMNO.
	PMTYPE	LGC, LTC, or RCC	Peripheral module type. Enter a value of "LGC," "LTC," or "RCC" to specify the type of PM to which the IPE or Remote IPE (RIPE) is attached.

500/2500 analog set datafill (continued)

Datafilling table IPEINV (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	PMNO	0 to 63	Peripheral module number. Enter a value from 0 to 63 to specify the PM number to which this IPE or RIPE is attached.
IPEINFO		See subfields	IPE information. This field consists of subfields IPESELECTOR, XSMEQUIP, LOOPID, XSMID, MODULEID, and LKINFO.
	IPESELECTOR	HIPE	IPE selector. Enter "HIPE" to specify a host IPE selector.
	XSMEQUIP	Y or N	XSM equipment. Enter "Y" to specify that the IPEC in which the IPE resides is equipped with an XSM. All IPEs residing in a given IPEC should have the same value datafilled for this selector. If this selector is set to "Y," the LOOPID, XSMID, and MODULEID subfields must also be datafilled. Enter "N" to specify that the IPEC is not equipped with an XSM.
	LOOPID	1 to 16 characters	Loop ID. Enter an alphanumeric value of 1 to 16 characters to specify the datalink (datafilled in Table SLLNKDEV) where XSM reports are to be received.
	XSMID	0 to 63	XSM ID. Enter a value of 0 to 63 to specify the number of the XSM responsible for monitoring the IPE. This value must correspond to the DIP switch setting for the XSM in the IPEC pedestal. Enter "0" for master XSMs.

500/2500 analog set datafill (continued)

Datafilling table IPEINV (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	MODULEID	0 to 3	Module ID. Enter a value of 0 to 3 to specify the address of the IPE within its IPEC. This value should correspond with the IPE position in its IPEC, where 0 refers to the IPE shelf closest to the floor, and 3 refers to the top shelf in an IPEC equipped with four IPEs. This value should also correspond with the shelf number (subfield SHELF in IPENM field) in the key for this tuple.
	LKINFO	0 to 19	Link information. Enter a value of 0 to 19 to specify the LGC/LTC links on which a host IPE is assigned. This subfield appears if subfield IPESEL equals "HIPE." The first two links are message links to the IPE. Up to six entries can be made. Enter "$" to end data entry for this table.

Datafill example for table IPEINV

The following example shows sample datafill for table IPEINV.

MAP display example for table IPEINV

```
SITE FRAME SHELF FRTYPE SHPOS FLOOR ROW FRPOS EQPEC  LOAD     PMTYPE PMNO IPESELECTOR
   XSMEQUIP LOOPID   XSMID MODULEID LKINFO
-------------------------------------------------------------------------------
HOST 04    0     IPEC   04    2     B   16    8D37DC IPE32RTM RCC    0    HIPE
   Y        XSMLOOP1 0     0        12 13 14 $
```

Datafilling table PADDATA

Table PADDATA stores the transmit and receive pad values. Table PADDATA uses a two-part key that consists of two pad group names. The corresponding data consists of the pad values for connections between the specified pad groups. (Table PADDATA must be datafilled before table LNINV.)

Analog sets on the IPE are considered to be on-premises sets, but have a different loss plan than the LCM analog lines. Users must establish a new loss pad group called IPEONS for these sets. On a station line-to-line connection, the total insertion loss for the ALC or MLC is 6 dB ± 1 dB. This loss is arranged as 3.5 dB loss for analog to PCM (incoming) and 2.5 dB loss for PCM

500/2500 analog set datafill (continued)

to analog (outgoing). The total loss is divided between the network and the peripheral. The peripheral applies the first 7 dB, and the network applies the remainder. However, the network does not compensate for the set 3.5 dB loss in the incoming direction, and there cannot be total loss less than 2.5. So the corresponding pad value (PAD1TO2 value in table PADDATA) should always be set at 3 dB less loss than normal.

One exception to these values is the IPEONS-POPS connection. Because of the line loss, this connection requires an end-to-end total loss of 0 dB, which would be specified in table PADDATA as a gain of 3 db in the PAD1TO2 field. However, be aware that this may cause an increase in the line noise level and unsatisfactory line quality.

The following table shows the datafill specific to 500/2500 analog set datafill for table PADDATA. Only those fields that apply directly to 500/2500 analog set datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table PADDATA

Field	Subfield or refinement	Entry	Explanation and action
PADKEY		See subfields	Pad data key. This field consists of subfields PADGRP1 and PADGRP2.
	PADGRP1	alphanumeric name	*Pad group name 1* Enter an alphanumeric pad group name that is to be datafilled in field PADGRP in table LNINV.
	PADGRP2	alphanumeric name	Pad group name 2. Enter an alphanumeric pad group name that is to be datafilled in field PADGRP in table LNINV.
PAD1TO2		0 or 0L to 14L	*Pad value 1 to 2* Enter a value of 0L to 14L or 0 to specify the value of the network or line pad for connection PADGRP1 to PADGRP2. Each entry value of 0L to 14L corresponds to a loss level (in decibels).
PAD2TO1		0 or 0L to 14L	Pad value 2 to 1. Enter a value of 0L to 14L or 0 to specify the value of the network or line pad for connection PADGRP2 to PADGRP1. Each entry value of 0L to 14L corresponds to a loss level (in decibels).

500/2500 analog set datafill (continued)

Datafill example for table PADDATA

The following example shows sample datafill for table PADDATA.

MAP display example for table PADDATA

```
PADGRP1    PADGRP2    PAD1TO2    PAD2TO1

IPEONS     IPEONS       2L         2L
IPEONS     UNBAL         0         3L
IPEONS     ONS          3L         6L
IPEONS     DONS         3L         2L
IPEONS     OPS           0         3L
IPEONS     PONS          0         6L
IPEONS     ATT           0         6L
IPEONS     DTT           0         9L
IPEONS     SATT          0         3L
IPEONS     SDTT          0         3L
IPEONS     ACO           0         3L
IPEONS     DCO           0         3L
IPEONS     ATO          3L         9L
IPEONS     DTO           0         9L
IPEONS     CONF          0         9L
```

Datafilling table LNINV

Table LNINV provides support for two analog line card types in the IPE: 8D03AB and 8D09AJ/AK. Card code 8D03AB corresponds to the ALC, which supports 500/2500 sets without message waiting lamps, while card codes 8D09AJ and 8D09AK correspond to the MLC. The IPE must be equipped with an MLC for 500/2500 sets with message waiting lamps to be supported.

When datafilling table LNINV for IPE analog lines, datafill fields PADGRP, STATUS, GND, and BNV the same as for IPE digital lines with the following exceptions:

- Fields LSG and CIRCUIT must correspond to an IPE analog line card that only supports 16 circuits (numbered 0-15).
- Field MNO must be datafilled as “N” for IPE analog lines.

Table IPEINV must be datafilled for the IPE before analog lines associated with that IPE can be datafilled in Table LNINV. Once tables IPEINV and LNINV are datafilled, table IBNLINES can be datafilled for IPE analog lines.

500/2500 analog set datafill (continued)

Table LNINV contains the following data for each line card slot associated with an IPE analog line:

- the Line Equipment Number (LEN) for each line
- the Product Engineering Code (PEC) of the line card
- the pad group for the group
- the status of the line card

The following table shows the datafill specific to 500/2500 analog set datafill for table LNINV. Only those fields that apply directly to 500/2500 analog set datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table LNINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		See subfields	Line equipment number. This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT.
	SITE	alphebetic site name	Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in Table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME	0 to 127	Frame number. Enter a frame number from 0 to 127.
	SHELF	0 to 3	Shelf number. Enter a shelf number from 0 to 3.

500/2500 analog set datafill (continued)

Datafilling table LNINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	LSG	0 to 15	Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT	0 to 16	Circuit number. Enter a circuit number for the analog line card from 0 to 16.
CARDCODE		8D03AAB or 8D09AK	Card product engineering code. Enter “8D03AB” for the analog line card without message waiting lamps. Enter “8D09AK” for the analog line card with message waiting lamps.
PADGRP		NPDGP	Pad group. Enter “NPDGP” to specify the pad group assigned to the line circuit in table PADDATA. Analog sets on the IPE are considered to be on-premise sets, but they have a different loss plan than the LCM analog lines. Users must establish a new loss pad group called IPEONS for the sets.
STATUS		HASU or RESERVED	Line inventory availability status. Enter “HASU” (Hardware Assigned, Software Unassigned) or “RESERVED.”
GND		N	Ground. Enter “N” to specify that the line is a loop start for the IPE.
BNV		NL	Balanced network value. Enter “NL” for a non-loaded network for the IPE.
MNO		N	Manual override. Enter “N” to allow the off-hook balance network test to update field BNV in this table.

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

500/2500 analog set datafill (continued)

MAP display example for table LNINV

```
SITE   FRAME  SHELF  LSG  CIRCUIT  CARDCODE  PADGRP  STATUS  GND  BNV  MNO
HOST     00      2    3        2    8D09AJ  IPEONS  HASU    N    NL   N
```

Datafilling table IBNLINES

Table IBNLINES contains line assignments for IPE analog lines. The central processing unit (CPU) accesses this table first to determine the customer group and Network Class of Service (NCOS). The Service Order (SERVORD) utility can also be used to place lines into service, which dynamically datafills table IBNLINES.

The following table shows the datafill specific to 500/2500 analog set datafill for table IBNLINES. Only those fields that apply directly to 500/2500 analog

500/2500 analog set datafill (continued)

set datafill are shown. For a description of the other fields, refer to the data schema document.

Datafilling table IBNLINES (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN			Line equipment number. This field consists of subfields SITE, FRAME, and SHELF, or subfields LSG and CIRCUIT.
	SITE		Site name. Enter an alphabetic site name for the remote location. If parameter USINGSITE in Table OFCOPT and parameter UNIQUE_BY_SITE_NUMBERING in table OFCENG both equal "Y" and if the line is remote from the host, enter the site name assigned to the remote location. Otherwise, if the line is located at the host, leave the field blank, and this field is default-filled with "HOST." ***Note:*** If parameter USINGSITE equals "Y" and parameter UNIQUE_BY_SITE_NUMBERING equals "N," the entry in field SITE is not default-filled and is not checked against one of the tables to which lines are assigned. The first character of the entry for the site name must be alphabetic. If parameter USINGSITE equals "N," leave field SITE blank.
	FRAME		Frame number. Enter a frame number from 0 to 127.
	SHELF		Shelf number. Enter a shelf number from 0 to 3.
	LSG		Line subgroup number. Enter an LSG (card slot) number from 0 to 15.
	CIRCUIT		Circuit number. Enter a circuit number for the Enhanced Digital Port Card from 0 to 31. An IVD digital set can only be datafilled with an even circuit number. The corresponding data option is datafilled with the odd circuit number, which is one greater than the mate set.
DNNO			Directory Number Number. Enter "0" to specify which DN on the LEN is being referenced.

500/2500 analog set datafill (continued)

Datafilling table IBNLINES (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RESULT			Result. This field consists of subfields SIGTYPE, FORMAT, IBNVAR, and OPTLIST.
	SIGTYPE		Signal type. Enter "DP" to specify that the CPU expects dial pulse, or enter "DT" to specify Digitone.
	FORMAT		Format. Enter "STN" to specify a station line assignment.
	IBNVAR		IBN Variable. This field consists of the following subfields: LCC, DN, CUSTGRP, SUBGRP, and SNPA.
	LCC		Line Class Code. Enter "IBN" to specify an Integrated Business Network (IBN) line.
	DN		Directory Number. Enter the directory number assigned to the IBN station.
	CUSTGRP		Customer Group. Enter the alphanumeric customer group name to which the IBN line is assigned.
	SUBGRP		Subgroup. Enter the subgroup number (0-7) within the customer group to which the IBN line is assigned.
	NCOS		Network Class of Service. Enter the NCOS number (0-255) assigned to the line.
	SNPA		Serving NPA. Enter the serving NPA to which the IBN line is assigned.
	OPTLIST		Option List. Enter the list of options to be assigned to the station. Separate options from each other by a space.

Datafill example for table IBNLINES

The following example shows sample datafill for table IBNLINES.

500/2500 analog set datafill (end)

MAP display example for table IBNLINES

```
LEN          DNNO  SIGTYPE  FORMAT  LCC  DN       CUSTGRP  SUBGRP  NCOS  SNPA  OPTLIST

00 1 02 03   0     DP       STN     IBN  2265244  ACC02    0       0     508   ACB 3WC
```

SERVORD

500/2500 analog set datafill does not use SERVORD.

Automated datafill for IPE line card

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL07 and up

Automated datafill for IPE line card was introduced in MSL07.

Prerequisites

Automated datafill for IPE line card has no prerequisites.

Description

This feature allows the MSL-100 system to poll the IPE line card and then to dynamically datafill the product engineering code (PEC) into table LNINV during system inventory routines. This functionality allows MSL-100 customers to make an immediate upgrade of existing card types for the IPE without any software intervention.

The feature assumes that any new line card version code is one of the following types:

- 8D02 Digital line card
- 8D03 Analog line card
- 8D09 Analog/Message waiting line card
- 5D11 Line side T1

Note: The addition of any new card types requires a software upgrade.

The current process requires updating table LNINV for every new product code that is brought to market. This requires system software intervention within an MSL stream or patch. If the datafill is not updated with the new product code, the system does not allow the activation of that product.

The current process causes the following system deficiencies:

- Continuous development of features or patches to support the new product engineering code
- Feature activities in the MSL layer are created to source new product codes
- Design and manufacturing issues are impossible to isolate for a specific product code

Automated datafill for IPE line card (continued)

This feature creates an automated datafill system accomplished during the return to service routine. The system polls the IPE line card, decides if it is compatible and then datafills table LNINV.

This feature not only allows MSL-100 customers to make an immediate upgrade of existing card types for the IPE without any software intervention, but also:

- Provides a more accurate inventory of products within a customer's PBX
- Minimize the software patches required
- Free up designer activities
- Provides the ability of support organizations to identify more accurately the products that are causing field problems

This activity's purpose helps in changing the way product engineering codes are implemented for use in table LNINV. This design facilitates the automatic datafill of a line card's product engineering code in table LNINV, and it maps proper test and diagnostic procedures to the line card.

Along with polling cards within the IPE this functionality creates a new table, IPECARDS, for compatible cards and binds diagnostic routines for compatible cards.

Table IPECARDS, containing the compatible cards, is the center of this feature. Information drawn from it provides data needed to properly automate the process of datafilling the IPE's line cards.

Translations table flow

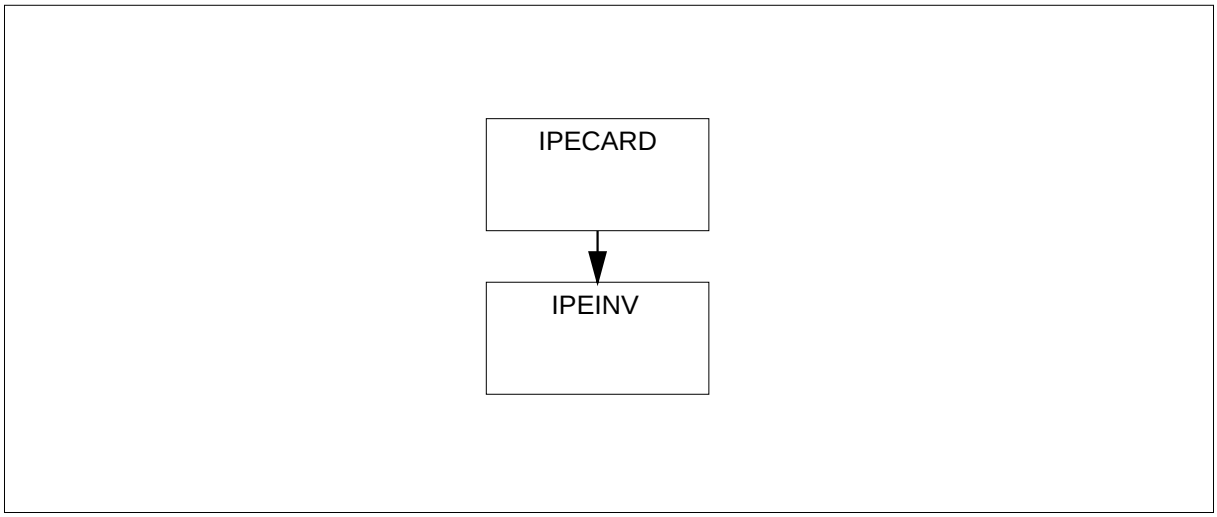
The Automated datafill for IPE line card translations tables are described in the following list:

- Table IPECARDS
- Table IPEINV

The Automated datafill for IPE line card translation process is shown in the flowchart that follows.

Automated datafill for IPE line card (continued)

Table flow for Automated datafill for IPE line card



The following table lists the datafill content used in the flowchart.

Datafill example for Automated datafill for IPE line card

Datafill table	Example data
IPECARDS	8D02CC NT8D02 BASIC DEFAULT LINES_328D03GG NT8D03 BASIC DEFAULT LINES_165D11ZZ NT5D11 BASIC DEFAULT LINES_16
IPEINV	IPE0 00 0 8 IPEC 11 0 B 0 8D37DC IPE07BA LGC 0 HIPE N (7) (5) (6) (4) $ 8

Limitations and restrictions

The following limitations and restrictions apply to Automated datafill for IPE line card:

This feature is applicable only to the IPE.

Interactions

The following paragraphs describe the interactions between Automated datafill for IPE line card and other functionalities.

This feature impacts system operations with table LNINV, line card maintenance and diagnostics functions for the IPE.

Billing

Automated datafill for IPE line card does not affect billing.

Automated datafill for IPE line card (continued)

Station Message Detail Recording

Automated datafill for IPE line card does not affect Station Message Detail Recording.

Datafilling office parameters

Automated datafill for IPE line card does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Automated datafill for IPE line card. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Automated datafill for IPE line card

Table	Purpose of table
IPECARDS	Intelligent Peripheral Equipment Cards contains information pertaining to product engneering codes and location of cards in the system. This table is used to bind new instances of IPE card types.
IPEINV	Intelligent Peripheral Equipment inventory table assigns location characteristics associated with an IPE.

Datafilling table IPECARDS

The following table shows the datafill specific to Automated datafill for IPE line card for table IPECARDS. Only those fields that apply directly to

Automated datafill for IPE line card (continued)

Automated datafill for IPE line card are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IPECARDS

Field	Subfield or refinement	Entry	Explanation and action
IPEPEC		8D02AA, 8D02AB, 8D02CC, 8D02EA, 8D02EB, 8D03AB, 8D03AE, 8D03AH, 8D03AJ, 8D09AB, 8D09AD, 8D09AG, 8D09AH 8D09AJ, 8D09AK, 8D09AL, 5D11AA, 5D11AB, 5D11AC, 5D11AD, 5D11AK	*Intelligent Peripheral Equipment Product Engineering code.* Entry for appropriate PEC code is entered here with applicable suffix for card in IPE shelf to be deployed.
CRDCODE		NT8D02, NT8D03, NT8D09, NT5D11	*Cardcode.* Enter appropriate card code for operation in IPE. This entry will correspond with the datafilled PEC code entry in field IPEPEC.
HARDWARE		ALL, BASIC, ENHANCED	Enter *Basic.* Currently only one type of IPE hardware is used: BASIC. The other field values are for future use for new types of IPE hardware.
DIAGNSTC		DEFAULT, CUSTOM	Enter *Default.* This field associates the type of diagnostics that are applied to a line card. It is possible, if a new card is deployed, to have a custom diagnostic created for the card. This field would have the value of CUSTOM if such a diagnostic were created.
LINES		Lines_16, Lines_32	*Lines.* This field associates the type of function the line card exhibits: LINES_16: 16 Port line card; LINES_32: 32 Port line card.
Note: Table IPECARDS must be datafilled before table LNINV can be datafilled. Otherwise, all tuples attempting to use a valid IPE card code will fall out upon One Night Process (ONP).			

Datafill example for table IPECARDS

The following example shows sample datafill for table IPECARDS.

Automated datafill for IPE line card (continued)

MAP display example for table IPECARDS

```
IPEPEC      CRDCODE     HARDWARE   DIAGNSTC   LINES
-------------------------------------------------------
8D02CC      NT8D02      BASIC      DEFAULT     LINES_32
8D03GG      NT8D03      BASIC      DEFAULT     LINES_16
5D11ZZ      NT5D11      BASIC      DEFAULT     LINES_16
```

Datafilling table IPEINV

The following table shows the datafill specific to Automated datafill for IPE line card for table IPEINV. Only those fields that apply directly to Automated datafill for IPE line card are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IPEINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
IPENM		See subfields	*IPE name.* This field consists of subfields SITE, FRAME, and SHELF.
	SITE	1 to 4 characters	*Site name.* Enter the 1 to 4 character alphabetic site name assigned to the remote location. If left blank, the default value is “HOST.”
	FRAME	0 to 511	*IPE Frame name.* Enter the IPE frame number, from 0 to 511, specifying the IPEC in which the IPE is located. ***Note:*** It is strongly recommended that all IPEs residing in a given IPEC should have the same column number datafilled to avoid confusion.
	SHELF	0-3	*IPE Shelf number.* Enter the IPE shelf number, from 0 to 3, numbered from the bottom. This number, in combination with the FRAME entry, produces a unique designation.

Automated datafill for IPE line card (continued)

Datafilling table IPEINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
ADNUM		0 to 4095	*Administration number.* Enter the administration number associated with the peripheral module (PM). ***Note:*** The value of field ADNUM must be unique across all PM inventory tables. Attempts to add a PM with an ADNUM already in use are rejected and the system prompts the user with the next available ADNUM value.
FRTYPE		IPEC	*Frame type.* Enter "IPEC" for the frame type, which specifies the type of frame on which the Peripheral Module (PM) is mounted.
SHPOS		04, 18, 38, or 52	*Shelf position.* Enter a value of "04," "18," "38," or "52" for the shelf position on which the PM equipment is mounted. (This value indicates inches above the floor.)
FLOOR		0 to 99	*Floor.* Enter a value from 0 to 99 to specify the floor on which the PM frame is located.
ROW		A to ZZ	*Row.* Enter a value of A to ZZ for the row on the floor where the PM frame is located.
FRPOS		0 to 99	*Frame position.* Enter a value of 0 to 99 to specify the frame position in the row of the PM frame.
EQPEC		8D037DC	*Equipment product engineering code.* Enter a value of "8D37DC" to specify the Product Engineering Code (PEC) of the PM.
LOAD		8-character alphanumeric value	*Load name.* Enter an 8-character alphanumeric value to specify the load name given to the issue of PM software.
CSPMNO		See subfields	*C-side peripheral module.* This field consists of subfields PMTYPE and PMNO.
	PMTYPE	LGC, LTC, or RCC	*Peripheral module type.* Enter a value of "LGC," "LTC," or "RCC" to specify the type of PM to which the IPE or Remote IPE (RIPE) is attached.

Automated datafill for IPE line card (continued)

Datafilling table IPEINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	PMNO	0 to 63	*Peripheral module number.* Enter a value from 0 to 63 to specify the PM number to which this IPE or RIPE is attached.
IPEINFO		See subfields	*IPE information.* This field consists of subfields IPESELECTOR, MODULEID, and LKINFO.
	IPESELECTOR	HIPE	*IPE selector.* Enter “HIPE” to specify a host IPE selector.
	MODULEID	0 to 4	*Module ID.* Enter a value of 0 to 4 to specify the address of the IPE within its IPEC. This value should correspond with the IPE position in its IPEC, where 0 refers to the IPE shelf closest to the floor, and 4 refers to the top shelf in an IPEC equipped with four IPEs. This value should also correspond with the shelf number (subfield SHELF in IPENM field) in the key for this tuple.
	LKINFO	0 to 63	*Link information*. Enter a value of 0 to 63 to specify the LGC/LTC links on which a host IPE is assigned. This subfield appears if subfield IPESEL equals “HIPE.” The first two links are message links to the IPE. Up to six entries can be made. Enter “$” to end data entry for this table.
MRR		0 to 16	*Maximum Ringing Resource.* This field indicates the number of analog phones that the IPE's ringing generator can handle simultaneously.

Datafill example for table IPEINV

The following example shows sample datafill for table IPEINV.

MAP display example for table IPEINV

```
IPE ADNUM FRTYPE SHPOS FLOOR ROW FRPOS EQPEC LOAD CSPMNO IPEINFO MRR
------------------------------------------------------------------
IPE0  00 0 8  IPEC 11 0 B 0 8D37DC  IPE07BA  LGC  0 HIPE N (7) (5) (6)
(4)  $ 8
IPE1  01 0 9  IPEC 11 0 B 1 8D37DC  IPE07BA  LGC  0 HIPE N (3) (1) (2)
(0) $ 16
```

Automated datafill for IPE line card (end)

Translation verification tools

Automated datafill for IPE line card does not use translation verification tools.

SERVORD

Automated datafill for IPE line card does not use SERVORD.

SYSPARK

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL08 and up

SYSPARK was introduced in MSL08.

Prerequisites

SYSPARK has no prerequisites.

Description

System Park (SYSPARK) is an enhancement to the Directed Call Park (DCPK) feature. DCPK is used by a customer when the location of a called party is unknown. Currently, calls are parked against a number that is defined by a customer. The customer pages the called party to have them retrieve the parked call. The paged party accesses the telephone and dials the call park retrieve code. Next, the customer dials the address of the parking slot where the calling party is parked.

The SYSPARK feature automatically provides the SYSPARK DN for the user when the location of the called party is unknown. Directed Call Park must be assigned to a specific key on a set. The DN is displayed on the set when the user presses the DCPK key, followed by the # key. If the user enters a specific DN before pressing the # key, the systems defaults to DCPK. SYSPARK is activated when the # key is pressed without entering a DN on the keypad.

This enhancement of this feature provides the generation of the call park DN for the user. The user is delivered the DN by pressing the park key. The system automatically provides the instrument display with a system call park DN. The user can choose to use this supplied DN by pressing the park key again or can supply a different park destination DN by inputting the DN and then pressing the park key.

The retrieving phone does not need DCPK assigned to the line as long as it is in the same customer group as the system park DN.

Translations table flow

The SYSPARK translations table is table DNROUTE.

SYSPARK (continued)

The following table lists the datafill content used in table DNROUTE.

Datafill example for SYSPARK

Datafill table	Example data
DNROUTE	619 675 4400 FEAT SYSPARK 0
	619 675 4401 FEAT SYSPARK 1

Limitations and restrictions

The following limitations and restrictions apply to SYSPARK:

- Restrictions and limitations that apply to DCPK also apply to SYSPARK.
- Table DNROUTE has a limitation of 50 DNs for the SYSPARK feature.
- Table DNROUTE must be datafilled with SYSPARK DNs for this enhancement to take affect.
- Customers who currently have DCPK and sets with a display, automatically upgrade to the SYSPARK feature.

Interactions

SYSPARK has the same functionality interactions with other features as DCPK. SYSPARK is an enhancement to the DCPK feature.

Billing

SYSPARK does not affect billing.

Station Message Detail Recording

SYSPARK does not affect Station Message Detail Recording.

Datafilling office parameters

SYSPARK does not affect office parameters.

Datafill sequence

Table DNROUTE is datafilled to implement the SYSPARK feature. Table Directory Number Route (DNROUTE) lists information for writable DNs in the switch (such as a DN that identifies a route), rather than line equipment numbers (LEN).

Datafilling table DNROUTE

The following table shows the datafill specific to SYSPARK for table DNROUTE. Only those fields that apply directly to SYSPARK are shown. For

a description of the other fields, refer to the data schema section of this document.

ATTENTION

Each SYSPARK tuple contains the parking slot number and a customer group associated with the SYSPARK DN for the SYSPARK feature selector. During datafill, ensure that each DN is properly assigned to its respective customer group. Also ensure that each DN can be translated (dialed) from the customer group to which it is assigned. Failure to do so creates the potential for a user to park a call that cannot be retrieved.

Datafilling table DNROUTE (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 9999999 (1 to 7 digits)	Area code. The area code identifies a major geographical area served by the switch. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits long.
OFCCODE		0 to 9999999 (1 to 7 digits)	Office code digit register. The office code is a subregion of the area code. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits long. The office code must be specified in table TOFCNAME.

SYSPARK (continued)

Datafilling table DNROUTE (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
STNCODE		0 to 99999999 (1 to 8 digits)	Station code. The station code identifies a unique station within the terminating office (TOFC). If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be one or four digits in length. If one digit is entered, it is treated as a D-digit, where the D-digit represents the fourth digit in the format ABC-DEFG. A D-digit is given the appropriate DN result. For example, if area code 613 and office code 226 are entered, and if 5 is entered as the station code, any calls to a number beginning with 6132265 are automatically routed to the specified treatment. If 5 is the D-digit, and DNROUTE is datafilled as 613 226 5 D OPRT, any numbers for 6132265 are routed to the operator treatment as set in table TMTCNTL.
DNRESULT		see subfield	Directory number result. This field consists of subfield DN_SEL.
	DN_SEL	D, M, MEM, MM, SYN, T, or FEAT	Directory number selector. Enter one of the following required DN selectors and datafill the appropriate refinements: • D (treatment) • M (listed DN) • MEM (direct routing to trunk member) • MM (meet me conference) • SYN (synonym DN) • T (route list) • FEAT (features)

Datafilling table DNROUTE (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	FEATURE	SYSPARK	Feature selector.This subfield specifies the feature assigned to a line. Enter SYSPRK to correspond to DN_SEL to activate System Park feature. Valid entry is SYSPARK.
	PARKING_SLOT	0-49 (1 to 2 digits)	Parking slot number. Enter the appropriate parking slot number to correlate to applicable DN in fields for area code, office code, and station code. Range is from 0-49.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE  OFCCODE  STNCODE          DNRESULT
---------------------------------------------------------
619       675      4400             FEAT SYSPARK 0
```

Translation verification tools

SYSPARK does not use translation verification tools.

SERVORD

SYSPARK does not use SERVORD.

PERUSE

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL08 and up

PERUSE was introduced in MSL08.

Prerequisites

PERUSE has no prerequisites.

Description

SMDR per use billing for features allows MSL-100 CLASS providers to charge their end users on a usage basis. This feature allows MSL-100 service providers billing services similar to billing services offered by local telephone companies.

A new Station Message Detail Record (SMDR) extension record (DF09) is introduced to store the CLASS feature usage information. Option PERUSE is introduced to enable or disable the DF09 extension record.

This is done through datafill of table CUSTSMDR. The addition of PERUSE enables the generation of SMDR records for each customer group assigned this feature.

This feature delivers the following:

- The ability to generate a usage sensitive SMDR extension record (extension code #DF09) based on the same format as the per use billing records generated through the bellcore AMA format.
- A method of activating and deactivating the generation of the SMDR per use billing extension record.
- The generation of a log each time an SMDR per use billing extension record is produced.

The following features are supported by PERUSE:

- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Calling Number Delivery (CND)

- Calling Name Delivery (CNAMD)
- Dialable Directory Number (DDN)
- Calling Number Delivery Blocking (CNDB)
- Customer Originated Trace (COT)
- Distinctive Ringing/Call Waiting (DRCW)
- Selective Call Acceptance (SCA)
- Selective Call Forwarding (SCF)
- Selective Call Rejection (SCRJ)
- Deluxe Spontaneous Call Waiting Display (DSCWID)
- Bulk Calling Line Identification (BCLID)

The sections following presume that any necessary translations datafill (for example RESOFC datafill, maintenance datafill) is already present. Only the required datafill for activating the PERUSE billing feature mechanisms are described. For more information on basic datafill needed to support standard CLASS feature operation, please refer to the applicable CLASS feature datafill in this document.

An hierarchy of control levels is used to determine whether an SMDR per use billing record is generated. On a switch by switch basis, the control mechanism is the SUSP tuple in table AMAOPTS. Setting this tuple to off disables per use billing for the entire switch. Setting this tuple to on generates per use billing records along with further levels of control.

Table CUSTSMDR is the control mechanism that generates SMDR per use billing records on a customer group basis. Each customer group defined on the switch has an entry in the table. PERUSE is assigned to each customer group that generates SMDR per use billing records.

SMDR per use billing records, generated on a phone by phone or a feature by feature basis, are controlled by setting the AMA option when the applicable CLASS feature is added through SERVORD. When SUSP is turned off in table AMAOPTS, SERVORD does not present the AMA/NOAMA prompt when the applicable CLASS feature is added. The system defaults to the NOAMA entry. When SUSP is turned on in table AMAOPTS, SERVORD presents the AMA/NOAMA prompt after each CLASS feature is entered. AMA is entered and per use billing records are generated.

PERUSE (continued)

Operation

When a CLASS feature listed previously is activated, a log and a record are generated when the following conditions have been met:

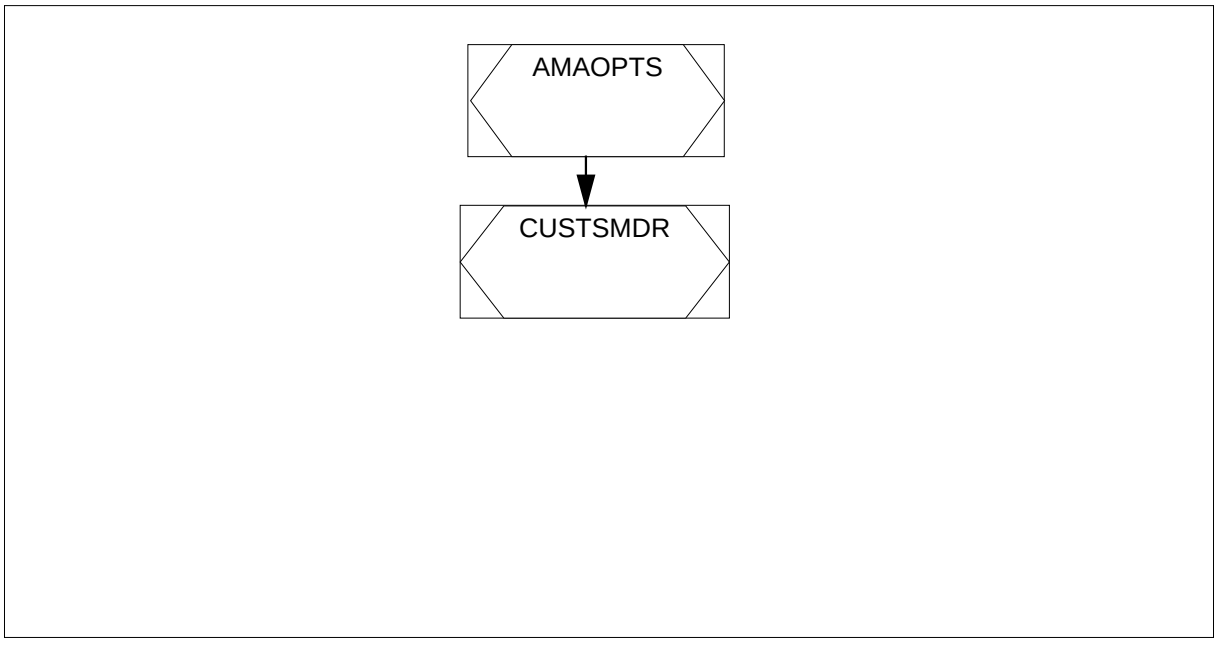
- All translations for the applicable CLASS feature has been datafilled.
- The PERUSE option is assigned to the appropriate customer group in table CUSTSMDR and the LOGS subfield is set to yes.
- SUSP option is turned on in table AMAOPTS.
- The appropriate CLASS feature is assigned to a phone that is a member of a customer group with PERUSE assigned to it.
- The applicable CLASS feature AMA/NOAMA prompt in SERVORD is set to AMA.
- A CALLDUMP is run to output the record.

Translations table flow

The PERUSE translations tables are described in the following list:

- Table AMAOPTS
- Table CUSTSMDR

The PERUSE translation process is shown in the flowchart that follows.



The following table lists the datafill content used in the flowchart.

Datafill example for PERUSE

Datafill table	Example data
AMAOPTS	SUSP ON
CUSTSMDR	BNRRCH 9
	(RAO) (ANSTIM 15) (MSN) (PIN) (TCN) (PERUSE Y) $

Limitations and restrictions

The following limitations and restrictions apply to PERUSE:

- PERUSE must be added to the appropriate customer groups in table CUSTSMDR.
- All CLASS features supported by the DF09 call extension record must have translations datafilled correctly.
- SUSP option must be turned on in table AMAOPTS.
- The applicable CLASS features must have AMA set as the billing type when added through SERVORD.
- For CND, DDN, CNAMD, DSCWID, and BCLID, the DF09 record is generated through a periodic audit of each phone that is assigned this option.
- For the SLE features SCA, SCF, SCRJ, and DRCW, the DF09 record is generated through activation or deactivation and through editing of the screening list. It is not generated for incoming calls processed by these features.
- For every other supported feature, the DF09 record is generated through feature activation.

Interactions

PERUSE uses the existing SMDR facilities for generating extension records.

Datafilling office parameters

PERUSE does not affect office parameters.

PERUSE (continued)

Datafill sequence

The following table lists the tables that require datafill to implement PERUSE. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for PERUSE

Table	Purpose of table
AMAOPTS	Automatic Message Accounting Options table controls the activation and scheduling of the recording options for automatic message accounting.
CUSTSMDR	Customer Group SMDR Option table lists the SMDR options assigned to each customer group.

Datafilling table AMAOPTS

The following table shows the datafill specific to PERUSE for table AMAOPTS. Only those fields that apply directly to PERUSE are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AMAOPTS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SUSP		ON or OFF	Subscription Usage Sensitive Pricing. This option controls SUSP. If option SUSP is off (default), no SUSP billing occurs and service order prompting for SUSP is suppressed. If the option is on, service order prompting for BILLING_OPTION is enabled and SUSP billing is enabled for the office (SUSP billing takes place on lines that have the AMA BILLING_OPTION). SUSP records are not recorded under any conditions if parameter AMA_FORMAT is NT.

Datafilling table AMAOPTS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
			SUSP is also provided for the screening list editing (SLE) features: Selective Call Forwarding (SCF), Selective Call Rejection (SCRJ), Selective Call Acceptance (SCA), and Distinctive Ringing/Call Waiting (DRCW). The usage-sensitive context here means generating billing records each time the subscriber accesses an SLE USP feature. Billing records are not generated each time a terminating call is screened by a subscriber's SLE USP feature. To enable usage-sensitive pricing (USP): feature(s) must be enabled in table RESOFC feature(s) must be assigned to a line SUSP entry in table AMAOPTS must be set to ON BILLING_OPTION prompt, displayed when adding or changing a SLE feature, must be set to AMA

Additional entries must be made in table AMAOPTS for the following CLASS features:

- Calling Number Delivery (CND)
- Dialable Directory Number (DDN)
- Calling Name Delivery (CNAMD)
- Bulk Calling Line Identification (BCLID)
- Deluxe Spontaneous Call Waiting Display (DSCWID)

CLASS display features CND, DDN, and CNAMD must have an audit schedule set through tuple CIDSUSPAUD in table AMAOPTS.

CLASS feature DSCWID must have an audit schedule set in table AMAOPTS through tuple DSCWID_CONF_AUDIT.

CLASS feature BCLID must have an audit schedule set through tuple BCLID_USPAUD in table AMAOPTS and must have the USP option set in table BCLIDGRP.

PERUSE (continued)

These entries control the interval of the switch as it audits every phone datafilled with the appropriate CLASS feature and generates a report that provides detailed delivery information.

Datafill example for table AMAOPTS

The following example shows sample datafill for table AMAOPTS.

MAP display example for table AMAOPTS

```
OPTION                                                  AMASEL
-------------------------------------------------------------
SUSP                                                      ON
CIDSUSPAUD           PERIODIC    980425    2400    24 HRS
DSCWID_CONF_AUDIT    PERIODIC    980425    0100    24 HRS
BCLID_USPAUD         PERIODIC    980425    0200    24 HRS
```

Datafilling table CUSTSMDR

The following table shows the datafill specific to PERUSE for table CUSTSMDR. Only those fields that apply directly to PERUSE are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CUSTSMDR

Field	Subfield or refinement	Entry	Explanation and action
OPTIONS		PERUSE	OPTIONS. Enter PERUSE for the appropriate customer group. This enables or disables the DF09 extension record. When PERUSE is entered, subfield LOGS must be datafilled to generate MSLSMDR 100 log.
	LOGS	Y or N	Subfield LOGS. Boolean expression. Enter Y to turn control of logs output on for MSLSMDR 100 log. Enter N to disable control of logs output for MSLSMDR 100 log.
OPTIONS		$	OPTIONS. Enter $ to end tuple transaction for this feature.
Note: Once PERUSE is assigned to the appropriate customer group, each applicable CLASS feature must have the AMA option set through SERVORD to enable the per use billing record.			

Datafill example for table CUSTSMDR

The following example shows sample datafill for table CUSTSMDR.

MAP display example for table CUSTSMDR

```
CUSTNAME   BUSNSID   OPTIONS
-----------------------------------------------------------
BNRRCH                      9
(RAO )  (ANSTIM 15)  (MSN )  (PIN )  (TCN )  (PERUSE Y) $
```

Translation verification tools

PERUSE does not use translation verification tools.

SERVORD

SERVORD limitations and restrictions

PERUSE must have each applicable CLASS feature set to AMA to enable the per use billing record output.

Meridian Cabinet Network Interface

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: NTYA05AA (MCNI initial) and NTYA05UK (field)

Release applicability

MSL11

Prerequisites

Meridian Cabinet Network Interface has no prerequisites.

Description

This feature provides the capability to datafill a C42 cabinet as a Meridian Cabinet Network Interface (MCNI) cabinet. The MCNI configuration allows up to two 32K enhanced network (ENET) shelves to be housed in the same cabinet with up to two link interface shelves (LIS). MCNI is provisioned by datafilling a new frame product engineering code (PEC) in table ENINV and datafilling a new frame type in tables ENINV and SUSHELF.

Translations table flow

The Meridian Cabinet Network Interface translations tables are described in the following list:

- Table SUSHELF contains inventories of the frame transport bus components for the link interface shelf (LIS).
- Table ENINV provides the location, equipment-type information, and C-side connection information for the ENET.

The Meridian Cabinet Network Interface translation process is shown in the flowchart that follows.

Meridian Cabinet Network Interface (continued)

Table flow for Meridian Cabinet Network Interface

The following table lists the datafill content used in the flowchart.

Datafill example for Meridian Cabinet Network Interface

Datafill table	Example data
SUSHELF	MS NIL 10 0 1 0 A 1 MCNI 1 0 NT9X72CA (7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $ (32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
ENINV	0 PRI MCNI 0 NTYA05AA NT9X0801 6 0 0 1 A 4 39 ENC11BA 7 0 0 1 A 4 13 ENC11BA

Limitations and restrictions

Meridian Cabinet Network Interface supports up to two 32K ENET shelves.

Interactions

Meridian Cabinet Network Interface has no functionality interactions.

Activation/deactivation by the end user

Meridian Cabinet Network Interface requires no activation or deactivation by the end user.

Billing

Meridian Cabinet Network Interface does not affect billing.

Datafilling office parameters

Meridian Cabinet Network Interface does not affect office parameters.

Meridian Cabinet Network Interface (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Meridian Cabinet Network Interface. The tables are lists in the order in which you enter data.

Datafill tables required for Meridian Cabinet Network Interface

Table	Purpose of table
SUSHELF	The service unit shelf table contains the frame type for the MCNI cabinet.
ENINV	The enhanced network node inventory table contains the frame type and PEC for the MCNI cabinet.

Datafilling table SUSHELF

The following table shows the datafill specific to Meridian Cabinet Network Interface for table SUSHELF. Only those fields that apply directly to Meridian Cabinet Network Interface are shown. See the *Customer Data Schema Reference Manual* for more information.

Datafilling table SUSHELF

Field	Subfield or refinement	Entry	Explanation and action
FRAMETYP		MCNI	This field identifies the frame type for the LIS cabinet. Enter MCNI for the Meridian cabinet network interface cabinet.

Datafill example for table SUSHELF

The following example shows sample datafill for table SUSHELF.

MAP display example for table SUSHELF

```
SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS
SHELFPEC CARDINFO
-------------------------------------------------------
MS NIL 10 0 1 0 A 1 MCNI 1 0 NT9X72CA (7 NT9X96AA
NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $ (32
NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL
NIL) $
```

Datafilling table ENINV

The following table shows the datafill specific to Meridian Cabinet Network Interface for table ENINV. Only those fields that apply directly to Meridian Cabinet Network Interface are shown. See the Data Schema Reference Manual for more information.

Datafilling table ENINV

Field	Subfield or refinement	Entry	Explanation and action
FRTYPE		MCNI	This field identifies the frame type for the ENET cabinet. Enter MCNI for the Meridian cabinet network interface cabinet.
FRPEC		NTYA05AA	This field contains the frame product engineering code. Enter NTYA05AA for the MCNI cabinet.

Datafill example for table ENINV

The following example shows sample datafill for table ENINV.

MAP display example for table ENINV

```
ENKEY ENCLASS FRTYPE FRNO FRPEC SHPEC MSCARD0 MSLINK0 MSPORT0 FLOOR0
ROW0 FRPOS0 SHELF0                      LOAD0 MSCARD1 MSLINK1 MSPORT1
FLOOR1 ROW1 FRPOS1 SHELF1                        LOAD1
-------------------------------------------------------------------
   0     PRI   MCNI 0 NTYA05AA NT9X0801 6       0      0       1
  A    4     39                        ENC11BA  7      0        0
    1  A      4     13                        ENC11BA
```

Translation verification tools

Meridian Cabinet Network Interface does not use translation verification tools.

SERVORD

Meridian Cabinet Netwrok Interface does not use SERVORD.

Music on Transfer

Ordering codes

Functional group ordering code: not applicable

Functionality ordering code: MSL00007

Release applicability

MSL11 and up

Prerequisites

Music on Transfer has no prerequisites.

Description

Music on Transfer (MOT) provides audio to the held party of a three way call (3WC) or call transfer (CXR) when the conference or transfer is initiated. This feature is assigned to the primary directory number (PDN) using SERVORD. MOT is controlled by datafill in tables CUSTSTN and AUDIO.

This feature provides audio on call transfers and conferences for IBN, MBS, and (integrated voice and data) IVD sets.

Operation

When caller A is transferred or conferenced by caller B to caller C, caller A is immediately connected to an audio source. When the call is completely transferred or conferenced, or the second leg is dropped by caller B, the call is re-established on the line and the audio source is terminated.

Translations table flow

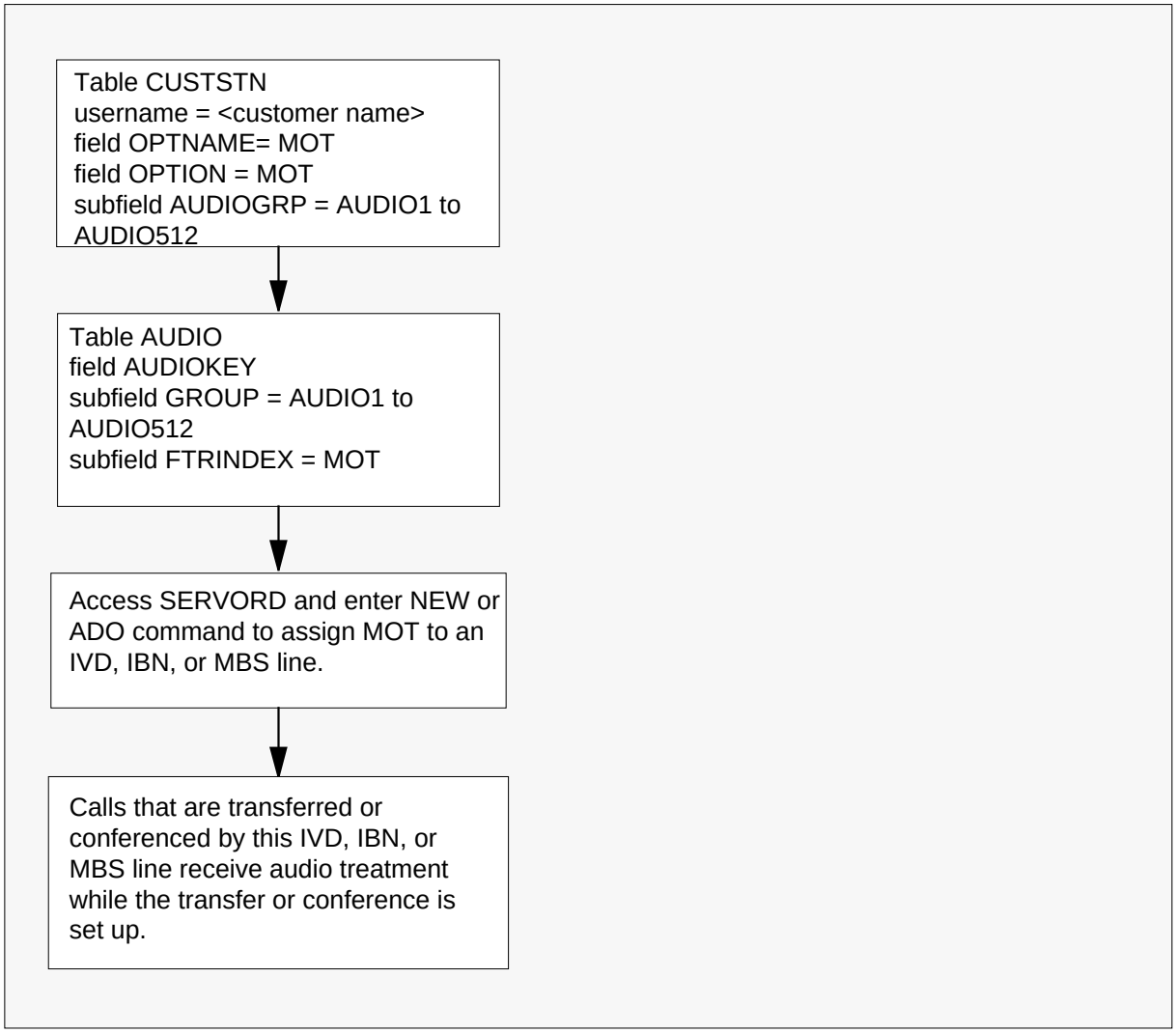
The Music on Transfer translations tables are described in the following list:

- Table CUSTSTN contains customer group data for station-dependent features.
- Table AUDIO specifies the type of broadcast made up of announcement, music, silence, ringing, repeat, or a combination of audio types.
- Table IBNLINES shows the line assignment for each IBN station number. This table is automatically datafilled when MOT is assigned to a line using the SERVORD command.
- Table KSETFEAT contains the directory numbers for business sets and IVD units. This table is automatically datafilled when MOT is assigned to a line using the SERVORD command.

Music on Transfer (continued)

The Music on Transfer translation process is shown in the flowchart that follows.

Table flow for Music on Transfer



Music on Transfer (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for Music on Transfer

Datafill table	Example data
CUSTSTN	MBSGRP1 MOT MOT AUDIO12
AUDIO	AUDIO12 MOT MUSIC AUTOAINANNC 12 $

Note: Tables IBNLINES and KSETFEAT are automatically datafilled when MOT is assigned to the line with the SERVORD command.

Limitations and restrictions

The following limitations and restrictions apply to Music on Transfer:

- This feature only provides audio to lines with the 3WC and CXR features assigned.
- If a participant in a conference call puts the the call on hold, MOT is not provided to the other conferees.
- The MOT feature must be assigned to the primary directory number (PDN) of an IBN, MBS, or IVD. If MOT is assigned to the PDN, the feature is provided for all lines on the set.
- The line must be in a customer group that is datafilled for the MOT feature. The customer group must have the MOT audio group datafilled in table CUSTSTN.
- The line must belong to a MOT audio group that is datafilled with an audio route containing a valid audio source in table AUDIO.

Interactions

The following paragraphs describe the interactions between Music on Transfer and other functionalities. All interactions assume the line is assigned MOT, 3WC, and CXR.

Flash activated features

Audio source is provided to the held party by the MOT feature as soon as the holding party flashes. The holding party can flash to activate any other feature. To activate a feature after flashing, the holding party dials the activation code for that feature. The held party receives the audio provided by the MOT feature until the holding party completes dialing the activation code. Audio is provided to the held party for a short duration while the holding party's feature is activated.

Music on Transfer (continued)

Call waiting

When a call waiting (CWT) subscriber with MOT flashes to answer a waiting call, the held party receives audio source. If the CWT subscriber flashes again to put the active call on hold and returns to the original call, audio source is removed from the first call and applied to the second call.

If the CWT subscriber on hold is receiving MOT audio source and an incoming call activates CWT indication, the CWT indication is overlaid on the MOT audio source. This continues until the call is answered or the CWT indicator times out.

If the CWT subscriber goes on hook with a party on hold, the CWT subscriber is re-rung by the call. The held party continues to receive audio while the CWT subscriber receives ringing.

CWT calls can be chained. If callers A and B are talking and both have CWT assigned to their lines, caller A can flash to answer a waiting call from caller C, and caller B receives audio. Caller B can flash to answer a waiting call from caller D. If caller A flashes back to the original call while caller B is on the call with caller D, caller A receives audio.

The held party receives audio regardless of whether the call is line-to-line or trunk-to-line.

Conference call

If a participant in a conference (CNF) call puts the conference on hold, the MOT feature does not provide audio to the other conferees.

Three way conference

If a participant in a 3WC call puts the conference on hold, the MOT feature does not provide audio to the other conferees.

Call hold

When a call hold subscriber flashes to initiate call hold, the held party is immediately provided with audio source specified by the MOT feature. When the call hold subscriber dials the call hold access code, the MOT audio source is replaced with the audio source specified by the call hold feature.

Permanent hold

When a permanent hold subscriber flashes to initiate permanent hold, the held party is immediately provided with audio source specified by the MOT feature. When the permanent hold subscriber dials the permanent hold access code, the MOT audio source is replaced with the audio source specified by the permanent hold feature.

Music on Transfer (continued)

Key set music on hold

If key set music on hold (KSMOH) is assigned to a line having MOT, KSMOH does not provide audio for 3WC or CXR held calls. Audio for 3WC and CXR calls is provided by the MOT feature.

Activation/deactivation by the end user

The following sections describe how to activate and deactivate MOT on different sets.

Activation/deactivation of Music on Transfer for IBN sets

On an IBN set with the MOT feature assigned, the subscriber performs the following steps to activate MOT (party A is assigned MOT, 3WC, and CXR.)

1. Party A establishes a call with party B.
2. Party A flashes to activate 3WC or CXR.
3. Party B is put on hold and receives audio source from specified by the MOT feature.
4. Party A dials party C.
5. Once the call on the second leg is established with party C, party A flashes again to complete the conference or hangs up to transfer the call to party B. When party B joins the conference or the transfer is complete, the audio source is removed.

Activation/deactivation of Music on Transfer for MBS and IVD sets

On MBS and IVD set with the MOT feature assigned, the subscriber performs the following steps to activate MOT (party A is assigned MOT on the PDN with 3WC and CXR assigned to a different key).

1. Party A establishes a call with party B.
2. Party A presses the 3WC or CXR key to activate 3WC or CXR.
3. Party B is put on hold and receives audio source from specified by the MOT feature.
4. Party A dials party C.
5. Once the call on the second leg is established with party C, party A presses the 3WC key again to complete the conference or presses the CXR key or hangs up to transfer the call to party B. When party B joins the conference or the transfer is complete, the audio source is removed.

Billing

Music on Transfer does not affect billing.

Station Message Detail Recording

Music on Transfer does not affect Station Message Detail Recording.

Datafilling office parameters

Music on Transfer does not affect office parameters.

Datafill sequence

Datafill the following table to implement Music on Transfer.

Datafill tables required for Music on Transfer

Table	Purpose of table
CUSTSTN	The customer group station table contains station options assigned to each customer group.
AUDIO	The audio interlude table defines the audio interlude broadcasts for audio groups and features. The broadcasts include announcement, music, silence, or ringing.

Note: Tables IBNLINES and KSETFEAT are automatically datafilled when MOT is assigned to the line with the SERVORD command.

Datafilling table CUSTSTN

The following table shows the datafill specific to Music on Transfer for table CUSTSTN. Only those fields that apply directly to Music on Transfer are shown. For a description of the other fields, refer to the data schema document.

Assigning MOT Option to a tuple in table CUSTSTN assigns the MOT option to the customer group. Adding this option defines the customer's MOT audio group. A valid audio route must be datafilled in table AUDIO for this audio group.

Datafilling table CUSTSTN (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer name. Enter the customer groups name.
OPTNAME		MOT	Option Name. This subfield specifies the option music on hold for the business set. Enter MOT.

Music on Transfer (continued)

Datafilling table CUSTSTN (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTION		MOT	Option. This subfield specifies the option music on hold for the business set. Enter MOT.
	AUDIOGRP	AUDIO1 through AUDIO512	Audio Group. This subfield defines the audio to be played for all business sets in the customer group that have option MOT. Enter the name of an audio group from table AUDIO.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN.

MAP display example for table CUSTSTN

```
CUSTNAME   OPTNAME    OPTION
_____________________________________________________
MDCGRP1    MOT        MOT                      AUDIO12
```

Datafilling table AUDIO

The AUDIOKEY field in table AUDIO consists of an audio group and a feature index. The MOT feature is added to the set of features supported by the AUDIO interlude facility with the addition of the MOT feature index in table AUDIO.

Table AUDIO has two levels of tuples. The size of level I tuples in table AUDIO is increased by one word with the addition of the MOT feature index. The maximum number of level II tuples also increases with the addition of the MOT feature.

Each tuple in table AUDIO can be datafilled with the maximum of four audio sources. If all four sources are datafilled, the party listening to the audio receives a sequence of four audio interludes with a time interval as datafilled in this tuple.

Music on Transfer (continued)

The following table shows the datafill specific to Music on Transfer for table AUDIO. Only those fields that apply directly to Music on Transfer are shown. For a description of the other fields, refer to the data schema document.

Datafilling table AUDIO

Field	Subfield or refinement	Entry	Explanation and action
AUDIOKEY		see subfields	Audio Key. This field consists of subfields GROUP and FTRINDEX.
	GROUP	AUDIO1 through AUDIO512	Group. This subfield specifies the audio group name. Enter an audio group name from AUDIO1 to AUDIO512.
	FTRINDEX	MOT	Feature Index. This subfield specifies the feature that requires a broadcast. Enter MOT.
CHOICE		ANN, MUSIC, SILENCE, RINGING, or REPEAT	Audio Choice. This field specifies the audio choice. Enter ANN for announcement, MUSIC for continuous music, SILENCE for absence of announcement or music, RINGING for ringing, or REPEAT to repeat a sequence.

Datafill example for table AUDIO

The following example shows sample datafill for table AUDIO.

MAP display example for table AUDIO

```
AUDIOKEY                                        CHOICE
_____________________________________________________________
AUDIO12   MOT           (MUSIC CWMUSICCLLI 0) $
```

Translation verification tools

Music on Transfer does not use translation verification tools.

SERVORD

This feature adds line option MOT. The SERVORD commands that can be used with this option are establish service (NEW) and add option (ADO). Option MOT can only be assigned to the PDN.

Music on Transfer (continued)

Music on Transfer can be assigned to the following set types:

- M2000
- M2100
- M2200
- M2300
- M2500
- M2600
- M3000
- M3901
- M3902
- M3903
- M3904
- M3905
- M5008
- M5009
- M5100
- M5112
- M5208
- M5209
- M5212
- M5216
- M5300
- M5312
- M5316
- PSET
- IBN

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Music on Transfer:

- MOT can only be assigned to the line when 3WC or CXR is already assigned to the line.
- A user can assign the MOT feature to a PDN using SERVORD, even if tables CUSTSTN and AUDIO are not datafilled. The MOT feature functions only when the tables are datafilled appropriately and the feature is assigned to the set using SERVORD.
- MOT can be deleted from the line when the 3WC or CXR is deleted from the line.

The following table shows line class code (LCC) compatibility with the MOT feature.

LCC compatibility for Music on Transfer

LCC	Compatible
1FR	N
1MR	N
IBN	Y
PSET	Y
ISDNKSET	N
MBS LCCs	Y
IVD	Y

Music on Transfer (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign Music on Transfer to an existing line.

SERVORD prompts for Music on Transfer

Prompt	Valid input	Explanation
DN_OR_LEN	7-digit DN or LEN	Specifies the 7-digit directory number (DN) or line equipment number (LEN) of the line to be changed. Enter the DN or LEN.
OPTKEY	1 to 69	Indicates the key on an MBS or IVD set with an assigned option. Enter a value from 1 to 69.
OPTION	MOT	Indicates the name of the option. Enter MOT.

SERVORD example for adding Music on Transfer to a new key set line

The following SERVORD example shows how Music on Transfer is added to a new key set line using the NEW command.

Music on Transfer (continued)

SERVORD example for Music on Transfer on a new key set line in prompt mode

```
SO:
>NEW
SONUMBER: NOW 99 12 29 PM
> $
DN:
> 2461006
LCC_ACC:
> M5316
GROUP:
> GRP1
SUBGRP:
> 0
NCOS:
> 0
SNPA:
> 919
KEY:
> 1
RINGING:
> Y
LATANAME:
> NILLATA
LTG:
> 0
LEN_OR_LTID:
> 00 0 00 20
OPTKEY:
> 1
OPTION:
> MOT
OPTKEY:
> $
```

SERVORD example for Music on Transfer on a new key set line in no-prompt mode

```
> NEW $ 2461006 M5316 GRP1 0 0 919 1 Y NILLATA 0  00 0 00 20 1
MOT$
```

SERVORD example for adding Music on Transfer to a new IBN line

The following SERVORD example shows how Music on Transfer is added to a new IBN line using the NEW command.

Music on Transfer (continued)

SERVORD example for Music on Transfer on a new IBN line in prompt mode

```
SO:
>NEW
SONUMBER: NOW 99 12 29 PM
> $
DN:
> 2461006
LCC_ACC:
> IBN
GROUP:
> GRP1
SUBGRP:
> 0
NCOS:
> 0
SNPA:
> 919
LATANAME:
> NILLATA
LTG:
> 0
LEN_OR_LTID:
> 00 0 06 03
OPTION:
> MOT
OPTION:
> $
```

SERVORD example for Music on Transfer on a new IBN line in no-prompt mode

```
> NEW $ 2461006 IBN GRP1 0 0 919 NILLATA 0 00 0 06 03 MOT $
```

SERVORD example for adding Music on Transfer to an existing key set line

The following SERVORD example shows how Music on Transfer is added to an existing key set line using the ADO command.

SERVORD example for adding MOT to an existing key set line in prompt mode

```
SO:
>ADO
SONUMBER: NOW 99 12 29 PM
> $
DN_OR_LEN:
> 2461006
OPTKEY:
> 1
OPTION:
> MOT
OPTKEY:
> $
```

SERVORD example for adding MOT to an existing key set line in no-prompt mode

```
> ADO $ 2461006 1 MOT $
```

SERVORD example for adding Music on Transfer to an existing IBN line

The following SERVORD example shows how Music on Transfer is added to an existing IBN line using the ADO command.

SERVORD example for adding MOT to an existing IBN line in prompt mode

```
SO:
>ADO
SONUMBER: NOW 99 12 29 PM
> $
DN_OR_LEN:
> 2461006
OPTION:
> MOT
OPTION:
> $
```

SERVORD example for adding MOT to an existing IBN line in no-prompt mode

```
> ADO $ 2461006 MOT $
```

NI-2 user access

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL09 and up

NI-2 user access was introduced in MSL09.

Prerequisites

NI-2 user access has no prerequisites.

Description

National Integrated Services Digital Network (NI-2) is a set of standards for ISDN in North America that provides uniform messaging, functions, and features in order to promote operation between switching systems provided by different equipment vendors such as Nortel Networks and Lucent.

Before NI-2, there was a wide variety of semi-proprietary implementations of ISDN. The Nortel North America (NTNA) ISDN variant was one implementation among several in the market.

As manufacturers and users of communications equipment employing ISDN Primary Rate Interfaces (PRI) migrate to NI-2 compliance, it is necessary for Nortel as a provider of public and private network switching systems to bring their implementation of ISDN PRI in compliance with NI-2 standards. This would satisfy the customers need for equipment to be able to operate between each other effectively.

The purpose of this activity is to satisfy the requirement to implement the Computing Module (CM) resident portion of NI-2 compliance that is specific to the user side of the PRI user-network interface.

There are two categories of functionality addressed:

- Basic Call
- Call-by-Call (CBC)

Basic call enables provisioning of an NIPRI trunk as user side. It automatically sets the default values for certain protocol timers on the user side. Other values than the default values are set by the user.

NI-2 user access (continued)

It also allows the craftsperson to set the Type of Number (TON) and Numbering Plan Identifier (NPI) fields of the called Party Number (CPN) information element of the SETUP message to UNKNOWN and UNKNOWN for calls outgoing from the user side.

Call-by-Call is the NI-2 term for Integrated Service Access (ISA). CBC provides InterLATA OUTWATS service which ISA cannot provide on its own.

InterLATA OUTWATS sets the length of network identification, type of network identification, network identification plan, and network identification fields of the Network Specific Facilities (NSF) information element of the SETUP message for outgoing WATS calls.

This module addresses the tables affected by this activity and provides datafill for an InterLATA OUTWATS call using the Integrated Service Access (ISA) selector.

Translations table flow

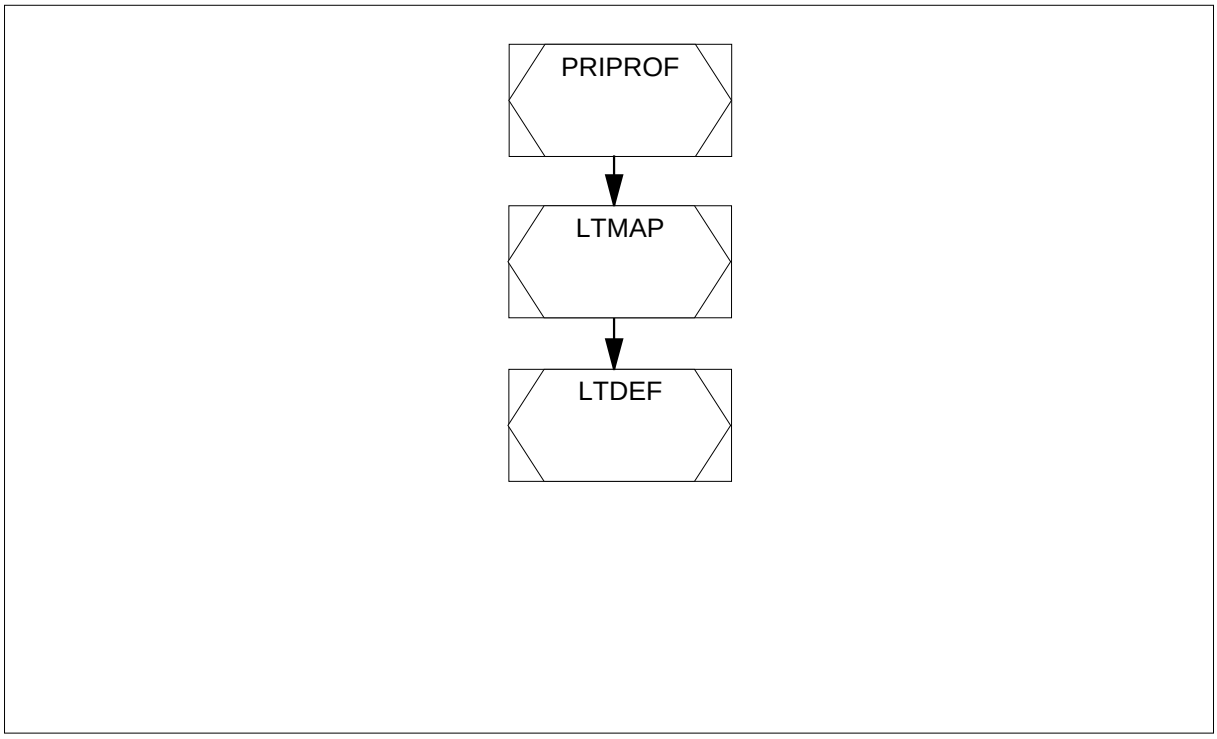
The NI-2 user access translations tables are described in the following list:

- Table PRIPROF
- Table LTMAP
- Table LTDEF

The NI-2 user access translation process is shown in the flowchart that follows.

NI-2 user access (continued)

Table flow for NI-2 user access



The following table lists the datafill content used in the flowchart.

Datafill example for NI-2 user access

Datafill table	Example data
PRIPROF	NI2PROFL NIPRI NI2V1 (UNTONNPI) $
LTMAP	ISDN 13 CLLI RCHTORTPNI2 TEI 0 $
LTDEF	ISDN 15 B PRA 25 25 4 4 NIPRI NI2V1 NI2PROFL (NOPMD) $

Limitations and restrictions

The following limitations and restrictions apply to NI-2 user access:

For all calls initiated over the user side of NI-2 PRI trunks, it is recommended the TON and NPI be set to UNKNOWN.

Interactions

The following paragraphs describe the interactions between NI-2 user access and other functionalities.

NI-2 user access (continued)

The XPM activity portion of NI-2 development addresses the required software changes to the ELI peripheral loads, currently located in the DTCI and LTCI modules. The changes incorporated into these modules allow the NI-2 user side requirements in the Central Control (CC) to function properly through the XPM peripheral.

The XPM activity also provides the following interactions for NI-2:

- ISDN PRI NI-2 user side items
- Basic call
- Calling Line Identification (Limited to calling number)
- 20 T1s per D-Channel
- D-Channel backup
- Call-by-Call (CBC)

Billing

NI-2 user access does not affect billing.

Datafilling office parameters

NI-2 user access does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement NI-2 user access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for NI-2 user access

Table	Purpose of table
PRIPROF	Primary Rate Interface Profile contains the status of function switches that were configured for a particular issue of a variant.
LTMAP	Logical Terminal Mapping Table maps logical terminals to a line equipment number (LEN) and the terminal equipment interface, depending on the logical terminal access privilege (LTAP).
LTDEF	Logical Terminal Definition identifies logical terminals and both the associated line equipment number (LEN) and the associated terminal equipment identifier (TEI).

Datafilling table PRIPROF

The following table shows the datafill specific to NI-2 user access for table PRIPROF. Only those fields that apply directly to NI-2 user access are shown.

NI-2 user access (continued)

For a description of the other fields, refer to the data schema section of this document.

Datafilling table PRIPROF

Field	Subfield or refinement	Entry	Explanation and action
PROFNAME		alphanumeric (1 to 8 characters)	Profile name. Enter a character string to represent the primary rate interface (PRI) profile name. Example: NI2PROFL.
VARINFO		see subfield	Variant information. This field consist of subfield VARIANT and refinement.
	VARIANT	NIPRI	Protocol variant. Enter NIPRI. Datafill this field to define the PRI protocol that the profile name must be associated, then datafill the refinement ISSUE. For this activity only, NIPRI is shown although other entries are available for input.
	ISSUE	NI2V1	Protocol issue. Datafill this field to define the specification issue that the PRI variant is associated. For this activity only, NI2V1 is shown although other entries are available for input. Default value is ISO 1996.
SWITCH		vector of up to 64 alphanumeric names (1 to 8 characters)	Function switch name. This field is a vector of up to 64 function switch names. Valid entries for this field are defined by specific applications. These values are dependent upon the variant and issue combination. Enter UNTONNPI. Several entries can be made by separating each entry by a space and ending the vector with a $. For this activity only, UNTONNPI is shown. Software functions for switch names that are not datafilled in this field are disabled.

Datafill example for table PRIPROF

The following example shows sample datafill for table PRIPROF.

MAP display example for table PRIPROF

```
PROFNAME       VARINFO                  SWITCH
-------------------------------------------------------
NI2PROFL      NIPRI  NI2V1             (UNTONNPI)   $
```

Datafilling table LTMAP

The following table shows the datafill specific to NI-2 user access for table LTMAP. Only those fields that apply directly to NI-2 user access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LTMAP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTKEY		see subfields	Logical terminal key. This field consists of subfields LTGRP and LTNUM.
	LTGRP	alphanumeric (1 to 8 characters)	Logical terminal group. Enter the group of the logical terminal. Example: ISDN
	LTNUM	numeric (1 to 1022)	Logical terminal number. Enter the logical terminal number within the group.
MAPPING		see subfields	Logical terminal mapping. This field consists of subfield MAPTYPE.
	MAPTYPE	CLLI or LEN	Logical terminal mapping type. Enter the type of mapping being used. Enter CLLI and datafill refinement CLLI. For this activity only the CLLI refinement is shown although LEN can be used.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the CLLI of the PRI trunk to where the logical terminal is assigned.

Note: Table LTMAP is modified to allow mapping for an NIPRI trunk who has user side specified in table TRKSGRP.

NI-2 user access (continued)

Datafilling table LTMAP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTION		TEI	Option. This field is a vector of two entries maximum. If less than two entries are required, end the list with a $. For this activity only, TEI is shown although other entries are available for input.
	TEI	0 to 63	Terminal endpoint identifier. Enter the terminal endpoint identifier that is specified for static TEI terminals.
Note: Table LTMAP is modified to allow mapping for an NIPRI trunk who has user side specified in table TRKSGRP.			

Datafill example for table LTMAP

The following example shows sample datafill for table LTMAP.

MAP display example for table LTMAP

```
LTKEY             MAPPING                          OPTION
-------------------------------------------------------------
ISDN 13  CLLI    RCHTORTPNI2                (   TEI  0) $
```

Datafilling table LTDEF

The following table shows the datafill specific to NI-2 user access for table LTDEF. Only those fields that apply directly to NI-2 user access are shown.

NI-2 user access (continued)

For a description of the other fields, refer to the data schema section of this document.

Datafilling table LTDEF (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTKEY		see subfields	Logical terminal key. This field consists of subfields LTGRP and LTNUM.
	LTGRP	alphanumeric (1 to 8 characters)	Logical terminal group. Enter the name of a group of logical terminals. Valid group names are in field GROUP of table LTGRP.
	LTNUM	numeric (1 to 1022)	Logical terminal number. Enter a number to identify the logical terminal within a group.
LTAP		B	Logical terminal access privilege. Enter the access privilege of the logical terminal. For this activity only, B is shown although other entries are available for input. B is entered for circuit switching or ISDN MFT terminals.
CLASS REF		see subfields	Class reference. This field consists of subfields LTCLASS, VARIANT, ISSUE, and PROFNAME for this activity.
	LTCLASS	PRA	Logical terminal class. This field identifies the set of services that are allowed for a logical terminal. Enter PRA.
	VARIANT	NIPRI	Protocol variant. Enter NIPRI. Datafill this field to define the PRI protocol that the profile name must be associated, then datafill the refinement ISSUE. For this activity only, NIPRI is shown although other entries are available for input.

Note: To provision a PRI trunk as NI-2, there must be an entry in table LTDEF containing a logical terminal defined for NI-2. The logical terminal must be datafilled in an LTID option in the GRPINFO field of table TRKGRP.

NI-2 user access (continued)

Datafilling table LTDEF (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	ISSUE	NI2V1	Protocol issue. Datafill this field to define the specification issue that the PRI variant is associated. For this activity only, NI2V1 is shown although other entries are available for input.
	PROFNAME	alphanumeric (1 to 8 characters)	Profile name. Enter a character string to represent the primary rate interface (PRI) profile name. An optional profile name of a profile defined in table PRIPROF that contains NI-2 specific profile information can be included.
Note: To provision a PRI trunk as NI-2, there must be an entry in table LTDEF containing a logical terminal defined for NI-2. The logical terminal must be datafilled in an LTID option in the GRPINFO field of table TRKGRP.			

Datafill example for table LTDEF

The following example shows sample datafill for table LTDEF.

MAP display example for table LTDEF

```
LTKEY    LTAP    CLASSREF
---------------------------------------------------------
ISDN  15  B PRA  25 25  4 4 NIPRI  NI2V1  NIL  (NOPMD) $
```

InterLATA, IntraLATA, and TR-601 (BANDED) OUTWATS calls and Integrated Service selector

This activity modifies the following tables to add the optional field CARRIER for use with the WATS ISA route selector in OUTWATS calls:

- HNPACONT subtable RTEREF
- OFRT
- OFR2
- OFR3
- OFR4

- IBNRTE
- IBNRTE2
- IBNRTE3
- IBNRTE4

Error messages for datafill sequence

Table CLLI must be datafilled prior to adding a new ISA route selector. If the CLLI name does not exist when the ISA route selector is added, the following message is displayed.

Error message	Explanation and action
`TYPE OF CLLI IS COMMON_LANGUAGE_NAME`	Add appropriate CLLI to table CLLI.

Table OCCINFO must be datafilled prior to adding a new WATS ISA route selector containing a CARRIER value other than $. If an error in datafill occurs due to no entry in table OCCINFO, the following message is displayed.

Error message	Explanation and action
`WARNING: THERE IS NO ENTRY FOR THE SPECIFIED CARRIER IN TABLE OCCINFO. THE CARRIER FIELD IS BEING DEFAULTED TO NIL CARRIER.`	Add appropriate name in table OCCINFO.

InterLATA OUTWATS call

For an InterLATA OUTWATS call, a valid carrier name must be entered in the CARRIER field of the WATS ISA selector. This should be the name of the carrier providing the OUTWATS service as it appears in table OCCINFO.

When the InterLATA OUTWATS call is specified, any value in the ZONE field is ignored. This is because zone or band number information is omitted from the NSF information element in the SETUP message for InterLATA OUTWATS calls.

The following table shows the datafill specific to NI-2 user access for the previous listed tables. Only those fields that apply directly to NI-2 user access

NI-2 user access (continued)

are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling tables HNPACONT subtables RTEREF, OFRT, OFR2, OFR3, OFR4 and tables IBNRTE, IBNRTE2, IBNRTE3, and IBNRTE4

Field	Subfield or refinement	Entry	Explanation and action
CARRIER		CARRIER_NAME or $	Carrier name. Enter a valid carrier name as specified in table OCCINFO with calltype InterLATA. Enter $ for no carrier and non-interLATA calltype.

The following example shows sample datafill of InterLATA OUTWATS for tables RTEREF, OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRTE2, IBNRTE3 and IBNRTE4 using table OFRT.

Datafill example for NI-2 user access in prompt mode for InterLATA OUTWATS

```
>Table: OFRT
ADD
>RTE:
998
>RTESEL:*See  Note
ISA
>OHQ , CBQ, EXP:
n
>CLLI:
RCHTORTPNI2
>CALLTYPE:
WATS
> ZONE:
0
>NPI:
E164
> DMI:
0
>CARRIER:
MCI
>RTESEL:
$
```

Note: *For the IBNRTE tables, the route selector prompt is IBNRTSEL. All other prompts remain the same.

NI-2 user access (continued)

IntraLATA OUTWATS call

For an IntraLATA OUTWATS call, an entry of $ must be entered in the CARRIER field. This indicates a non-InterLATA call type. Since the band number for IntraLATA OUTWATS call is always 0, the value 0 is entered in the ZONE field.

The following example shows sample datafill of IntraLATA OUTWATS for tables RTEREF, OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRTE2, IBNRTE3 and IBNRTE4 using table OFRT.

Datafill example for NI-2 user access in prompt mode for IntraLATA OUTWATS

```
>Table: OFRT
ADD
>RTE:
998
>RTESEL:*See  Note
ISA
>OHQ , CBQ, EXP:
n
>CLLI:
RCHTORTPNI2
>CALLTYPE:
WATS
> ZONE:
0
>NPI:
E164
> DMI:
0
>CARRIER:
$
>RTESEL:
$
```

Note: *For the IBNRTE tables, the route selector prompt is IBNRTSEL. All other prompts remain the same.

TR-601 (BANDED) OUTWATS call

For a TR-601 OUTWATS call, an entry of $ must be entered in the CARRIER field. This indicates a non-InterLATA call type. A non-zero value number is entered for the ZONE field.

NI-2 user access (end)

The following example shows sample datafill of TR-601 (BANDED) OUTWATS for tables RTEREF, OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRTE2, IBNRTE3 and IBNRTE4 using table OFRT.

Datafill example for NI-2 user access in prompt mode for TR-601 OUTWATS

```
>Table: OFRT
ADD
>RTE:
998
>RTESEL:*See  Note
ISA
>OHQ , CBQ, EXP:
n
>CLLI:
RCHTORTPNI2
>CALLTYPE:
WATS
> ZONE:
9
>NPI:
E164
> DMI:
0
>CARRIER:
$
>RTESEL:
$
```

Note: *For the IBNRTE tables, the route selector prompt is IBNRTSEL. All other prompts remain the same.

Translation verification tools

NI-2 user access does not use translation verification tools.

SERVORD

NI-2 user access does not use SERVORD.

Meridian SCAI

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL03 and up

Prerequisites

Meridian SCAI has no prerequisites.

Description

Meridian SCAI is the Meridian SL-100 application of the American National Standards Institute's (ANSI) switch computer application interface (SCAI) open architecture standard.

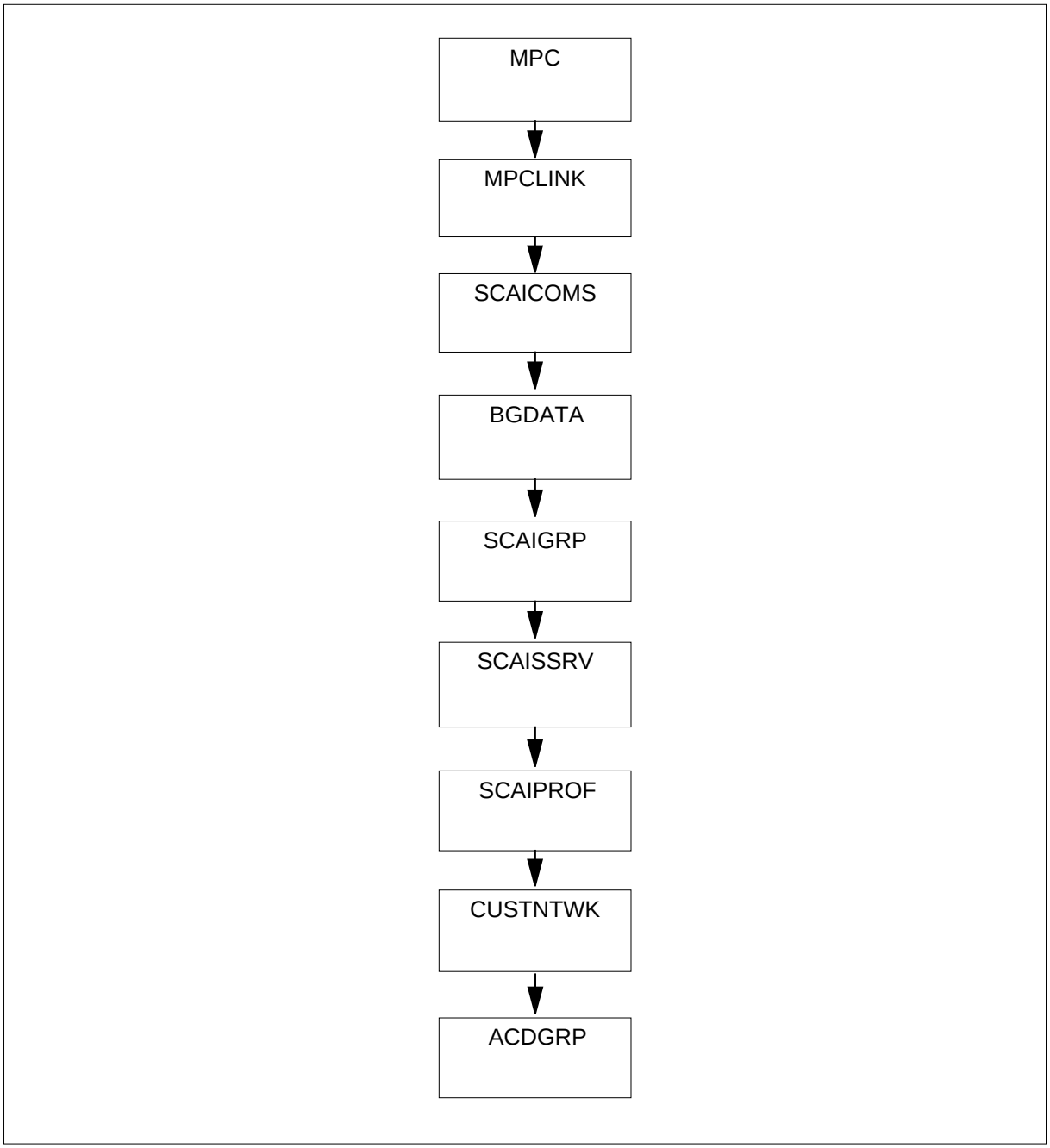
Meridian SCAI consists of both the software in a Meridian SL-100 and the intelligent link to a subscriber's business computer. Meridian SCAI technology is available to subscribers of Meridian Automatic Call Distribution (ACD) and is marketed under the name Meridian ACD Meridian SCAI Options.

Translations table flow

The Meridian SCAI translation process is shown in the flowchart that follows.

Meridian SCAI (continued)

Table flow for Meridian SCAI



Datafilling office parameters

The following table shows the office parameters used by Meridian SCAI. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Meridian SCAI (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	AUX_CPU_SHARE	Parameter gives Meridian SCAI service performance some protection when switch is heavily used. Operating company uses the parameter to manipulate CM RT for Meridian SCAI messages. The parameter adjusts maximum RT AUXCP use during call processing overload. Range: 1 to 25 (%). Default: 6 (with high-speed SMDI software). Simplified option: Set the parameter to 25.
OFCOPT	MAX_NUM_ECM_ACDEVENT	ACD line call event category includes features that provide coordinated voice and data. Messages consists of CALLQUED, CALLREL, CALLANSWR, CALLOFFR.
	MAX_NUM_ECM_ROUTING	Custom call routing category makes call redirection possible. It includes the following messages: CALLRECC and CALLREDIR.
	MAX_NUM_ECM_TPCC	Third party call control category includes the following messages: ADDPTY, MAKECALL, TRANPTY, DROPPTY, and CONFPTY.
	MAX_NUM_ECM_RESOURCE	Resource category consists of the ACDQUERY message to help the business computer keep track of Meridian SCAI traffic.
	MAX_NUM_ECM_SVC	SVC (switched virtual circuit) is synonymous with X.25 link. Each Meridian SCAI call center is permitted up to 8 links (or SVCs) for each linkset connection between switch and computer.

Note: Each of the OFCOPT parameters should not be set above 96 because that is the maximum value for the switch.

Meridian SCAI (continued)

Office parameters used by Meridian SCAI (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
	MAX_NUM_ECM_TPAC	Third party agent control gives the call center computer the ability to log agents in and out and make agents ready or not. The messages consist of the following: LOGINAGT, LOGOUTAGT, READYAGT, NREADYAGT.
OFCVAR	SCAI_CONTINUITY_AUDIT_INTERVAL	This parameter allows the operating company to schedule a Meridian SCAI continuity test. Range: 0 to 720. This means test will run every 1 to 720 minutes; 0 means no test. Default: 30. Activation: Immediate.
Note: Each of the OFCOPT parameters should not be set above 96 because that is the maximum value for the switch.		

Datafill sequence

The following table lists the tables that require datafill to implement Meridian SCAI. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Meridian SCAI (Sheet 1 of 2)

Table	Purpose of table
MPC	Table Multi-Protocol Controller tells the switch which enhanced MPC (EMPC) or MPC card is used for the Meridian SCAI link. When the call center decides to use multiple links, up to 8 are permitted for each connection between switch and computer, Northern Telecom recommends using more than one MPC/EMPC card. The names and locations of that card or cards are determined at this table.
MPCLINK	Table Multi-Protocol Controller Link specifies which of two X.25 protocol versions a specific MPC link uses. The versions are X2580 (1980 CCITT) and X2584 (1984 CCITT). Either protocol will work with Meridian SCAI. This table also defines X.25 parameters for use on the link.
SCAICOMS	Table Switch Computer Application Interface Communications defines a linkset. A linkset goes from one or more of the switch MPC/EMPC cards to the call center computer and can include up to 8 links. A linkset uses up to 8 X.25 links as its transportation medium.
BGDATA	Table Business Group Data allows multiple switches to share MDC features. The only purpose of this table for Meridian SCAI is to associate a business group ID with a customer group.

Datafill tables required for Meridian SCAI (Sheet 2 of 2)

Table	Purpose of table
SCAIGRP	Table Switch Computer Application Interface Group lists call centers with Meridian SCAI links, associating the BGID customer groups with the links. This table stores all Meridian SCAI groups, identified as SCAI groups, in a switch. Each group is assigned a password, network node ID, and linkset (from table SCAICOMS) as well as the BGID (business group ID) the group uses.
SCAISSRV	Table Switch Computer Application Interface Subservices acts as a look-up table for Meridian SCAI service categories and the messages that go in them.
SCAIPROF	Table Switch Computer Application Interface Profile defines the service profile a service ID can use. A service profile consists of a set of subservices a call center computer can use.
CUSTNTWK	Table Customer Group Network specifies that a specific customer group can use Meridian SCAI services after datafilling the ECM option. The ECM option can be added to table CUSTNTWK at any time and is not dependent upon datafill order.
ACDGRP	Table Automatic Call Distribution Group defines and describes ACD groups. For Meridian SCAI purposes, make changes to this table only if the call center needs redirection or distinctive ringing for outgoing ACD calls. A call center can program its computer so selected incoming calls and automatically redirect to another number. Distinctive ringing tells the agent the call that is ringing is an outgoing call, rather than the typical incoming call. The agent must answer to signal the computer to dial the outgoing call.

Datafilling table MPC

The following table shows the datafill specific to Meridian SCAI for table MPC. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

Table MPC identifies the MPC and Enhanced MPC (EMPC) card to the central control (CC) in the MSL-100 switch. The CC consists of data processing

Meridian SCAI (continued)

functions associated with data store and program store. In the DMS SuperNode, the CC functions take place in the central control complex.

Datafilling table MPC

Field	Subfield or refinement	Entry	Explanation and action
MPCNO		0 to 255	MPC number. Enter a unique number for the MPC/EMPC. The cards can be numbered as desired. No more than 256 cards can be installed. There is no default.
MPCIOC		0 to 12	MPC Input/Output Controller. Enter the number of the IOC on which the MPC/EMPC card sits. Up to 9 cards can be equipped on each shelf. There is no default.
IOCCCT		0, 4, 8, 12, 16, 20, 24, 28, 32	IOC circuit number. Enter circuit number of the card. Entries outside the listed range are invalid. There is no default.
EQ		1X89AA, 1X89BA	Equipment. Enter the Northern Telecom product engineering code (PEC). 1X89AA is the PEC for the MPC card; 1X89BA for the EMPC card. There is no default.
DLDFILE		alphanumeric	Download file. Enter the 8-character file name beginning with MPC, followed by 0 for the 1980 version of X.25, 4 for the 1984 version of X.25, followed by four alphanumeric characters designating the cycle number and its load designation. Software download files are interchangeable between MPC and EMPC. There is no default.

Note: The operating company or its customers must decide whether to provision Meridian SCAI with MPC or EMPC cards. During BCS34 MPC cards were manufacture discontinued. Even so, many operating companies have these cards which are effective for Meridian SCAI.

The operating company or its customers must decide whether to provision Meridian SCAI with MPC or EMPC cards. During BCS34 MPC cards were manufacture discontinued. Even so, many operating companies have these cards which are effective for Meridian SCAI.

In choosing between the MPC and EMPC card, the basic issue is how frequently the call center will use Meridian SCAI messages. The EMPC card permits greater throughput capacity. In making the decision, consider the

number of messages that will be used, keeping in mind that some messages require larger capacity than others.

Both the MPC and EMPC have two programmable data communication links and accomplishes real time savings in the switch's CM by performing low level data communications functions. Both support simultaneous operation of two, programmable RS-232 port connections. Both allow these ports to be configured at the maximum rate of 19.2 kilobits per second (kbps). The EMPC version also has alternate capacity to handle baud rates as high as 64 kbps.

Up to 256 tuples can be filled for table MPC. Tuples can be deleted only when the corresponding MPC/EMPCs are offline and all associated tuples in table MPCLINK are deleted.

Download file (DLDFILE) is the only field that can be changed in a table MPC tuple. Change other fields by deleting and re-entering the tuple.

Before entering a tuple, list the directory of the storage device where the download file is located to place the file in the user directory, where it can be recognized by the CC at the time of datafill. For example, LISTVOL can be performed on a disk volume, such as D000XPM, to list the download file. If the download file is not listed, datafill proceeds with a warning that download may fail.

Datafill table MPC before table MPCLINK. Table MPCLINK provides protocol support and link information for cards configured in table MPC.

Datafill example for table MPC

The following example shows sample datafill for table MPC. For the first entry, translations personnel assigned the call center MPC card number 3 which resides in IOC shelf number 3, using IOC circuit number 12. The card's equipment number is 1X89BA, an EMPC card. The download file is MPC036RI.

MAP display example for table MPC

```
 MPCNO    MPCIOC    IOCCCT    EQ      DLDFILE

-------------------------------------------------------
 3        3         12        1X89BA  MPC036RI
 1        2         8         1X89BA  MPC036RI
```

Meridian SCAI (continued)

Datafilling table MPCLINK

The following table shows the datafill specific to Meridian SCAI for table MPCLINK. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

Table Multi-Protocol Controller Link (MPCLINK) gives the switch's central control (CC) specific link and protocol information about the MPC/EMPC cards datafilled in table MPC. In doing so, table MPCLINK also establishes appropriate data communications parameters for MPC/EMPC links to call center computers.

Table MPCLINK has the following two fields:

- LINKKEY is a two-part key consisting of the MPC number and MPC link number.
- PRTCLDAT consists of selector subfield PROTOCOL identifying an applicable version of X.25 for Meridian SCAI customers.

The remaining subfields vary based on the protocol value entered. The fields identify the MPC data links to the CC in the same way as table MPC identifies the actual MPC hardware to the CC.

Datafilling table MPCLINK (Sheet 1 of 10)

Field	Subfield or refinement	Entry	Explanation and action
LINKKEY			Link key. This key field consists of subfields MPCNO and LINKNO.
	MPCNO	0 to 255	MPC number. Enter MPC number. The entry in field MPCNO in table MPC is identical to this number. MPCNO specifies the existing MPC card for this entry. There is no default value.
	LINKNO	0 to 3	Link number. Enter the MPC link number. The X.25 protocols support only ports 2 and 3 of the MPC card. There is no default value.
LINKALM		N	Link alarm. Enter Y to enable the MPCLINK alarm for system busy MPC links. Otherwise, enter N. Default is Y on dump and restore for pre-BCS 35.

Meridian SCAI (continued)

Datafilling table MPCLINK (Sheet 2 of 10)

Field	Subfield or refinement	Entry	Explanation and action
PRTCLDAT			MDC protocol data area. PRTCLDAT is a fixed field, with selector subfield PROTOCOL identifying one of the following X.25 versions appropriate for Meridian SCAI: X2580 (the 1980 version) or X2584 (the 1984 version).
	PROTOCOL	X2580, X2584	Link protocol data. The protocol choice must be consistent with table MPC download file. Either versions of X.25 is acceptable for Meridian SCAI. There is no default.
LINKNABL		0 to 32767	Link enable. Enter number of minutes a link is enabling before it is busied if not enabled. Value must be a multiple of 5. A zero value indicates an indefinite period. There is no default.
For PROTOCOL, X25O or X2584, first datafill fields CONVNABL, PARMS, and PARMSEL.			
CONVNABL		0 to 32767	Conversation enable. Enter number of minutes a conversation is not in service before corrective action is taken. Value must be a multiple of 5. A zero value indicates an indefinite period. There is no default.
PARMS		See subfield PARMSEL	Parameter selector. This key field consists of subfield PARMSEL.

Meridian SCAI (continued)

Datafilling table MPCLINK (Sheet 3 of 10)

Field	Subfield or refinement	Entry	Explanation and action
	PARMSEL	BAUDRATE, CLKSRCE, ELECSPEC, L2MODULO, L2WINDOW, L3ACK, L3DATA, L3MODULO, L3WINDOW, NODETYPE, NUMPVCS, PVCDBIT, SVCSIN, SVCSOUT, SVCS2WAY, THRUPUT, T_1OMS, T_1S, T2_1OMS, T3_S, T3_1OMS, T4_S, T4_10MS, N2, R20, R22, R23, R25, T20, T21, T22, T23, T25, T26 $	Parameter selector. This field is a vector field consisting of 45 parameter options. To change a parameter default value, enter the parameter option and its associated value. Parameter options for Meridian SCAI are described in the parameter options list following this section. Enter parameters as a combination of the field name and value, one at a time in any order. Enter a dollar sign ($) to terminate parameter entry or to indicate the field is not needed.
Parameter options list. Changing default values is optional. Only entries related to Meridian SCAI are listed.			

Datafilling table MPCLINK (Sheet 4 of 10)

Field	Subfield or refinement	Entry	Explanation and action
CLKSRCE		INTERNAL or EXTERNAL	Clock source. Parameter specifies source for MPC system clock. Enter INTERNAL for the MPC/EMPC card or EXTERNAL for a modem-like device. Default value is EXTERNAL. Links 2 and 3 must have the same clock source (internal or external). If a different source is datafilled for link 2 and 3, the following error message appears: `CLKSRCE for link 2 and link 3 do not match. Delete either tuple and refill both tuples with the same CLKSRCE.` If this message is received, delete and ready one tuple (link 2 or 3) using the same clock sources as the other link.
L2WINDOW		1 to 127	Frame window size. Enter size of the frame window, a reference to number of frames layer 2 software sends before requiring confirmation the first one was received. Northern Telecom recommends a frame window of 7 because it transmits data quickly. In some cases the call center cannot allow a 7 frame window. The computer and switch must agree on this parameter. The default is 2.
L2MODULO		MOD8 or MOD128	Frame level modulo counter. Parameter specifies protocol numbering for end-to-end messaging at layer 2. Modulo 8 frame sequencing (MOD8) supports a maximum layer 2 window size of 7 (subfield L2WINDOW=7). Default is MOD8.
L3WINDOW		1 to 127	Level 3 packet window. Enter packet level window size. Packet window refers to number of packets layer 3 software sends before it requiring confirmation the first one was received. Northern Telecom recommends a packet window of 7 because it transmits data quickly. In some cases the call center cannot allow a 7 packet window. Computer and switch must agree on this parameter. Default is 7 for X.25 protocol, 1980 version.

Meridian SCAI (continued)

Datafilling table MPCLINK (Sheet 5 of 10)

Field	Subfield or refinement	Entry	Explanation and action
L3MODULO		MOD8 or MOD128	Packet level modulo counter. Parameter specifies protocol numbering for end-to-end messaging at layer 3. Modulo 8 sequencing supports a maximum level 3 window size of 7. Default is MOD8.
NODETYPE		DCE	Node type or address. Enter node type or address of the MPC; DTE for data terminal equipment or DCE for digital carrier equipment. This tells the MPC that frame address of the switch is DTE or DCE. Default value is DTE.
L3DATA		P16, P32, P64, P128, P256, P512, P1024, P2048, P4096	Level 3 data packet size. Enter maximum user data bytes allowed in a data packet. Default is P128.
N2		1 to 255	Retransmission counter. Enter size of retransmission counter. A 255 value indicates no limit on counter size. Counter determines how often level 2 retransmits a frame when it receives no acknowledgement within retransmission time (subfield T1). Default is 10.
T1_S		1 to 255	Timer 1 in seconds. Enter timer value in seconds. At level 2 timer determines if the computer is responding correctly. It is used with subfield N2 where it is datafilled with the number of times a computer fails to properly acknowledging a frame. If timer exceeds the limit, link changes state and reinitializes. Timer values equal the computer DCE or DTE for local timer (subfield T_2S) accuracy.
T2_S		0 to 255	Timer 2 in seconds. Enter timer value in seconds. This timer is a guide for sending an acknowledgement for data received. Its real value must be less than the value entered in subfield T1_S or subfield T1_MS, as applicable in seconds or 10-ms units.

Datafilling table MPCLINK (Sheet 6 of 10)

Field	Subfield or refinement	Entry	Explanation and action
SVCS2WAY		0 to 255	Number of 2-way SVCs. This field specifies number of two-way SVCs configured on a link. Meridian SCAI only permits a maximum of 96 SVCs for each switch.
After completing options return to PROTOCOL entries for X25O or X2584 consisting of datafill fields EXINF, EXINFO, and DIGITS. Additional parameter options appear after the DIGITS field.			
EXINF		See subfield EXINFO	Example information protocol. This field consists of subfield EXINFO.
	EXINFO	SVCDNA or $	Example information protocol. Enter SVCDNA when using SVCs on a link. Otherwise, enter dollar sign ($) to terminate the entry. SVCDNA is the only valid entry. If SVCDNA is entered, datafill digits.
DIGITS		0 to 9 (vector of up to 15 entries)	Digits. Enter digits for network address. This number is the address of the MPC/EMPC link on the switch. When arbitrarily determined, as in this entry, make sure call center uses same numbers to datafill the computer. If using a packet switched, this number will be supplied by the network.
Additional parameter options for X2580 and X2584 PROTOCOL entries follow.			
BAUDRATE		B300, B600, B1200, B2400, B4800, B9600, or B19200	Baud rate. Enter the baud rate value (representing bits per second) for data transmission compatible for both ends of a circuit. Field BAUDRATE can only be datafilled if field CLKSRCE is datafilled as INTERNAL. Default value is B2400.
ELECSPEC		RS232 or V350	Physical link specification. Enter RS232 as the electrical specification for links 2 and 3 on the MPC (PEC 1X89AA). If using the EMPC, enter either V350 (port 1 is link 3) or RS232 (port 3 is link 3) since EMPC supports both specifications. Default is RS232.

Meridian SCAI (continued)

Datafilling table MPCLINK (Sheet 7 of 10)

Field	Subfield or refinement	Entry	Explanation and action
L3ACK		0 to 255	Level 3 packet acknowledgement. This level 3 timer is used with subfields T2_S and T2_10MS. The entry, in units of 10 ms, must be less than the values in subfields T2_S and T2_10MS (unless both are zero). Preferred value is at least 20 ms less than values datafilled in subfields T2_S and T2_10MS. This recommendation is based on the operating system timing function of the MPC card. Default value of 0 means incoming data is immediately acknowledged at level 3. Datafilling subfield L3ACK is not recommended unless a pattern of data exists and is recognized. Level 3 packet acknowledgement can impede throughput from the call center computer if used improperly. To conserve packet when subfield L3ACK is not 0, timer is started for an incoming packet in anticipation that reciprocal outgoing data can carry acknowledgement of the incoming data. Incoming data is acknowledged when L3ACK expires. If vendor X.25 software contains a packet acknowledgement timer, also set this to zero to enable immediate acknowledgement of packets received (containing Meridian SCAI messages), allowing increased data throughput.
NUMPVCS		0 to 255	Number of PVC. Enter number of permanent virtual circuits on the link. Enter 0. Meridian SCAI does not use PVCs. Default 0 when SVCS2WAY datafilled.
R20		1 to 255	Restart requests count. Parameter specifies maximum expirations of restart request timer (subfield T20). When value datafilled in T20 expires, level 3 restart request is sent, up to the value datafilled in subfield R20. Timing stops if confirmation request received. Default is 1.
R22		1 to 255	Reset requests count. Enter maximum resets before expiration of the value entered in subfield T22. Default is 1.

Datafilling table MPCLINK (Sheet 8 of 10)

Field	Subfield or refinement	Entry	Explanation and action
R23		0 to 255	Clear request retransmission count. Parameter specifies maximum number of times clear response request timer (subfield T23) can expire before clear request is sent. Enter number of clear request retransmissions sent before counter is cleared. Default is 0.
R25		0 to 255	Data retransmission count. Enter number of data retransmissions attempted before message fails. A channel is reset based on which data is unacknowledged after packet acknowledgement timer (subfield T25) expires. Default is 0.
PVCDBIT		DOFF or DON	PVC bit set. The default value is DOFF. Go with the default.
SVCSIN		0 to 255	Number of SVCs in. This field specifies number of one-way incoming SVCs configured on the link. Default 0 when SVCS2WAY datafilled.
SVCSOUT		0 to 255	Number of SVCs out. This field specifies the number of one-way outgoing SVCs configured on the link. Default 0 when SVCS2WAY datafilled.
THRUPUT		NOVALUE or an X25THRUPUTBPS value	Throughput class. Throughput class concerns outgoing data going across a link. Enter NOVALUE to accept class transmission rate entered in subfield BAUDRATE. To select a throughput class other than the default, enter one of the following X25THRUPUTBPS values: T75, T150, T300, T600, T1200, T2400, T4800, T9600, T19200, or T4800. Not applicable with external clock source (the currently established setting). Default is NOVALUE.

Meridian SCAI (continued)

Datafilling table MPCLINK (Sheet 9 of 10)

Field	Subfield or refinement	Entry	Explanation and action
T3_S		1 to 255	Timer 3 in seconds. Enter timer value in seconds. This idle channel timer determines when link is logically disconnected after the idle channel state is detected. The idle channel state is entered when one end detects no I-frames or flags are incoming on a channel from the computer. The idle channel timer value must always be greater than the inactive link timer value and greater than the timer values in subfields T1_S or T1_10MS. Ensure respective time units for these subfields are used in determining timer datafill.
T4_S		1 to 255	Timer 4 in seconds. Enter timer value in seconds. This inactive link timer is used for periodic transmission of a frame. Timer checks remote responsiveness when there is no higher level of links activity. Inactive link timer must always be less than idle channel timer value (subfields T3_S or T3_10MS) and greater than values in subfields T1_S or T1_10MS (as applicable). Ensure respective time units for these subfields determine timer datafill.
T20		1 to 255	*Restart request timer* Enter timer value in seconds. Timer determines the sending of requests to restart level 3. Default is 45.
T21		1 to 255	Call request timer. Enter timer value in seconds. Parameter times remote response to a call request packet, an activity related to establishment of an SVC. Default 60.
T22		1 to 255	Reset request timer. Enter time in seconds for remote response to a reset request. The request is sent if value entered in subfield R22 has not been exceeded. Default is 180.
T23		1 to 255	Clear request response timer. Enter timer value in seconds. Parameter times computer response to a request to clear a virtual call, an activity related to an SVC. Default is 60.

Datafilling table MPCLINK (Sheet 10 of 10)

Field	Subfield or refinement	Entry	Explanation and action
T25		0 to 255	Packet acknowledgement timer. Enter time in seconds to wait for an acknowledgement from the business computer that a level 3 packet was received. Entry of zero indicates an indefinite period. An entry of zero is invalid for protocol X2580. Default is 60.
T26		1 to 255	Interrupt response timer. Enter time in seconds. Parameter times computer response if an interrupt packet is transmitted at level 3. The default is 40.

To datafill table MPCLINK use a valid

- MPC/EMPC card
- link
- protocol combination
- group of protocol-specific fields

When datafilling parameters at the MAP a prompt continues to appear until a dollar sign is entered. Those parameters not entered retain the default values established when they are downloaded. Be sure to datafill fixed fields in table MPCLINK since these fields have no default value.

Most fields in a tuple can be changed only when the affected link is busied.

Enter the following command at the MPC level of MAP to view all link parameter values on the MPC card: QLINK linknum. Link number <linknum> specifies which link (2 or 3) is queried for parameter values. Table MPCLINK is datafilled after table MPC.

Datafill example for table MPCLINK

The following example shows sample datafill for table MPCLINK. You may notice the call center is served by two links. There can be as many as 8 links to a linkset (a bundle of links going to the same call center computer). This example illustrates a standard point-to-point configuration between switch and call center. In such a configuration, a private line makes the connection.

When datafilling for other call centers with multiple links, generally ensure that, with the exception of MPC and link number, the datafill for each is

Meridian SCAI (continued)

identical. However, sometimes the datafill cannot be the same. For example, a packet-switched network would require unique SVCDNAs for each link.

MAP display example for table <NAME>

```
LINKKEY                                          PRTCLDAT

 ---------------------------------------------------------

  3   3     N
X2580 0 0 (CLKSRCE EXTERNAL) (L2WINDOW 7) (L2MODULO
MOD8) (L3WINDOW 7) (L3MODULO MOD8) (NODETYPE DCE)
(L3DATA P128) (N2 20) (T1_S 5) (T2_S 3) SVCS2WAY 2) $
(SVCDNA 987654321) $

  1   2     N
X2580 0 0 (CLKSRCE EXTERNAL) (L2WINDOW 7) (L2MODULO
MOD8) (L3WINDOW 7) (L3MODULO MOD8) (NODETYPE DCE)
(L3DATA P128) (N2 20) (T1_S 5) (T2_S 3) SVCS2WAY 2) $
(SVCDNA 987654321) $
```

This example also illustrates a standard point-to-point configuration between the SL-100 office and the call center. In such a configuration, a private line establishes the connection.

Call centers may subscribe to a packet switched network to take advantage of the services of that configuration, which include overcoming distance limitations of point-to-point configurations. A discussion of point-to-point and packet switched configurations appears later in this chapter.

The following figure illustrates the MAP position for a link connected to a call center computer, as shown in line 13, under link 3.

Note: If physical connections are correct and if tables MPC and MPCLINK are properly datafilled, the link status identifier shows "Enabled" (which means that layers 1 and 2 are established).

MAP display example for table MPCLINK

```
      CM     MS      IOD   Net      PM       CCS    Lns      Trks    Ext
   .     .      .      .     .        .        .      .        .      .
MPC                   IOD
 0   Quit             IOC     0  1  2  3
 2   _Link_           STAT    .   .  .  .
 3   _All
 4   Listdev_  DIRP:  .   XFER:     .     DPPP: .     DPPU:   .  NOP: .
 5             SLM:   .   SCAI:   .
 6   Tst
 7   Bsy_      IOC   CARD   0     1     2     3     4     5     6     7     8
 8   Rts_       3    PORT 0123  0123  0123  0123  0123  0123  0123  0123  0123
 9   Offl_           STAT .---  .---  ....  .---  .---  .---  .---  .---  .---
 10  Qnode           TYPE DDU   MTD  CONS  MPC   CONS  MPC   MPC   MPC   MPC
 11            Card 3 Unit   3
 12                   User   SYSTEM  BOARD  LINK0  LINK1 LINK2  LINK3
 13  Qmpc_            Status Ready  COMPACT  UNEQ   N/A   UNEQ   ENABLD
 14  Qlink_
 15  Qconv_
 16  Revive_   CARD:
 17  Downld_
 18
    A120
  Time  09:57  >
```

Datafilling table SCAICOMS

The following table shows the datafill specific to Meridian SCAI for table SCAICOMS. Only those fields that apply directly to Meridian SCAI are shown. The examples only includes datafill for one link in one linkset. For a description of the other fields, refer to the data schema section of this document.

The operating company uses table Switch Computer Application Interface Communications (SCAICOMS) to define the links contained in a linkset. A linkset runs between a call center computer and the MPC/EMPC card in the MSL-100 switch.

Table SCAICOMS gives the switch such information as

- how many links each call center has for each linkset
- switch location of these links, MPC/EMPC card and link number

Meridian SCAI (continued)

- remote destination network address (REMDNA) of the call center computer
- protocol, also known as X.25 user data, the computer uses for receiving and sending information to and from the switch

When table SCAICOMS is successfully datafilled an X.25 link is established between switch and call center. An X.25 link is often associated with Meridian SCAI and some assume incorrectly that an X.25 link is a Meridian SCAI link. Rather an X.25 link means layer 3, the network layer, of a 7 layer process has been reached.

Each linkset can provide a call center with up to 8 active links, synonymous with switched virtual circuits (SVC) and X.25 links. The 8 links can automatically share call load and provide redundancy from link to link. Meridian SCAI messages travel round-robin on multiple links according to a pre-established order. Hard coding insures each call begins and ends on the same link.

Datafill tables MPC and MPCLINK before table SCAICOMS. Minimum size is 0 tuples. Maximum size is 255 tuples.

Datafilling table SCAICOMS (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LINKSET		Alphanumeric up to 16 characters	Linkset name. Enter linkset name. It is more reliable if every link in a linkset does not share the same MPC card or even the same IOC.
SCAILINKS		See subfields	SCAI links. This field is composed of subfields LNKSEL, DEVICE, MCNO, LINK, REMDNA, PROTOCOL, and LINKTYPE.
	LNKSEL	X25	Link selector. Enter X25, the only transport protocol used. (Do not type a period when entering X25.)
	DEVICE	MPC	Device. Enter the device that supports the controller. Only the MPC (or EMPC) is supported. (Even if using an EMPC, enter MPC.)
	MPCNO	0 to 255	MPC number. Enter the MPC number used, as defined in table MPC.
	LINK	2 to 3	Link number. Enter the MPC link, datafilled in table MPCLINK for each link in each linkset.

Datafilling table SCAICOMS (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	REMDNA	up to 15 digits from 0 to 9	Remote data network address. Enter the remote calling data network address (REMDNA), using digits from 0 to 9. This gives the switch the electronic (logical) address of the customer's computer. If the Meridian SCAI link is a direct, dedicated line between switch and computer, a formal address is not necessary. An arbitrary number, such as 123456789 is acceptable. The REMDNA datafilled at the switch must match the REMDNA the customer selects for the computer when datafilling it at the call center. Also, the same REMDNA is not suitable for more than one call center computer. If the call center uses a packet-switched network, the network supplies a REMDNA that switch and computer must use. Remind the customer to allow time to apply for the service and obtain the REMDNA.

Meridian SCAI (continued)

Datafilling table SCAICOMS (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	PROTOCOL	0 to 255	Protocol. Enter protocol-specific data. The MPC/EMPC reads the first 4 digits of this information which may consist of as many as 16 digits. In X.25 terminology this information is called user data. Of the four major computer vendors who provide Meridian SCAI application programming interface (API), only International Business Machines (IBM) has hard coded its user data so that it is consistently the same. IBM's protocol is 0 0 0 0. The other major API providers, Digital, Hewlett-Packard, and Tandem, give their customers the option to change protocols from call center to call center. It is necessary to find out the user data entered in the call center's computer so that it can be datafilled here in table SCAICOMS. Nortel Networks suggests planning for this datafill with advanced coordination between call center and operating company.
	LINKTYPE	SVC	Virtual circuit type. Enter switched virtual circuit (SVC). Only one SVC can be engineered per link.

Datafill example for table SCAICOMS

The following example shows sample datafill for table SCAICOMS.

MAP display example for table SCAICOMS

```
LINKSET                                          SCAILINKS
 ------------------------------------------------------
LINKSET1 X25 (MPC 3 3 123456789 0 0 0 0 SVC)
             (MPC 1 3 123456789 0 0 0 0 SVC)$

LINKSET2 X25 (MPC 2 2 929394959 1 1 1 1 SVC)
             (MPC 0 3 929394959 1 1 1 1 SVC)$
```

To establish a data session with the switch, the computer must first begin the process of setting up a switched virtual circuit with the switch. An application session set up through layer 7 starts the process of setting up an SVC session.

SVCs are set up with a level 3 Call_Request packet and its acceptance as shown when the L (for link) appears in line 10 of the following figure.

MAP display example for table SCAICOMS

```
      CM     MS      IOD   Net      PM       CCS    Lns      Trks    Ext
   .     .      .      .     .        .        .      .        .      .
SCAIX25              IOD
 0   Quit            IOC     0  1  2  3
 2   Post_           STAT    .  .  .  .
 3   Query_
 4   Clear_   DIRP:    .   XFER:     .     DPPP: .     DPPU:   .   NOP: .
 5            SLM:     .   SCAI:   .
 6   Scaitest
 7             MPC:      3      LINK:      3
 8
 9              SE:  01
10              ST:  .L
11                   __
12
13              Post  3  3
14
15
16
17  _SESSION
18  _ALARM
   A120
 Time  09:57  >
```

Error messages for table SCAICOMS

When a parameter in table OFCOPT is not set at a value high enough to meet the datafill requirements, an error message appears. For example, consider what happens if values of table OFCOPT are not sufficient and translations personnel try to add the following tuple to table SCAICOMS: `SIDE0_L1 X25 MPC 0 2 02412123 1 1 1 1 SVC $`.

The following two message lines appear:

- `In use levels in tables SCAICOMS/SCAIPROF exceed office limits.`
- `Office limit for SVCs exceeded.`

Multiple links

A BCS35 feature SCAI Link Reliability (AR0047) gave Meridian SCAI software the ability to use multiple links (called a linkset) for one Meridian SCAI session. In each linkset tuple of table SCAICOMS, up to 8 link

Meridian SCAI (continued)

definitions are allowed for a linkset. As becomes apparent in table SCAIGRP, also allowed is multiple linksets, as many as 8, each serving the same call center computer and each able to carry up to 8 links.

Each session, for each linkset, may use a different Meridian SCAI profile. However, all links in a given linkset have the same Meridian SCAI profile.

Switch-to-link configurations

Two methods exist for configuring the connection between switch and call center. These methods are point-to-point and packet-switched configuration and are shown in the following figures, “Point-to-point configuration,” and “Packet-switched network configuration.” Nortel Networks does not express any preference between these two configurations. Each has its advantages.

Point-to-point is relatively easy to install and troubleshooting is made easier because the operating company controls all switch-to-computer connections.

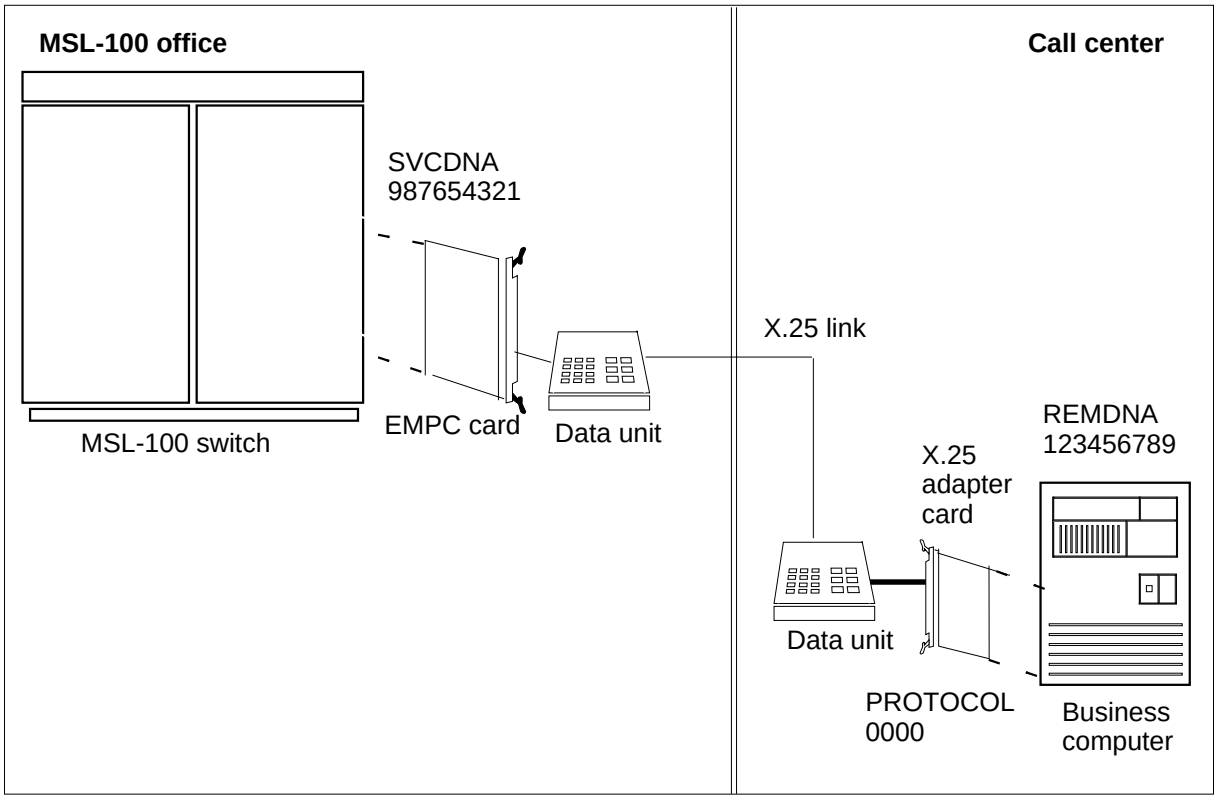
Translations questions for the SVCDNA tuple in table MPCLINK and the REMDNA tuple in table SCAICOMS can be provided easily by translations personnel. An arbitrary number for each tuple is acceptable as long as it remains unique and the call center is aware of the switch's datafill.

Packet-switched networks overcome the distance limitations of point-to-point. (Consult with your Nortel Networks representative for details.) Packet-switched networks also can provide cost and efficiency benefits under the right circumstances.

In a packet-switched network, the network supplies its own address information for switch SVCDNA and computer REMDNA. The network's exact address information must be supplied and then datafilled in the switch and computer. Before datafilling the switch, allow enough time to obtain the addresses from the network.

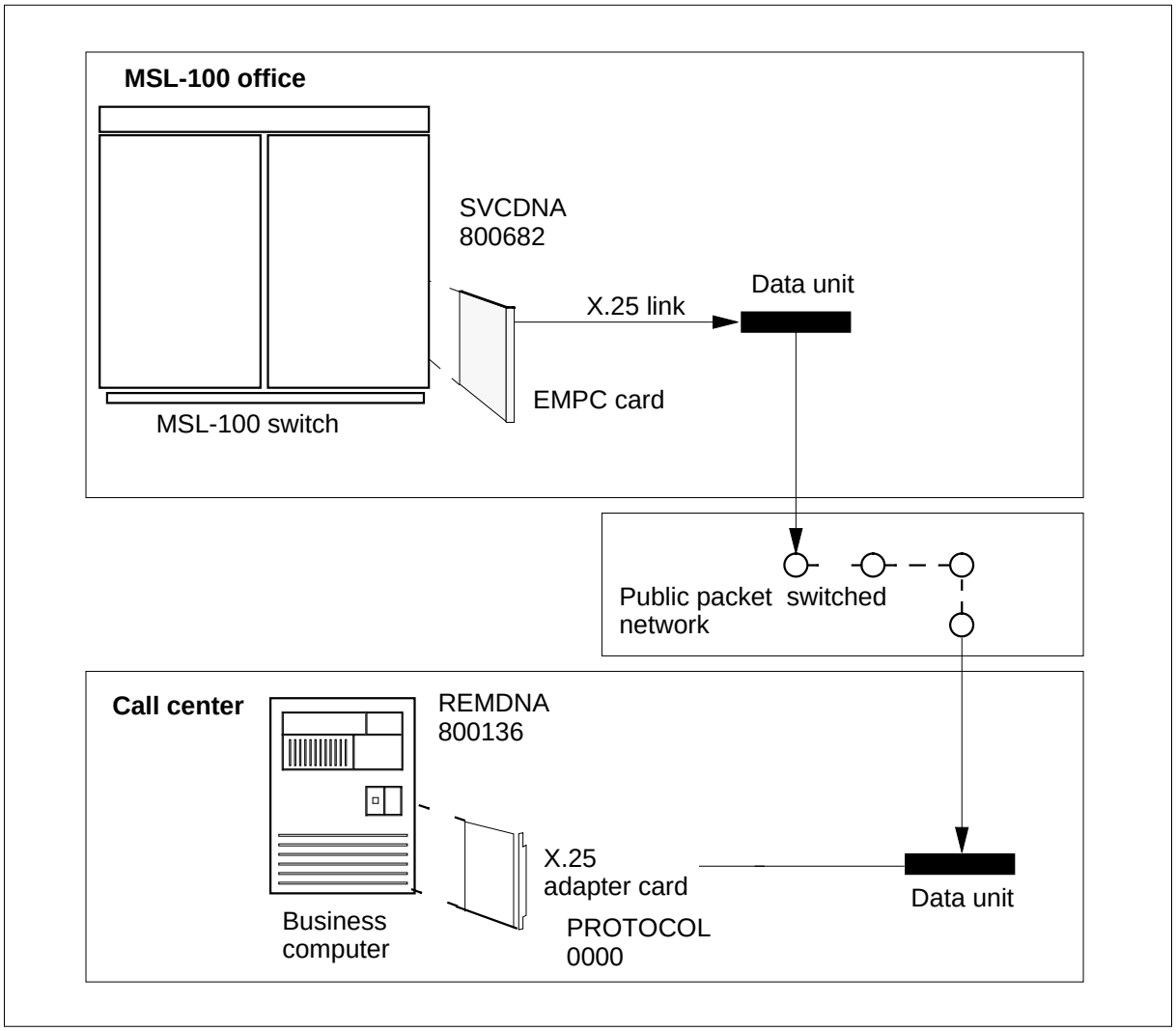
The protocol information shown in “Point-to-point configuration” and “Packet switched network configuraiton” does not vary from configuration to configuration. Be sure to emphasize to the call center the importance of obtaining this protocol/user data. The call center computer's protocol may be difficult to obtain easily. Allow time for the call center to contact its supplier, vendor, or systems integrator and obtain the information.

Point-to-point configuration



Meridian SCAI (continued)

Packet switched network configuration



Datafilling table BGDATA

The following table shows the datafill specific to Meridian SCAI for table BGDATA. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

Table Business Group Data (BGDATA) stores information about multiswitch business groups (MBGs). For Meridian SCAI, this table is import because it makes it possible for a call center to obtain a business group identifier (BGID).

Without a BGID, a call center computer cannot log on to a Meridian SCAI session.

Datafilling table BGDATA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
BGID			Business group identifier. This field consists of subfields LOCATION and GRPNUM.
	LOCATION	LOCAL or NATIONAL	Business group location. Enter business group location identifier: LOCAL or NATIONAL.
	GRPNUM	0 - 4,194,303	Business group number. Enter the business group number from 0 to 4,194,303.
BGXLA		$	Digit translator mapping structure. This field is being investigated for future use. Enter a $ to satisfy table editor.
OPTIONS		CUSTGRP	Options. Enter CUSTGRP.
When CUSTGRP is entered, datafill the following subfields:			
	CUSTGRP	1 to 16 character	Customer group. Enter the 1 to 16 character customer group name.
	MBG	N	Multiswitch business group services. Enter Y so all customer group lines can access MBG features. Otherwise, enter N. Field is not applicable to Meridian SCAI.
	NUMLINES		Number of MBG lines. This read only field displays the number of primary DNs in a customer group. Secondary DNs do not count as MBG lines. If no number appears, enter 0.
	INTRAGRP	Y or N	Intragroup. Enter Y or N. Field is not applicable to Meridian SCAI.
	LSCFN	0	Line screening code flag number. Enter the LSCFN of the party using the MBG trunk. The LSCFN is mapped into a group of line screening codes by table LCSFLAGS. Field is not applicable to Meridian SCAI. Entry range is 0 to 255. Enter 0.

Meridian SCAI (continued)

Datafilling table BGDATA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	LSCINCPT	0	Line screening code flexible intercept. Use LSCINCPT to specify treatment when MBG trunk access is blocked. Field is not applicable to Meridian SCAI. Range is 0 to 63. Enter 0.
	CONTMARK	$	Continuation mark. Enter $ to mark the end of the options to a specific tuple. Enter $.

Datafill example for table BGDATA

The following example shows sample datafill for table BGDATA.

MAP display example for table BGDATA

```
   BGID
                                                  BGXLA
                                                 OPTIONS
-------------------------------------------------------
LOCAL    4118
                                                      $
            (CUSTGRP    WELL_RUN N 329 Y 0 0)$
LOCAL    9901
                                                      $
            (CUSTGRP    HAPPY_CORP N 22 Y 0 0)$
```

Datafilling table SCAIGRP

The following table shows the datafill specific to Meridian SCAI for table SCAIGRP. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema section of this document.

Table SCAIGRP stores all SCAI groups within a switch. SCAI groups are associated with a set of Meridian SCAI links and services. Each SCAI group corresponds to a Meridian Digital Centrex (MDC) customer group. The operating company defines the SCAI groups.

Meridian SCAI (continued)

By datafilling table SCAIGRP, the operating company defines each SCAI group and assigns it the following information:

- password—a unique character string with a up to 8 characters. The call center must use this password to establish or associate a session.
- network node ID—identifies network node the operating company assigns to a SCAI group. Call center must specify this parameter to establish or associate a session. Except as a means of identification for Meridian SCAI groups this field serves no other current purpose. The field is reserved for possible future use.
- business group ID (BGID)—maps each business group (defined in table BGID) to a SCAI group. When associating a session, the call center sets up the context and verifies the validity of association. Since logon specifies BGID, mapping between BGIDs and SCAI groups is necessary.
- linkset—used by the SCAI group and defined in table SCAICOMS.

Note: One SCAI group's password cannot be assigned to another group.

Datafilling table SCAIGRP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SCAIGNAM		1 to 16 character name	SCAI group name. Enter the 1 to 16 character name of the SCAI group.
PASSWORD		up to eight characters	Password. Assign a password (a string of up to eight characters) to a SCAI group to use at a Meridian SCAI session association.
NETNODID		0 to 32767	Network node ID. Enter network node ID for each SCAI group to specify at Meridian SCAI session association. Range is 0 to 32767. This field serves no other purpose except to establish a datafill requirement that must be met by the call center computer when logging in. Otherwise, this field is reserved for future use.
BGID		See subfields	Business group ID. Enter business group ID associated with a Meridian SCAI group.
	LOCATION	alphanumeric	Location. Enter LOCAL or NATIONAL designation for the BGID (from table BGDATA).

Meridian SCAI (continued)

Datafilling table SCAIGRP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	GRPNUM	0 to 4,294,967,295	Group number. Enter business group number (0 to 4,294,967,295) datafilled in table BGDATA.
OPTIONS		LINKSET	Options. Enter LINKSET.
	LINKSET	link set name	Link set name. Enter the link set name (from table SCAICOMS). As many as 8 linksets can be entered, but they must be datafilled in table SCAICOMS before being entered here.
CONTMARK		$	Continuation mark. Enter a $ sign to indicate the end of a tuple or the end of a table.

Datafill example for table SCAIGRP

The following example shows sample datafill for table SCAIGRP.

MAP display example for table SCAIGRP

```
SCAIGNAM PASSWORD  NETNODID BGID     OPTIONS
 ------------------------------------------------
 SCAIGRP1 1234       1   LOCAL  4118 (LINKSET (SET1)
 (SET2)) $
```

Datafilling table SCAISSRV

The following table shows the datafill specific to Meridian SCAI for table SCAISSRV. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema section of this document.

Table Switch Computer Application Interface Subservice (SCAISSRV) lists the following:

- categories for Meridian SCAI messages
- the messages themselves
- parameter settings for each message

Meridian SCAI (continued)

With Meridian SCAI messages, DV stands for data and voice. C refers to a message from switch to business computer requiring a RETURN_RESULT confirmation. U refers to a message not requiring confirmation. Messages from computer to switch do not have a trailing letter C or U, but may still require confirmation.

Return messages are also sent by the business computer when a response is called for. The switch acceptance reply is RETURN_RESULT.

If the switch (or computer) does not accept, the reply is RETURN_ERROR or REJECT (the switch cannot understand the message) and the reply contains a reason for the return or rejection.

The fixed subservices described in the following table is used for reference in table SCAIPROF in establishing a service profile. A fixed subservice functions as a default and cannot be changed. If a customer wants a customized subservice, use the ADD command. A customized subservice can then appear in table SCAIPROF.

For customized datafill, sending some messages and datafilling some parameters, use the ADD command to create new customized subservices. Use these subservices in the profile sent to the computer.

To datafill existing Meridian SCAI groups do the following:

- List each Meridian SCAI group linkset and the messages in each linkset.
- Find table SCAISSRV subservice names with messages to which the call center subscribes.
- If you cannot find the desired mix of messages, enter new subservices to include desired messages and parameters.
- List table SCAISSRV subservice names which reflect your revisions.
- In table SCAIPROF (see chapter 10 of this guide) enter linkset and all subservice names required for each linkset.

Meridian SCAI (continued)

Table SCAIPROF uses subservice names defined in table SCAISSRV to build a service profile of the messages available to a subscriber linkset during a Meridian SCAI session.

Datafilling tableSCAISSRV (Sheet 1 of 11)

Field	Subfield or refinement	Entry	Explanation and action
SUBSERV			Subservice profile name. The fixed subservice profiles are included in the operating company's software load. Datafill the messages in each profile before going on to the next profile.
SPROFILE		See subfields.	Subservice profile contents. This field consists of subfield CATEGORY.
	CATEGORY		Service category. Meridian SCAI service categories: • ACDEVENT (ACD line call event) • ROUTING (custom call routing) • TPCC (third party call control) • RESOURCE (resource category) • TPAC (third party agent control)
For service category ACDEVENT, there are up to eight Meridian SCAI messages.			
ACDEVENT		CALLQUED CALLREL CALLANSWR CALLOFFR AGTLGDIN AGTLGDOUT AGTREADY AGTNREADY	Enter up to eight messages, datafilling the parameters on each message before going on to the next.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.
The switch uses the DV_CALL_QUEUED_U message to tell the business computer first that the switch is placing a call in the ACD group's call queue and second that it is giving the computer information about the call. This gives the computer time to generate a screen display even before an agent is selected. Datafill the CALLQUED message in the following way:			

Datafilling tableSCAISSRV (Sheet 2 of 11)

Field	Subfield or refinement	Entry	Explanation and action
ACDEVENT	NCALLID/ CALLQUED	Y or N	Network call identification. Parameter identifies call in the customer's network. Enter Y to include parameter in the message. If set to N, switch cannot track Meridian SCAI messages.
	ACDDN/ CALLQUED	Y or N	ACD directory number. Parameter shows primary or supplementary ACD DN associated with a call. Enter Y to include parameter.
	CALLNGNO/ CALLQUED	Y or N	Calling number. Parameter shows calling line DN. Enter Y to include parameter. If not, enter N.
	CHARGENO/ CALLQUED	Y or N	Charge number. Parameter is 10-digit operating company charge number (ANI) associated with a call. Enter Y to include parameter.
	CALLTYPE/ CALLQUED	Y or N	Call type. Enter Y to include parameter in the message. If not, enter N.
	ORIGDN/ CALLQUED	Y or N	Original ACD DN or non-ACD DN. Parameter gives DN of an ACD group or non-ACD phone that originally received a transferred, overflowed, or redirected call. Enter Y to include parameter. If not, enter N.
	PREVAPPL/ CALLQUED	Y or N	Previous application identification. Enter Y to include parameter in the message. If not, enter N.
	HOSTCALD/ CALLQUED	Y or N	Host call data. Enter Y to include the parameter. If not, enter N.
	ACDGROUP/ CALLQUED	Y or N	ACD group. Parameter identifies primary ACD DN of the ACD group. Enter Y to include the parameter.
	FWDPARTY/ CALLQUED	Y or N	Forwarding party. Parameter contains information on the first and last forwarding party. Enter Y to include the parameter.
This DV_CALL_RELEASED_U message from the switch tells the business computer when the agent disconnects from an inbound or outbound ACD call or when an ACD call is redirected, overflows, or is abandoned by the caller. Datafill the CALLREL message in the following way:			

Meridian SCAI (continued)

Datafilling tableSCAISSRV (Sheet 3 of 11)

Field	Subfield or refinement	Entry	Explanation and action
ACDEVENT	NCALLID	Y or N	Network call identification. Parameter identifies call in a customer's network. Enter Y to include parameter. If set to N, switch cannot track Meridian SCAI messages.
	ACDDN	Y or N	ACD directory number. Parameter shows primary or supplementary ACD DN associated with a call. Enter Y to include parameter.
	RELTYPE	Y or N	Release reason. Parameter tells why a call was released. Enter Y to include parameter. If not, enter N.
	ACDGROUP	Y or N	ACD group. Parameter identifies the primary ACD DN of the ACD group. Enter Y to include the parameter.
	DEVICEID	Y or N	Device identification. Parameter gives agent position or non-ACD station releasing call. Enter Y to include this parameter. If not, enter N.
The switch uses this DV_CALL_ANSWERED_U message to tell the business computer that an ACD agent has answered a Meridian SCAI call. The message also provides call-related information, such as the calling number. Datafill the CALLANSWR message in the following way:			
ACDEVENT	NCALLID/ CALLANSWR	Y or N	Network call identification. Parameter identifies call in a customer's network. Enter Y to include the parameter. If set to N, switch cannot track Meridian SCAI messages.
	DEVICEID/ CALLANSWR	Y or N	Device identification. Parameter identifies agent position or non-ACD station releasing a call. Enter Y to include parameter. If not, enter N.
	ACDDN/ CALLANSWR	Y or N	ACD directory number. Parameter shows primary or supplementary ACD DN associated with a call. Enter Y to include parameter.
	CALLNGNO/ CALLANSWR	Y or N	Calling number. Parameter shows calling line DN. Enter Y to include parameter. If not, enter N.
	CHARGENO/ CALLANSWR	Y or N	Charge number. Parameter is 10-digit operating company charge number (ANI) associated with a call. Enter Y to include parameter.

Datafilling tableSCAISSRV (Sheet 4 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	CALLTYPE/ CALLANSWR	Y or N	Call type. Enter Y to include parameter in the message. If not, enter N.
	ORIGDN/ CALLANSWR	Y or N	Original ACD DN or non-ACD DN. Parameter gives DN of an ACD group or non-ACD phone that originally received a transferred, overflowed, or redirected call. Enter Y to include parameter. If not, enter N.
	PREVAPPL/ CALLANSWR	Y or N	Previous application identification. Enter Y to include parameter in the message. If not, enter N.
	HOSTCALD/ CALLANSWR	Y or N	Host call data. Enter Y to include the parameter. If not, enter N.
	ACDGROUP/ CALLANSWR	Y or N	ACD group. Parameter identifies primary ACD DN of the ACD group. Enter Y to include the parameter.
	FWDPARTY/ CALLANSWR	Y or N	Forwarding party. Parameter contains information on the first and last forwarding party. Enter Y to include the parameter.
The switch uses DV_CALL_OFFERED_U to tell the business computer an agent is selected for a call. The message gives call-related information, such as the calling number, so the computer can look up and send the agent a data screen. Datafill the CALLOFFR message in the following way:			
ACDEVENT	NCALLID/ CALLOFFR	Y or N	Network call identification. Parameter identifies call in a customer's network. Enter Y to include the parameter. If set to N, switch cannot track Meridian SCAI messages.
	DEVICEID/ CALLOFFR	Y or N	Device identification. Parameter identifies agent position or non-ACD station releasing a call. Enter Y to include parameter. If not, enter N.
	ACDDN/ CALLOFFR	Y or N	ACD directory number. Parameter shows primary or supplementary ACD DN associated with a call. Enter Y to include parameter.
	CALLNGNO/ CALLOFFR	Y or N	Calling number. Parameter shows calling line DN. Enter Y to include parameter. If not, enter N.

Meridian SCAI (continued)

Datafilling tableSCAISSRV (Sheet 5 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	CHARGENO/ CALLOFFR	Y or N	Charge number. Parameter is 10-digit operating company charge number (ANI) associated with a call. Enter Y to include parameter.
	CALLTYPE/ CALLOFFR	Y or N	Call type. Enter Y to include parameter in the message. If not, enter N.
	ORIGDN/ CALLOFFR	Y or N	Original ACD DN or non-ACD DN. Parameter gives DN of an ACD group or non-ACD phone that originally received a transferred, overflowed, or redirected call. Enter Y to include parameter. If not, enter N.
	PREVAPPL/ CALLOFFR	Y or N	Previous application identification. Enter Y to include parameter in the message. If not, enter N.
	HOSTCALD/ CALLOFFR	Y or N	Host call data. Enter Y to include the parameter. If not, enter N.
	ACDGROUP/ CALLOFFR	Y or N	ACD group. Parameter identifies primary ACD DN of the ACD group. Enter Y to include the parameter.
	FWDPARTY/ CALLOFFR	Y or N	Forwarding party. Parameter contains information on the first and last forwarding party. Enter Y to include the parameter.
DV_AGENT_LOGGED_IN_U is sent by the switch to the computer when an ACD agent position requests a login and it has been completed. Datafill the AGTLGDIN message in the following way:			
ACDEVENT	ACDGROUP	Y	ACD group. Enter Y to select the ACD group option.
	POSID	Y	Position identification. Enter Y to indicate selection of a position identification.
	LOGINID	Y	Log in identification. Enter Y to indicate selection of a log in identification.
The switch sends the computer a DV_AGENT_LOGGED_OUT_U message when an agent position requests logout and it has been completed. Datafill the AGTLGDOUT message in the following way:			
ACDEVENT	ACDGROUP	Y	ACD group. Enter Y to select the ACD group option.

Datafilling tableSCAISSRV (Sheet 6 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	POSID	Y	Position identification. Enter Y to indicate selection of a position identification.
The switch sends the computer DV_AGENT_READY_U when an agent position's request for availability to receive ACD calls is complete. Datafill the AGTREADY message in the following way:			
ACDEVENT	ACDGROUP	Y	ACD group. Enter Y to select the ACD group option.
	POSID	Y	Position identification. Enter Y to indicate selection of a position identification.
The switch sends DV_AGENT_NOT_READY_U to the computer when an agent's request not to be available to receive ACD calls is complete. Datafill the AGTNREADY message in the following way:			
ACDEVENT	ACDGROUP	Y	ACD group. Enter Y to select the ACD group option.
	POSID	Y	Position identification. Enter Y to indicate selection of a position identification.
	WALKAWAY	N	Walkaway. Enter N. Parameter is not subscribed to in this table. Parameter is ACD option not datafilled by default.
For service category ROUTING, there are up to two Meridian SCAI messages.			
ROUTING		CALLRECC,CALLREDIR	Datafill parameters on each message before going on to the next.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.
Switch sends DV_CALL_RECEIVED_C to the business computer when the switch receives an ACD call. Message provides call-related information such as calling number and can give the computer a chance to reply on whether to redirect a call. Datafill the CALLRECC message in the following way:			
ROUTING	NCALLID	Y or N	Network call identification. Parameter identifies call in a customer's network. Enter Y to include the parameter. If set to N, switch cannot track Meridian SCAI messages.

Meridian SCAI (continued)

Datafilling tableSCAISSRV (Sheet 7 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	ACDDN	Y or N	ACD directory number. Parameter shows primary or supplementary ACD DN associated with a call. Enter Y to include parameter.
	CALLNGNO	Y or N	Calling number. Parameter shows calling line DN. Enter Y to include parameter. If not, enter N.
	CHARGENO	Y or N	Charge number. Parameter is 10-digit operating company charge number (ANI) associated with a call. Enter Y to include parameter.
	CALLTYPE	Y or N	Call type. Enter Y to include parameter in the message. If not, enter N.
	ORIGDN	Y or N	Original ACD DN or non-ACD DN. Parameter gives DN of an ACD group or non-ACD phone that originally received a transferred, overflowed, or redirected call. Enter Y to include parameter. If not, enter N.
	PREVAPPL	Y or N	Previous application identification. Enter Y to include parameter in the message. If not, enter N.
	HOSTCALD	Y or N	Host call data. Enter Y to include the parameter. If not, enter N.
	ACDGROUP	Y or N	ACD group. Parameter identifies primary ACD DN of the ACD group. Enter Y to include the parameter.
	FWDPARTY	Y or N	Forwarding party. Parameter contains information on the first and last forwarding party. Enter Y to include the parameter.
The business computer sends a DV_CALL_REDIRECT message to the switch requesting redirection an ACD call to a primary or supplementary ACD directory number (DN) or non-ACD DN on the same or a different switch or to an ACD line in the same customer group. Datafill CALLREDIR in the following way:			
ROUTING	NCALLID	Y or N	Network call identification. Parameter identifies call in a customer's network. Enter Y to include the parameter. If set to N, switch cannot track Meridian SCAI messages.

Datafilling tableSCAISSRV (Sheet 8 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	REDIRN	Y	Redirect destination. Enter Y to select the REDIRN option.
	HOSTCALD	Y or N	Host call data. Enter Y to include the parameter. If not, enter N.
For service category TPCC, there are up to five Meridian SCAI messages.			
TPCC		ADDPTY, MAKECALL, TRANPTY, DROPPTY, CONFPTY	Datafill parameters on each before going on to the next.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.
The computer sends the DV_ADD_PARTY message to the switch requesting that it add another ACD agent to a current two-way conversation. Datafill the ADDPTY message in the following way:			
TPCC	OPTYPE	Y or N	Operation type. Enter Y to include parameter in message. If not, enter N.
	ORIGADDR	Y or N	Originating address. Enter Y to include parameter in message. If not, enter N.
	DESTDN	Y or N	Destination directory number. Enter Y to include parameter in message. If not, enter N.
DV_MAKE_CALL gives a business computer the ability to initiate an outbound ACD call for a specific agent position. The switch alerts agent with a distinctive ringing tone that the call is being placed. One option is that the switch sets up an outbound call only after verification of an authorization or account code sent by the computer. Datafill the MAKECALL message in the following way:			
TPCC	AUTHCODE	Y or N	Authorization code. Enter Y to include parameter in message.
	ACCTCODE	Y or N	Account code. Enter Y to include parameter in message. If not, enter N.
This DV_Transfer_party message gives the business computer the ability to transfer a call to a specific agent. Datafill the TRANPTY message in the following way:			

Meridian SCAI (continued)

Datafilling tableSCAISSRV (Sheet 9 of 11)

Field	Subfield or refinement	Entry	Explanation and action
TPCC	ORIGADDR	Y or N	Originating address. Enter Y to include parameter in message. If not, enter N.
This DV_DROP_PARTY message gives the business computer the ability to request release of a consult call. Datafill the DROPPTY message in the following way:			
TPCC	OPTYPE/ DROPPTY	Y or N	Operation type. Enter Y to include the parameter in message. If not, enter N.
	ORIGADDR/ DROPPTY	Y or N	Originating address. Enter Y to include parameter in message. If not, enter N.
DV_CONFERENCE_PARTY gives a business computer the ability to initiate a conference call (with held and consult calls) for a specific agent. Datafill CONFPTY in the following way:			
TPCC	ORIGADDR/ CONFPTY	Y or N	Originating address. Enter Y to include parameter in message. If not, enter N.
For service category RESOURCE, there is an ACDQUERY message.			
RESOURCE		ACDQUERY	Enter ACDQUERY message.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.
The computer uses DV_RESOURCE_QUERY to ask the switch for current ACD group traffic load statistics. Datafill ACDQUERY in the following way:			
RESOURCE		ACDQUERY	Enter ACDQUERY message. No parameter datafill required.
For service category TPAC, there are up to four Meridian SCAI messages:			
TPAC		LOGINAGT, LOGOUTAGT READYAGT, NREADYAGT	Enter up to four messages. datafilling the parameters on each message before going on to the next message.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.

Datafilling tableSCAISSRV (Sheet 10 of 11)

Field	Subfield or refinement	Entry	Explanation and action
The computer sends the switch a DV_SET_FEATURE message. This message contains a parameter requesting the switch login a given agent. Datafill the LOGINAGT message parameters in the following way so that the switch has the information it needs when the DV_SET_FEATURE message arrives and make sure that datafill at the switch matches datafill at the call center:			
TPAC	ORIGADDR	Y	Originating address. Enter Y for originating address needed for DV_LOGIN_AGENT message.
	LOGINID	Y	Login in identification. Enter Y to select login ID required for this message.
	PASSWORD	Y	Password. Enter N. Parameter is not subscribed to here. Parameter identifies an ACD option which, by default, is not datafilled.
Computer sends the switch a DV_SET_FEATURE message. This message contains a parameter requesting the switch logout a given agent. Datafill the LOGOUTAGT message parameters in the following way so the switch has the information it needs when the DV_SET_FEATURE message arrives and make sure datafill at the switch matches call center datafill:			
TPAC	ORIGADDR	Y	Originating address. Enter Y for originating address needed for DV_LOGOUT_AGENT message.
Computer sends the switch a DV_SET_FEATURE message. This message contains a parameter requesting the switch make an agent ready to receive ACD calls. Datafill READYAGT message parameters in the following way so the switch has the information needed when DV_SET_FEATURE arrives and make sure datafill at the switch matches call center datafill:			
TPAC	ORIGADDR	Y	Originating address. Enter Y for originating address needed for DV_READY_AGENT message.
The computer sends the switch a DV_SET_FEATURE message. This message contains a parameter requesting the switch make a given agent not ready to receive ACD calls. Datafill the NREADYAGT message parameters in the following way so the switch has the information it needs when DV_SET_FEATURE arrives and make sure datafill at the switch matches call center datafill:			

Meridian SCAI (continued)

Datafilling tableSCAISSRV (Sheet 11 of 11)

Field	Subfield or refinement	Entry	Explanation and action
TPAC	ORIGADDR	Y	Originating address. Enter Y for originating address needed for DV_NOT_READY_AGENT message.
	WALKAWAY	N	Walkaway. Enter N. Parameter is not subscribed to in this table. Parameter is ACD option not datafilled by default.

Datafill example for table SCAISSRV

The following example shows sample datafill for table SCAISSRV.

MAP display example for table SCAISSRV

```
SUBSERV
                                        SPROFILE
   ACDEVENT34$
 ------------------------------------------------------------------
 ACDEVENT (CALLQUED Y Y Y Y Y Y Y Y Y N) (CALLOFFR Y Y Y Y Y Y Y
 Y Y Y N)(CALLANSWR Y Y Y Y Y Y Y Y Y Y N)(CALLREL Y Y Y Y Y) $
   ROUTING34$
 ROUTING     (CALLRECDC Y Y Y Y Y Y Y Y Y N) (CALLREDIR Y Y Y)$
   TPCC34$
 TPCC (ADDPTY Y Y Y) (CONFPTY Y) (DROPPTY Y Y) (TRANPTY Y)
 (MAKECALL Y Y) $
   ACDEVENT35$
 ACDEVENT (CALLQUED Y Y Y Y Y Y Y Y Y Y)(CALLOFFR Y Y Y Y Y Y Y Y
 Y Y Y) (CALLANSWR Y Y Y Y Y Y Y Y Y Y Y)(CALLREL Y Y Y Y Y) $
   ROUTING35$
 ROUTING     (CALLRECDC Y Y Y Y Y Y Y Y Y Y) (CALLREDIR Y Y Y)$
   TPCC35$
 TPCC (ADDPTY Y Y Y) (CONFPTY Y) (DROPPTY Y Y) (TRANPTY Y)
 (MAKECALL Y Y) $
   RESOURCE35$
                          RESOURCE (ACDQUERY) $
   ACDEVENT36$
 ACDEVENT (CALLQUED Y Y Y Y Y Y Y Y Y Y)(CALLOFFR Y Y Y Y Y Y Y Y
 Y Y Y)(CALLANSWR Y Y Y Y Y Y Y Y Y Y Y)(CALLREL Y Y Y Y Y)
 (AGTLGDIN Y Y Y)(AGTLGDOUT Y Y)(AGTREADY Y Y)(AGTNREADY Y Y N)$
   TPAC36$
 TPAC (LOGINAGT Y Y N)(LOGOUTAGT Y)(READYAGT Y)(NREADYAGT Y N)
```

Datafilling table SCAIPROF

The following table shows the datafill specific to Meridian SCAI for table SCAIPROF. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

Table Switch Computer Application Interface Profile (SCAIPROF) serves as a look-up table for Meridian SCAI service profiles. A service profile is a set of Meridian SCAI messages and associated options available to a call center during a Meridian SCAI session.

Table SCAIPROF uses the linksets entered in table SCAICOMS and the subservice names in table SCAISSRV to make up a Meridian SCAI service profile used by the business computer at login. The key field is PROFKEY.

Note: This table only discusses services to Meridian Automatic Call Distribution (ACD) call centers.

The SCAIPROF table size ranges from 0 to 2048 tuples. The maximum table size derives from the maximum number of 8 service identities for each linkset multiplied by the number of linksets (256) that can be datafilled in table SCAICOMS.

The following steps are required to datafill existing Meridian SCAI groups:

- Make a list of each linkset owned by a Meridian SCAI group and the required Meridian SCAI messages assigned to the linkset.
- Find the subservice names in table SCAISSRV that display all the Meridian SCAI messages to which the call center subscribes.
- If messages cannot be found, enter new subservice names or edit existing subservice names to include necessary messages in table SCAISSRV.
- Make a list of the subservice names datafilled in table SCAISSRV to reflects any revisions you have made.
- Enter the names of the linksets and the subservice names associated which each linkset in table SCAIPROF.

Relationship with other tables

Because of the interrelated nature of the information contained in each table, before datafilling table SCAIPROF, make sure that tables OFCOPT, SCAIGRP, SCAICOMS, and SCAISSRV have the correct information.

Meridian SCAI (continued)

Table OFCOPT

Table OFCOPT is a parameter table that gives the operating company permission to allocate Meridian SCAI links and services. If the necessary parameters do not have the correct values, service will not be available.

Table SCAICOMS

Table SCAICOMS establishes communication with the call center so that the linkset (or linksets) know the location of the call center's computer and the X.25 protocol the computer is using. The linkset name datafilled in table SCAICOMS is used in datafill for table SCAIPROF.

Table SCAIGRP

Table SCAIGRP makes it possible for the business computer to establish a Meridian SCAI logon after supplying network node ID, business group ID, password, and service profile ID. The service profile ID comes from the datafill in table SCAIPROF.

Table SCAISSRV

Table SCAISSRV provides the subscribed functions, including categories and message parameters, that table SCAIPROF turns into a service profile.

Datafilling table SCAIPROF (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PROFKEY			Profile key. This field consists of subfields LINKSET and SRVCID. This field is the first of a two-part key that, combined with PROFILE, identifies linkset and service profile combinations.
	LINKSET	1 to 16 characters	Linkset name. Enter one of the linkset names (alphanumeric 1 to 16 characters) entered in table SCAICOMS.
	SRVCID		Service identity. Enter a service ID number of 0 to 255. As many as eight service IDs can be entered for each linkset, but only one service profile can be used at any time. A unique service ID is required for each linkset and profile combination.

Datafilling table SCAIPROF (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PROFILE			Profile. Enter one or more subservice names from table SCAISSRV. This field establishes a Meridian SCAI service profile. Eight service profiles (one for each of up to 8 links) can be configured for each linkset.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.

Datafill example for table SCAIPROF

The following example shows sample datafill for table SCAIPROF.

MAP display example for table SCAIPROF

```
PROFKEY
                                                PROFILE
 ____________________________________________________
LINKSET1 0
(TPCC35$) (ACDEVENT36$) (ROUTING35$) (TPAC36$)
(RESOURCE35$)$
```

Error messages for table <NAME>

When a parameter in table OFCOPT is not set at a value high enough to meet the datafill requirements, an error message appears. For example, consider what happens if the values of table OFCOPT are not sufficient and you add the following tuple to table SCAIPROF: `LINKSET1 0 TPCC35$`.

The following two message lines appear:

- `In use levels in tables SCAICOMS/SCAIPROF exceed office limits.`
- `Office limit for SVCs with TPCC category exceeded.`

As another example, consider what happens if the values of table OFCOPT are not sufficient and one adds the following tuple to table SCAIPROF: `LINKSET1 0 ACDEVENT35$ ROUTING35$ TPCC34$`

Meridian SCAI (continued)

The following message lines appear:

- `In use levels in tables SCAICOMS/SCAIPROF exceed office limits.`
- `Office limit for SVCs with ACDEVENT category exceeded.`
- `Office limit for SVCs with ROUTING category exceeded.`
- `Office limit for SVCs with TPCC category exceeded.`

A service profile cannot include two subservice names from the same Meridian SCAI service category. A linkset can be associated with more than one service profile through the use of different service IDs.

Datafilling table CUSTNTWK

The following table shows the datafill specific to Meridian SCAI for table CUSTNTWK. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

For Meridian SCAI, the primary purpose of this table is that it assigns the ECM option to the customer group. ECM (extended call management) is an old name for Meridian SCAI. A group cannot have Meridian SCAI service unless the ECM option is assigned in table CUSTNTWK.

Note: If an entry already exists for a customer group in table CUSTNTWK, add the ECM option to the tuple.

Datafilling table CUSTNTWK (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		1-16 characters	Customer Group Name. Enter the name assigned to the customer group in table CUSTENG.
NETNAME		1-31 characters	Network Name. Enter the network name assigned to the customer group in table NETNAMES.
NETCGID		1-4096	Network Customer Group Identifier (NCGI). Specify a unique NCGI number for the customer group.

Datafilling table CUSTNTWK (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DNREVXLA		$	Directory Number Reverse Translators. This field consists of subfields NETNAME, RXLANAME, and NUMDIGS. Enter $ to satisfy the table editor.
OPTIONS		ECM	ECM. Enter ECM (Extended Call Management, an early name for Meridian SCAI) to assign Meridian SCAI. This entry is essential for Meridian SCAI service.
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next tuple. Otherwise, enter $ to indicate end of the tuple.

Datafill example for table CUSTNTWK

The following example shows sample datafill for table CUSTNTWK.

MAP display example for table CUSTNTWK

```
CUSTNAME     NETNAME     NETCGID
                                          DNREVXLA
                                          OPTIONS
 ------------------------------------------------
 WELL_RUN    PUBLIC      10               $
                                          (ECM)$
```

Datafilling table ACDGRP

The general purpose of table Automatic Call Distribution Group (ACDGRP) is that it defines and describes ACD groups. That purpose does not concern us here because the definition and description of the ACD group had to take place *before* the Meridian SCAI translations process could begin.

Table ACDGRP is discussed in this guide because it has the following optional Meridian SCAI functions:

- defining call redirection, called SCAIREDIR
- providing for distinctive ringing for ACD calls, especially helpful when using the DV_MAKE_CALL call message to place outgoing calls

Meridian SCAI (continued)

The following table shows the datafill specific to Meridian SCAI for table ACDGRP. Only those fields that apply directly to Meridian SCAI are shown. For a description of the other fields, refer to the data schema document.

Datafilling table ACDGRP (Sheet 1 of 5)

Field	Subfield or refinement	Entry	Explanation and action
ACDNAME		Alphanumeric (1 to 16 characters)	Automatic call distribution name. This field contains the ACD group's name. The datafill example shows the following entry: ACDGRP1
CUSTGRP		Alphanumeric (1 to 16 characters)	Customer group name. This field contains the name of the customer group to which the ACD group belongs. The datafill example shows the following entry: WELL_RUN
ACDRNGTH		Either 0 or 12 to 60	ACD ringing threshold. This field shows the maximum time (in seconds) that elapses before an unanswered call at an agent's phone is reenqueued at the head of the incoming call queue. The datafill example shows the following entry: 20
THROUTE		TABNAME/INDEX	Threshold route. This field consists of subfields TABNAME and INDEX and specifies the route in table IBNRTE or OFRT where overflow ACD calls are routed.
TABNAME		IBNRTE, OFRT, OFRT2, OFR3, OFR4, or TOPS	Table name. Enter the table name to which translation is routed. The datafill example shows the following entry: OFRT
INDEX		1 to 1023	Index. Enter number assigned to the route list in the table to which translation routes. Zero is not a valid entry for this field. The datafill example shows the following entry: 10
CONTMARK		+ or $	Continuation mark. Enter + if additional information for this tuple is contained in the next record. Otherwise, enter $ to indicate the end of the tuple. Datafill example shows the following entry: +

Datafilling table ACDGRP (Sheet 2 of 5)

Field	Subfield or refinement	Entry	Explanation and action
NSROUTE		See subfields	Night service route. This field consists of subfields TABNAME and INDEX. It specifies the night service route where incoming calls are routed if there are no active agents in the ACD group.
TABNAME		IBNRTE, OFRT, OFRT2, OFR3, OFR4, or TOPS	Table name. Enter the table name where a night service call goes. The datafill example shows the following entry: OFRT
INDEX		1 to 1023	Index. Enter number assigned to the route list in the table where a night service call goes. Zero is not a valid entry for this field. The datafill example shows the following entry: 11
PRIOPRO		0 to 255 (in seconds)	Priority promotion time out. Enter maximum time a call waits in queue. When time expires, call is put into a higher priority queue. Enter 0 if no time out applies. Datafill example shows the following entry: 30
DBG		Y or N	Delayed billing. Delayed billing in table ACDGRP only applies for intraoffice calls. Enter Y for billing to start when ACD agent answers call. Enter N for billing to start when caller receives recorded announcement. Datafill example shows the following entry: N ***Note 1:*** Field DBG and office parameter ACD_TOLL_DELAYED_BILLING in table OFCENG control answer propagation. ***Note 2:*** Field DBG is not valid for Japanese operating companies. For these companies, this field has been replaced by the NOANSWER option in field OPTIONS.

Meridian SCAI (continued)

Datafilling table ACDGRP (Sheet 3 of 5)

Field	Subfield or refinement	Entry	Explanation and action
MAXCQSIZ		0 to 511	Maximum call queue size. Enter the maximum number of calls enqueued in incoming call queue at one time. After this threshold is reached, all subsequent calls are deflected to the route specified in field THROUTE. Enter 0 if the ACD group does not have call queuing capacity. The datafill example shows the following entry: 3
MAXWAIT		0 to 1800 (in seconds)	Maximum waiting time. Enter maximum time a call must wait in the incoming call queue. After this number is reached, all subsequent calls are sent to the route specified in field THROUTE. Enter 0 if ACD group does not have call queuing capacity. Datafill example shows the following entry: 25
ACDMIS		Y or N	ACD management information system. Enter Y to assign ACDMIS to this ACD group. Otherwise enter N. Datafill example shows the following entry: N
MSQS		Y or N	Multistage queue status. Enter Y to assign MSQS to this ACD group. Otherwise enter N. Datafill example shows the following entry: N
If the customer wants distinctive ringing, datafill field DISTRING.			
DISTRING		NONEINBOUNDOUTBOUNDorBOTH	Distinctive ringing. Field specifies distinctive ringing for an ACD group for inbound and outbound ACD calls. Enter NONE for no distinctive ringing, INBOUND for distinctive ringing on inbound calls, OUTBOUND for distinctive ringing on outbound calls, and BOTH for distinctive ringing on both. Datafill example shows the following entry: OUTBOUND
OBSWTONE		Y or N	Observation warning tone. Enter Y if an ACD agent receives a warning tone when a supervisor activates observation. Otherwise, enter N. The datafill example shows the following entry: N

Meridian SCAI (continued)

Datafilling table ACDGRP (Sheet 4 of 5)

Field	Subfield or refinement	Entry	Explanation and action
FRCNGTSV		Y or N	Forced night service. Forced night service prevents calls from remaining in a queue when night service is activated. When selected, incoming call queues are checked and calls routed to the customer defined night service route or a clearing route. Enter Y to select the FRCNGTSV option. Otherwise, enter N. The datafill example shows the following entry: N
OPTIONS		See subfield	Options. This field consists of subfield OPTION.
	OPTION	A list of options which include SCAIREDIR	Switch computer application interface redirection. SCAIREDIR is a Meridian SCAI option for redirecting calls on an ACD group basis. Option has no effect unless agent's group is logged onto a Meridian SCAI session that has subscribed to DV_Call_Received and the DV_Call_Redirect messages in tables SCAISSRV and SCAIPROF. The datafill example shows the following entry: SCAIREDIR.
When option SCAIREDIR is entered, subfields MSGTO, NCOS, and BILLDN must be datafilled:			
	MSGTO	1 to 30 seconds	Receive message time-out value. Enter time-out value from 1 to 30 seconds for a business computer's response to a message requiring confirmation. The datafill example shows the following entry: 2 ***Note:*** There is a hard-coded limit of two redirections for a given call. After that limit is reached, the call remains in the last redirected location.
	NCOS	0 to 255	Network class of service. Enter NCOS value from 0 to 255 for customer group used to translate and route redirected calls. The datafill example shows the following entry: 0

Meridian SCAI (continued)

Datafilling table ACDGRP (Sheet 5 of 5)

Field	Subfield or refinement	Entry	Explanation and action
	BILLDN	numbers with 0 to 11 digits, N, or $	Billing directory number. Enter billing DN used in Automatic Message Accounting (AMA) and SMDR records for call redirection. Entries are numbers with 0 to 11 digits, N, or $ for the default billing DN. Default billing DN is ACD DN caller reaches before being redirected. Although this field accepts 0 to 11 digits, only a number with 7 or 10 digits is truly valid. The datafill example shows the following entry: 4817856
CONTMARK		$	Continuation mark. Enter $ to indicate the end of the tuple.

Note 1: Meridian SCAI does not affect Station Message Detail Recording (SMDR). SMDR is a system providing recording facilities for the details of billable and nonbillable calls for each Meridian Digital Centrex (MDC) customer group. Every ACD group uses MDC software.

Note 2: If redirection is activated for an ACD group, SMDR may be affected. SMDR is an originating feature and needs to be turned on in each switch for each leg of a redirected call.

Note 3: During the make call procedure, the agent or business computer can specify account code digits for cost accounting tracking. The information will be entered into the SMDR stream and the customer can use the information for charge back account purposes.

Datafill example for table ACDGRP

The following example shows sample datafill for table ACDGRP.

MAP display example for table ACDGRP

```
ACDNAME   CUSTGRP   ACDRNGTH  THROUTE
NSROUTE PRIOPRO DBG MAXCQSIZ MAXWAIT
   ACDMIS MSQS DISTRING OBSWTONE FRCNGTSV
                                                    OPTIONS
OPTION       SCAIREDIR MSGTO NCOS BILLDN OPTION
-------------------------------------------------------
ACDGRP1    WELL_RUN    20    OFRT 10   +
  OFRT 11     30        N         3      25
  N N OUTBOUND N   N
  (SCAIREDIR  2  0  4817856) $
```

Applying distinctive ringing to phone sets

When all the telephone sets within an ACD customer group require distinctive ringing for calls placed using the make call message, do the following:

- datafill table Customer Group Station Option (CUSTSTN) using the DRING option for the appropriate customer group setting MAKECALL to Y and choosing a distinctive ringing type ranging from 1 to 8
- datafill the table ACDGRP DISTING field for OUTBOUND or BOTH

When setting only individual sets with distinctive ringing, apply the DRING option to individual lines by choosing MAKECALL and a distinctive ringing type. Remember to datafill table ACDGRP DISTING field for OUTBOUND or BOTH.

Call redirection

The Coordinated Voice and Data features give the call center computer the ability to automatically redirect a call, so that, for example, a gold card customer call goes to a specially trained customer group for special treatment.

Call redirection requires the following messages:

- DV_CALL_RECEIVED_C
- DV_CALL_REDIRECT

The DV_CALL_RECEIVED_C message

If an ACD group subscribes to redirection, the switch sends the computer a DV_CALL_RECEIVED_C message. This happens when the switch receives a call to an ACD DN associated with a Meridian SCAI session.

When the switch sends a DV_CALL_RECEIVED_C message, the computer must respond to the switch in a predetermined time of from 0 to 30 seconds. Two seconds is the recommended value.

Meridian SCAI (end)

If the switch does not receive a response in time, it routes the call to a default destination. This destination is the ACD group the caller initially called. The message is sent before the switch determines that the call should be routed to night service, overflowed, queued, or offered to an agent.

The DV_CALL_REDIRECT message

The computer may respond to a DV_CALL_RECEIVED_C message by sending a DV_CALL_REDIRECT message to the switch to send the call to an MDC or ACD line on any switch in the public switch network. For redirection to take place, specify the line in translations.

Distinctive ringing

The Third Party Call Control feature package gives the call center computer the ability (known as make call) to place outgoing calls for an ACD agent.

The DV_MAKE_CALL message gives the computer the ability to initiate an outbound ACD call for a specific agent position. The switch can use the distinctive ringing option to use a specific ringing tone.

The special tone tells the agent that the phone ringing is an outgoing call the agent requested. The ringing sound is different from the more common incoming call.

When the phone rings and the agent picks it up, the called party will be dialed and the agent must wait for the called party to answer.

Translation verification tools

Meridian SCAI does not use translation verification tools.

SERVORD

Meridian SCAI does not use SERVORD.

MDC Meridian SCAI

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

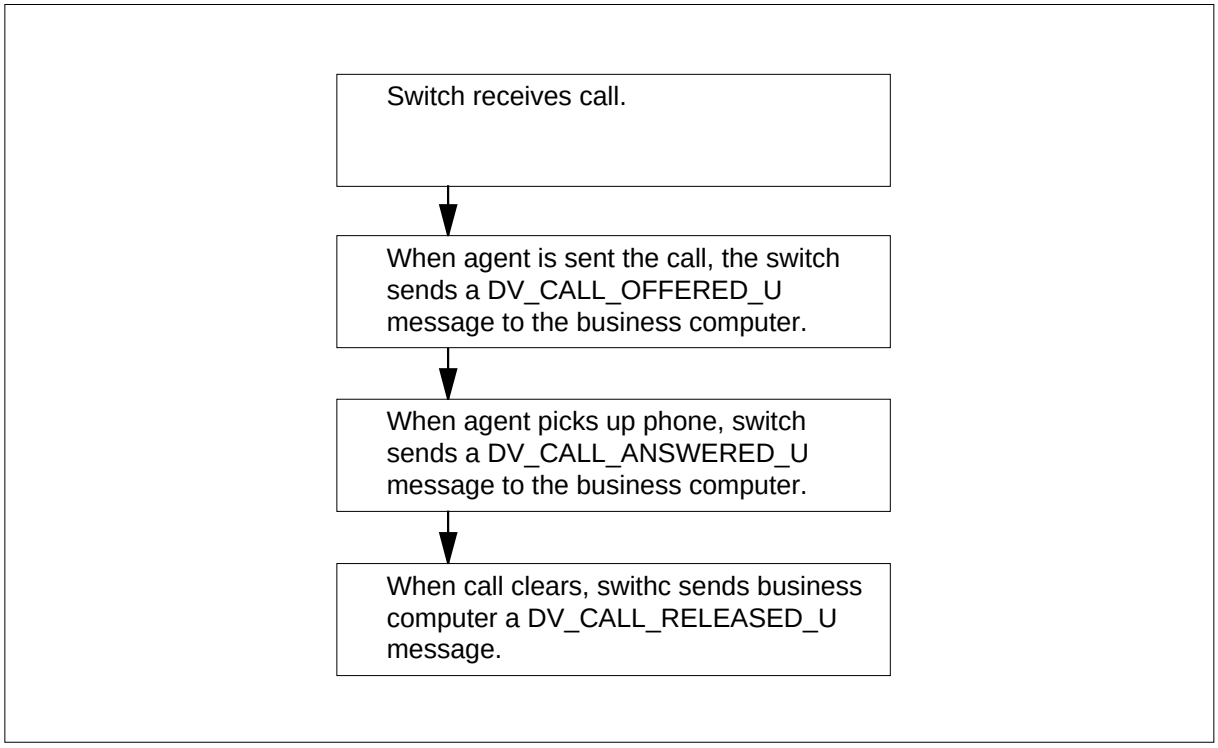
MSL03 and up

Prerequisites

MDC Meridian SCAI has no prerequisites.

Description

Meridian SCAI provides coordinated voice and data (CVD) to Meridian Digital Centrex (MDC) call centers, as seen in the following figure.



Coordinated voice and data in MDC call centers

The switch sends a DV_Call_Offered_U message to an MDC call center business computer when the switch selects an agent to receive a call. The message provides the computer with call-related information so the computer can display the information at the agent's workstation at the same time the

MDC Meridian SCAI (continued)

agent receives the voice call at his or her set. The message the switch sends contains the following information:

- calling number
- called number
- call identification number (for tracking purposes)
- agent position to which the call is being sent

Assuming the computer is configured to retrieve customer information on the basis of directory number (DN), the customer's files can be pulled and presented to the agent position at approximately the same time as the call itself is presented.

The switch sends the DV_CALL_ANSWERED_U message to the computer to inform it that the agent has answered the phone.

Finally, the switch sends the DV_CALL_RELEASED_U message to the computer when a call is released. A call is released if the agent disconnects it, the call is overflowed, transferred, or redirected, or the caller abandons the call before it is offered to an agent.

MDC Meridian SCAI Options

Two Meridian SCAI service offerings are available. The first provides service to call centers which use DMS Meridian Automatic Call Distribution (ACD) software. The previous chapters in this guide focus primarily on datafilling for ACD-based call centers using a Meridian SCAI service known as Meridian ACD Meridian SCAI Options.

The second Meridian SCAI service offering is to MDC call centers and MDC lines. This service is called MDC Meridian SCAI Options and provides MDC call centers and lines with Meridian SCAI CVD service, which consists of the following messages:

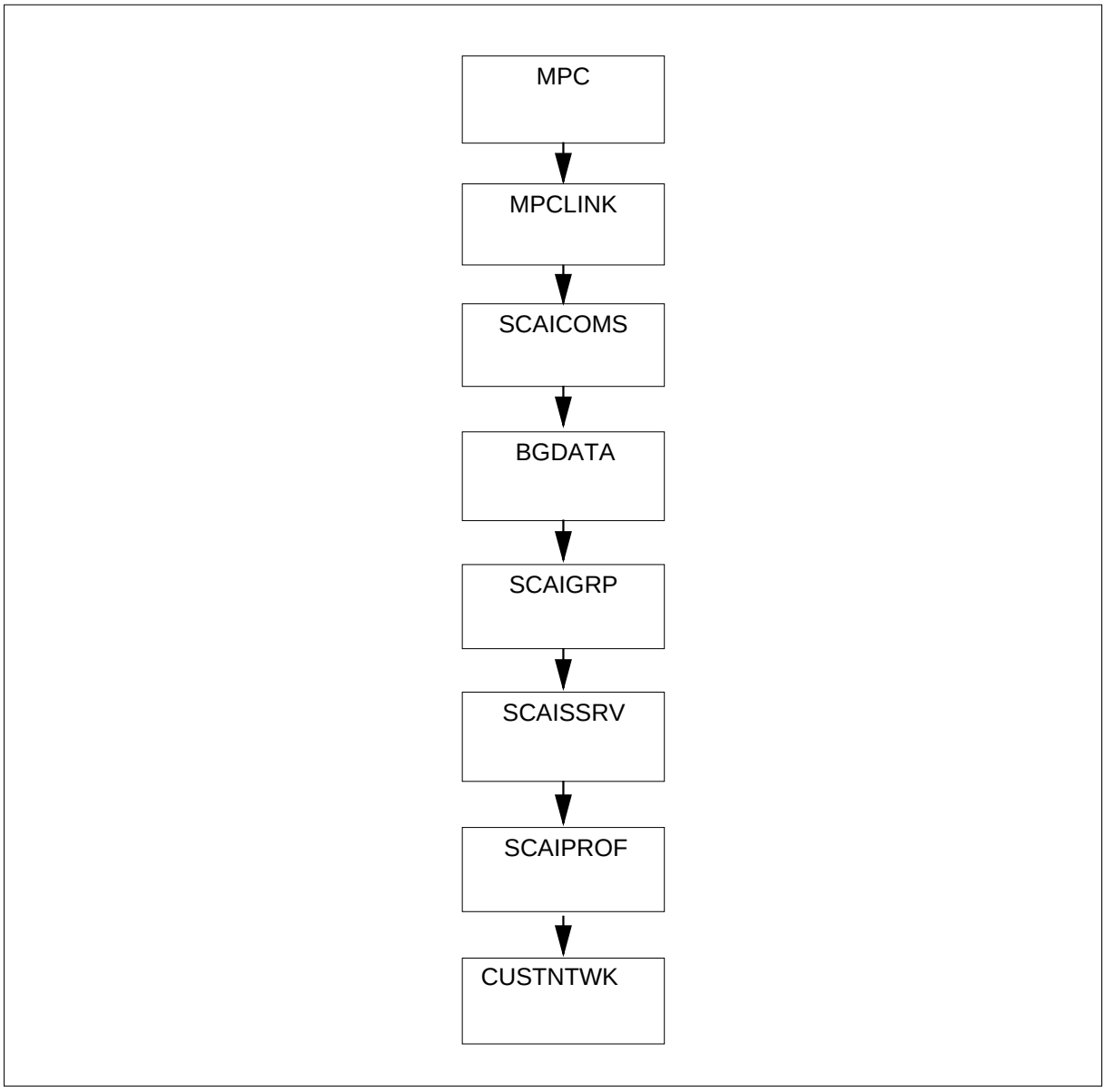
- DV_CALL_ANSWERED_U (abbreviated for datafill purposes CALLANSWR)
- DV_CALL_OFFERED_U (CALLOFFR)
- DV_CALL_RELEASED_U (CALLREL)

Translations table flow

The MDC Meridian SCAI translation process is shown in the flowchart that follows.

MDC Meridian SCAI (continued)

Table flow for MDC Meridian SCAI



Limitations and restrictions

MDC Meridian SCAI has no limitations or restrictions.

Interactions

MDC Meridian SCAI has no functionality interactions.

MDC Meridian SCAI (continued)

Activation/deactivation by the end user

MDC Meridian SCAI requires no activation or deactivation by the end user.

Billing

MDC Meridian SCAI does not affect billing.

Station Message Detail Recording

MDC Meridian SCAI does not affect Station Message Detail Recording.

The following table provides information for module code <number>.

Datafilling office parameters

AUX_CPU_SHARE is concerned with allocating memory during periods of heavy switch usage, so that, for example, enough memory will be available for Meridian SCAI.

SCAI_CONTINUITY_AUDIT_INTERVAL establishes a testing schedule so a Meridian SCAI message can automatically monitor the status of the Meridian SCAI link. Both parameters have important implications for MDC call centers.

Table OFCOPT

Meridian SCAI-related parameters in table OFCOPT are part of a software feature called Meridian SCAI Pricing Controls (AR0391). Nortel Networks uses this feature to categorize Meridian SCAI messages into groups and to provision the switch for Meridian SCAI service. Meridian SCAI service is not available to the switch unless the table OFCOPT parameters are established with values high enough to meet call center requirements.

Table OFCENG

Set parameter FTRQ32WAREAS in table OFCENG properly to insure service quality for MDC Meridian SCAI Options. To set this value for parameter FTRQ32WAREAS use the following formula: [(The number of MWI subscribers) + (the number of lines with the ECM option)]/ 10.

Note: MWI = message waiting indicator

Parameter FTRQ32WAREAS assigns generic data blocks available when software features require their use. Meridian SCAI uses these data blocks for MDC lines with Meridian SCAI (datafilled as the ECM option).

If this parameter is underprovisioned and operating company personnel attempt to DN_ASSOCIATE an MDC line, a RETURN_ERROR message will

appear with a “No Software Resources” explanation. On the other hand, overprovisioning wastes data store.

The following table shows the office parameters used by MDC Meridian SCAI. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by MDC Meridian SCAI

Table name	Parameter name	Explanation and action
OFCOPT	MAX_NUM_ECM_CTXEVENT	The CTXEVENT category provides coordinated voice and data to MDC call centers, using messages CALLANSWR, CALLOFFR, and CALLREL. Before a call center can use these messages the operating company must datafill tables SCAISSRV and SCAIPROF.
OFCOPT	MAX_NUM_ECM_SVC	Switched virtual circuit (SVC) is synonymous with an X.25 link. A Meridian SCAI call center uses up to 8 SVCs for each linkset between switch and computer.
OFCENG	FTRQ32WAREAS	Use care datafilling this parameter. Datafill when switch is not in service. Changes made when a switch is in service require a warm or cold restart resulting in Meridian SCAI service loss. To set this value use the following formula:*[(The number of network MWI subscribers) + (the number of lines with the ECM option)] / 10*

Datafill sequence

The following table lists the tables that require datafill to implement MDC Meridian SCAI. The tables are listed in the order in which they are to be datafilled.

The datafill procedures for Meridian ACD Meridian SCAI Options and MDC Meridian SCAI Options are the same for several of the Meridian SCAI translations tables. Once tables MPC through SCAIGRP are datafilled, the operating company can assign the information required for MDC Meridian

MDC Meridian SCAI (continued)

SCAI service. This information is assigned in tables SCAISSRV and SCAIPROF.

Datafill tables required for MDC Meridian SCAI

Table	Purpose of table
MPC	Table Multi-Protocol Controller tells the switch which enhanced MPC (EMPC) or MPC card is used for the Meridian SCAI link. When the call center decides to use multiple links, up to 8 are permitted for each connection between switch and computer, Nortel Networks recommends using more than one MPC/EMPC card. The names and locations of that card or cards are determined at this table.
MPCLINK	Table Multi-Protocol Controller Link specifies which of two X.25 protocol versions a specific MPC link uses. The versions are X2580 (1980 CCITT) and X2584 (1984 CCITT). Either protocol will work with Meridian SCAI. This table also defines X.25 parameters for use on the link.
SCAICOMS	Table Switch Computer Application Interface Communications defines a linkset. A linkset goes from one or more of the switch MPC/EMPC cards to the call center computer and can include up to 8 links. A linkset uses up to 8 X.25 links as its transportation medium.
BGDATA	Table Business Group Data allows multiple switches to share MDC features. The only purpose of this table for Meridian SCAI is to associate a business group ID with a customer group.
SCAIGRP	Table Switch Computer Application Interface Group lists call centers with Meridian SCAI links, associating the BGID customer groups with the links. This table stores all Meridian SCAI groups, identified as SCAI groups, in a switch. Each group is assigned a password, network node ID, and linkset (from table SCAICOMS) as well as the BGID (business group ID) the group uses.
SCAISSRV	Table Switch Computer Application Interface Subservices acts as a look-up table for Meridian SCAI service categories and the messages that go in them.
SCAIPROF	Table Switch Computer Application Interface Profile defines the service profile a service ID can use. A service profile consists of a set of subservices a call center computer can use.
CUSTNTWK	Table Customer Group Network specifies that a specific customer group can use Meridian SCAI services after datafilling the ECM option. The ECM option can be added to table CUSTNTWK at any time and is not dependent upon datafill order.

Datafilling table SCAISSRV

The following table shows the datafill specific to MDC Meridian SCAI for table SCAISSRV. Only those fields that apply directly to MDC Meridian

SCAI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SCAISSRV (Sheet 1 of 6)

Field	Subfield or refinement	Entry	Explanation and action
SUBSERV		name of the fixed subservice profile	Subservice profile name. This field is the table key. Enter the name of the fixed subservice profile. For the most recent messages and parameters available, enter CTXEVENT35$ Dollar sign ($) cannot be used in subservice names but is reserved for *fixed* subservice names.
SPROFILE		See subfield	Subservice profile contents. This field consists of subfield category CTXEVENT.
For category CTXEVENT enter up to three Meridian SCAI messages.			
	CTXEVENT	CALLOFFR, CALLANSWR CALLREL	Enter up to three messages, datafilling the parameters for each message before going on to the next.
CONTMARK		$	Continuation mark. Enter $ to indicate end of the tuple.
The switch uses a DV_CALL_OFFERED_U message to select an agent for a call and tell the computer it has done so, giving such additional information as calling number. The computer looks up the call-related file in its data base and sends the file to the agent's workstation. Datafill the CALLOFFR message in the following way.			
CTXEVENT	NCALLID	Y or N	Network call identification. Parameter identifies call in the context of the customer's network. Enter Y to include parameter. If set to N, the switch cannot track Meridian SCAI messages.
	CALLNGNO	Y or N	Calling number. Parameter shows calling line's DN. Enter Y to include parameter in the message.
Note: Translations personnel may customize the MDC datafill by using the ADD command.			

MDC Meridian SCAI (continued)

Datafilling table SCAISSRV (Sheet 2 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	CHARGENO	Y or N	Charge number. Parameter is a 10-digit operating company charge number, also known as Automatic Number Identification (ANI), associated with an incoming call when it enters the Meridian SCAI environment. Enter Y to include parameter in message.
	CALLTYPE	Y or N	Call type. This parameter contains call-related information. It indicates whether the call to the current Meridian SCAI party has been transferred, overflowed, redirected, or forwarded. Enter Y to include the call type option.
	ORIGDN	Y or N	Originating Directory Number (DN). Parameter identifies the first DN of a non-ACD phone when it enters the Meridian SCAI environment. This number stays the same as long as the call stays within the Meridian SCAI environment, even if the call is subsequently transferred, overflowed, redirected, or forwarded. Enter Y to include the parameter.
	PREVAPPL	Y or N	Previous application identification. This parameter contains call-related information. It identifies the application ID for the session of the associated environment to which the party extending the call belongs. Call extension includes call transfer, overflow, redirect, and forward. Enter Y to include the parameter.
	HOSTCALD	Y or N	Host call data. This parameter contains call-related information of a generic and miscellaneous nature provided by a business computer application. In the case of a call which has been redirected by a computer application, this parameter may be provided by that computer application at that time and might include the reason for the redirection. Enter Y if the parameter should be included in the message.

Note: Translations personnel may customize the MDC datafill by using the ADD command.

MDC Meridian SCAI (continued)

Datafilling table SCAISSRV (Sheet 3 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	CALLMODE	Y or N	Call mode. This parameter contains call-related information. It identifies the modality of the call at the time it is offered to the Meridian SCAI party. At present, only call waiting is supported. If a call is on call waiting for the MDC station while the station is busy on an existing call, the DV_CALL_OFFERED_U message will include the CALLMODE parameter to indicate that the call waited. The parameter applies to MDC calls only. Enter Y to include the parameter in the message.
	DEVICEID	Y or N	Device identification. This parameter contains call-related information. It identifies the specific customer work station to which the call is offered. It is unique within the switch. It is defined as a choice parameter. The only available choice is the station number, a subparameter which includes the specific MDC line to which the call is offered. Enter Y to include this subparameter in the message.
The switch uses the DV_CALL_ANSWERED_U message to tell the call center computer an agent answered a Meridian SCAI call. The message also gives call-related information, such as the calling number. Datafill the CALLANSWR message in the following way.			
CTXEVENT	NCALLID	Y or N	Network call identification. Parameter identifies call in the context of the customer's network. Enter Y to include parameter. If set to N, the switch cannot track Meridian SCAI messages.
	DEVICEID	Y or N	Device identification. This parameter contains call-related information. It identifies the specific customer work station to which the call is offered. It is unique within the switch. It is defined as a choice parameter. The only available subparameter is the station number which includes the specific MDC line to which the call is offered. Enter Y to include this information in the message.
Note: Translations personnel may customize the MDC datafill by using the ADD command.			

MDC Meridian SCAI (continued)

Datafilling table SCAISSRV (Sheet 4 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	CALLNGNO	Y or N	Calling number. Parameter shows calling line's DN. Enter Y to include parameter in the message.
	CHARGENO	Y or N	Charge number. Parameter is a 10-digit operating company charge number (ANI) associated with an incoming call. Enter Y to include parameter in message.
	CALLTYPE	Y or N	Call type. This parameter contains call-related information. It indicates whether the call to the current Meridian SCAI party has been transferred, overflowed, redirected, or forwarded. Enter Y to include the call type option in the parameter for this message.
	ORIGDN	Y or N	Originating Directory Number (DN). Parameter identifies the first DN of a non-ACD phone when it enters the Meridian SCAI environment. This number stays the same as long as the call stays in the Meridian SCAI environment, even if the call is subsequently transferred, overflowed, redirected, or forwarded. Enter Y to include the parameter in the message.
	PREVAPPL	Y or N	Previous application identification. This parameter contains call-related information. It identifies the application ID for the session of the associated environment to which the party extending the call belongs. Call extension includes call transfer, overflow, redirect, and forward. Enter Y to include the parameter in the message.

Note: Translations personnel may customize the MDC datafill by using the ADD command.

MDC Meridian SCAI (continued)

Datafilling table SCAISSRV (Sheet 5 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	HOSTCALD	Y or N	Host call data. This parameter contains call-related information of a generic and miscellaneous nature provided by a business computer application. In the case of a call which has been redirected by a computer application, this parameter may be provided by that computer application at that time and might include the reason for the redirection. Enter Y if the parameter should be included in the message.
	CALLMODE	Y or N	Call mode. This parameter contains call-related information. It identifies the modality of the call at the time it is offered to the Meridian SCAI party. At present, only call waiting is supported. If a call is on call waiting for the MDC station while the station is busy on an existing call, the message will include the CALLMODE parameter to indicate the call waited. The parameter applies to MDC calls only. Enter Y to include the parameter in the message.
The switch uses the DV_CALL_RELEASED_U message to tell the computer when the agent disconnects from an inbound call. This message is used to provide closure regarding previous Meridian SCAI messages associated with the call. The DV_CALL_RELEASED_U message indicates why the call was released. Datafill the CALLREL message in the following way.			
CTXEVENT	NCALLID	Y or N	Network call identification. Parameter identifies the call in the context of the customer's network. Enter Y to include the parameter in the message. If set to N, the switch cannot track Meridian SCAI messages.
Note: Translations personnel may customize the MDC datafill by using the ADD command.			

MDC Meridian SCAI (continued)

Datafilling table SCAISSRV (Sheet 6 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	RELTYPE	Y or N	Release reason. Parameter tells why a call was released. The reasons include call cleared, caller transferred, call overflowed, call abandoned, call redirected, call forwarded, call picked-up, party dropped, party dropped no answer. Enter Y to include this parameter in the message.
	DEVICEID	Y or N	Device identification. This parameter contains call-related information. It identifies the specific customer work station to which the call is offered. It is unique within the switch. It is defined as a choice parameter. The only available subparameter is the station number which includes the specific MDC line to which the call is offered. Enter Y to include this information in the message.
Note: Translations personnel may customize the MDC datafill by using the ADD command.			

Datafill example for table SCAISSRV

The following example shows sample datafill for table SCAISSRV The fixed category shown is labeled CTXEVENT35$, which means that these are the most recent messages and parameters available for MDC call centers and lines..

MAP display example for table SCAISSRV (CTXEVENT category)

```
CTXEVENT35$
CTXEVENT (CALLOFFR Y Y Y Y Y Y Y Y Y) (CALLANSWR Y Y Y Y Y Y Y Y Y)
(CALLREL Y Y Y) $
```

Datafilling table SCAIPROF

Table SCAIPROF uses the linkset or sets entered in table SCAICOMS and the subservice name in table SCAISSRV to make up a Meridian SCAI service profile used by the business computer at login. The key field is PROFKEY.

The following table shows the datafill specific to MDC Meridian SCAI for table SCAIPROF. Only those fields that apply directly to MDC Meridian

SCAI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SCAIPROF

Field	Subfield or refinement	Entry	Explanation and action
PROFKEY			Profile key. This field consists of subfields LINKSET and SRVCID. This field is the first of a two-part key that, combined with PROFILE, identifies linkset and service profile combinations.
	LINKSET	alphanumeric 1 to 16 characters	Linkset name. Enter one of the linkset names (alphanumeric 1 to 16 characters) entered in table SCAICOMS. The MAP example shows an entry of LINKSET1.
	SRVCID	0 to 255	Service identity. Enter a service ID number of 0 to 255. As many as eight service IDs can be entered for each linkset, but only one service profile can be used at any time. A unique service ID is required for each linkset and profile combination. The MAP example shows an entry of 0. The entry means that LINKSET1 has one link with a service ID of 0 with subservice names listed in the PROFILE field.
PROFILE		subservice names from table SCAISSRV	Profile. Enter one or more subservice names from table SCAISSRV. This field establishes a Meridian SCAI service profile. Eight service profiles (one for each of up to 8 permitted links) can be configured for each linkset. The MAP example shows an entry of (CTXEVENT35$). This entry means that the available Meridian SCAI fixed subcategory is assigned to the one link in LINKSET1.
CONTMARK		+ or $	Continuation mark. Enter + where additional information for this tuple is contained in the next record. Otherwise, enter $ to end the tuple.

Datafill example for table SCAIPROF

The following example shows a MAP display of a table SCAIPROF datafill for a customer who has chosen the CTXEVENT35$ fixed category.

MDC Meridian SCAI (end)

MAP display example for table SCAIPROF

```
PROFKEY
                                                PROFILE
_____________________________________________________________
LINKSET1 0
 (CTXEVENT35$)
```

SERVORD

There are two sets of phones available to MDC agents. The first consists of Meridian Business Sets (MBS) and other business sets generally used by ACD agents. The second set includes most other telephone sets.

For agents using business sets, translations information can be seen in table KSETLINE. For the other phones, see table IBNLINES. For both sets of phones, datafill through SERVORD and *not* the table editor.

The service order system (SERVORD) consists of commands that enable the user to modify existing lines in a DMS. SERVORD, part of the switch's database software, provides the operating company with a rapid and transparent means of performing many operations, such as adding and deleting options from a line, adding or removing lines, and changing aspects of a line such as directory number (DN) or line equipment number (LEN).

MSMWI for IBN CLASS sets

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL08 and up

MSMWI for IBN CLASS sets was introduced in MSL08.

Prerequisites

In order to operate, MSMWI for IBN CLASS sets has the following prerequisites:

- Functional Group Name: MSL CLASS Options
- Functional Group Order Code: MSL00107
- Functionality: Multiple Station Message Waiting Indicators for IBN CLASS sets

Description

This feature enhances the MSMWI feature. MSMWI allows for a secondary terminal to provide an indication that messages are on another terminal that is the primary. MSMWI operates as a key set feature and only supports multi-line terminals.

MSMWI provides visual lamp indication on a key of the secondary terminal. The enhancements provided by this feature (MSMWI for IBN CLASS sets) extend the support of MSMWI to single-line analog IBN terminals that support CLASS messaging.

This feature provides both primary and secondary terminals the advantage of being either multi-line or single-sets. This feature provides a visual indication on the secondary terminal.

Companion C3050 sets are identified as single-line analog IBN terminals. This feature allows Companion C3050 sets to receive visual indication of messages waiting on the primary terminal.

This is accomplished by sending a CLASS message to an XPM with a CMR card. The CMR card provides the appropriate messaging to the C200a to update the visual indicator on the C3050 set.

MSMWI for IBN CLASS sets (continued)

The following table lists the IBN terminals that support CLASS.

IBN Terminals suppporting CLASS

Terminal Description	Terminal Type
Single-line analog set	2500
Maestro	1500
	2500
	3500
	4525
	4625
Power Touch	225
	250
	350
	360
Meridian Business Set	M8001
	M8003
	M9216
	M9316
	M9417
Quick Touch	100
	200

Note: Terminal sets that are assigned MSMWI for IBN CLASS sets that do not have visual indicators will not function.

Translations table flow

The MSMWI for IBN CLASS sets translations tables are shown in the following list:

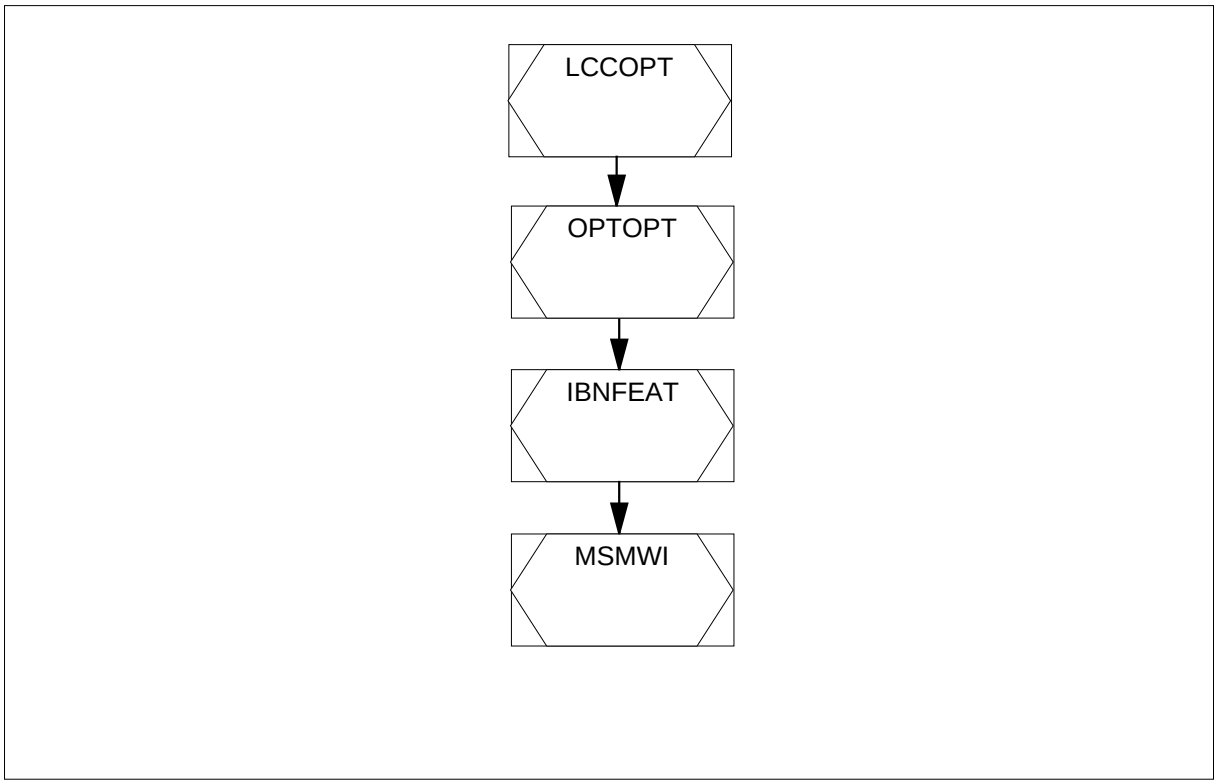
- Table LCCOPT
- Table OPTOPT

MSMWI for IBN CLASS sets (continued)

- Table IBNFEAT
- Table MSMWI

The MSMWI for IBN CLASS sets translation process is shown in the flowchart that follows.

Table flow for MSMWI for IBN CLASS sets



The following table lists the datafill content used in the flowchart.

Datafill example for MSMWI for IBN CLASS sets

Datafill table	Example data
IBNFEAT	LCM1 00 0 08 00 0 MSMWI MSMWI LCM1 00 1 09 31 5
MSMWI	LCM1 00 1 09 31 5 1 LCM1 00 0 08 00 0
Note: Tables LCCOPT and OPTOPT are datafilled prior to delivery of software load to site. Table IBNFEAT upon datafill dynamically datafills table MSMWI.	

MSMWI for IBN CLASS sets (continued)

Limitations and restrictions

The following limitations and restrictions apply to MSMWI for IBN CLASS sets:

- Table RESOFC must have the ENABLED field for CMWI set to yes.
- This feature can be assigned to CLASS terminals that do not provide visual indication.
- Terminals extending from an IPE require the IPE load with ACTID AX0374.
- The set of terminal types supported for this feature are IBN CLASS terminals.
- These terminals extend from a peripheral module that has the CMR card.
- A restriction on single-line sets, is that the number of primary terminals a secondary terminal can monitor is limited to one, because the MSMWI feature is only assigned once to an IBN terminal.
- This feature is not assignable to a secondary DN (through Teen Services) of an IBN terminal.
- This feature is transparent to MADN SCA groups.
- This feature operates the same regardless of whether the primary terminal and secondary terminal are members of a MADN SCA group.

Interactions

The following paragraphs describe the interactions between MSMWI for IBN CLASS sets and other functionalities.

- The primary terminal must be datafilled with the MWT or EMW feature in order for this feature to operate.
- The secondary terminal must be datafilled with the MSMWI feature after MWT or EMW are assigned to the primary terminal in order for this feature to operate.
- This feature operates only on IBN terminals capable of CLASS messaging.

Billing

MSMWI for IBN CLASS sets does not affect billing.

Station Message Detail Recording

MSMWI for IBN CLASS sets does not affect Station Message Detail Recording.

MSMWI for IBN CLASS sets (continued)

Datafill sequence

The following table lists the tables that require datafill to implement MSMWI for IBN CLASS sets. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for MSMWI for IBN CLASS sets

Table	Purpose of table
IBNFEAT	IBN Line Feature table contains the options for a single-line station.
MSMWI	Multiple Station Message Waiting Indication contains LENs of IBN and Key Set terminals.
Note: Table IBNFEAT is datafilled through SERVORD; therefore, no datafill procedure is provided. Table MSMWI is dynamically datafilled after table IBNFEAT is datafilled.	

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

MAP display example for table IBNFEAT

```
LEN  DNNO  DF  FEATURE  DATA
-----------------------------------------------------
LCM1  00 0 08 00 0 MSMWI  MSMWI LCM1 00 1 09 31 5
```

Datafill example for table MSMWI

The following example shows sample datafill for table MSMWI.

MAP display example for table MSMWI

```
MSMWIKEY               SLEN SLKEY
-----------------------------------------------------
LCM1  00 1 09 31 5      1 LCM1  00 0 08 00   0
```

MSMWI for IBN CLASS sets (continued)

Translation verification tools

MSMWI for IBN CLASS sets does not use translation verification tools.

SERVORD

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to MSMWI for IBN CLASS sets:

- Table IBNFEAT is datafilled through SERVORD.
- When adding MSMWI to an IBN set, the user is not prompted for the primary logical key.
- A default of 0 is used by the system.

SERVORD prompts

The following table shows the SERVORD prompts used to add MSMWI for IBN CLASS sets.

SERVORD prompts for MSMWI for IBN CLASS sets

Prompt	Valid input	Explanation
OPTION	MSMWI or $	Specifies the name of the option. Enter MSMWI. $ sign ends Servord
PRIMARY_LEN	Valid LEN	Specifies what primary LEN assignment feature requires.

SERVORD example for adding MSMWI for IBN CLASS sets

The following SERVORD example shows how MSMWI for IBN CLASS sets is added to an existing line using the ADO command.

MSMWI for IBN CLASS sets (end)

SERVORD example for MSMWI for IBN CLASS sets in prompt mode

```
>ADO
SONUMBER: NOW 97 12 10 PM
> $
DN_OR_LEN:
> 0 0 0 3
OPTION:
> MSMWI
PRIMARY_LEN:
> LCM1 0 1 9 31
OPTION:
> $
```

SERVORD example for MSMWI for IBN CLASS sets in no-prompt mode

```
> ADO   0 0 0 3   MSMWI   LCM1 0 1 9 31   $
```

Call Waiting Activation/Deactivation

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL07 and up

Call Waiting Activation/Deactivation was introduced in MSL07.

Prerequisites

Call Waiting Activation/Deactivation has no prerequisites.

Description

The purpose of this feature is to allow users data calls not to be interrupted by CWT. Call Waiting Activation/Deactivation (CWTACT) allows a user to activate or deactivate CWT as desired. The subscriber uses feature codes to activate and deactivate CWTACT.

This activity allows CWTACT assignment to any IBN line class code 500/2500 set. It also allows switch personnel to assign feature access codes for activating and deactivating CWTACT in table IBNXLA.

Translations table flow

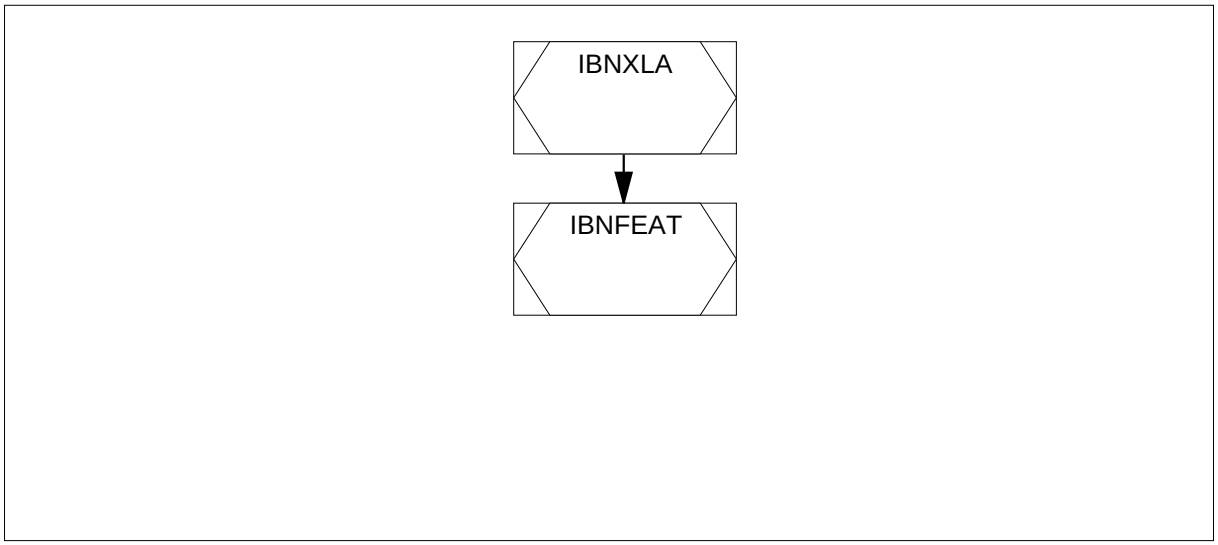
The Call Waiting Activation/Deactivation translations tables are shown in the following list:

- Table IBNXLA
- Table IBNFEAT

The Call Waiting Activation/Deactivation translation process is shown in the flowchart that follows.

Call Waiting Activation/Deactivation (continued)

Table flow for Call Waiting Activation/Deactivation



The following table lists the datafill content used in the flowchart.

Datafill example for Call Waiting Activation/Deactivation

Datafill table	Example data
IBNXLA	FNT 22 FEAT N N CWTACT
	FNT 23 FEAT N N CWTDEACT
IBNFEAT	LCM2 00 0 00 01 0 CWTACT CWTACT Y
Note: Table IBNFEAT tuples are dynamically datafilled by the user through Servord.	

Limitations and restrictions

The following limitations and restrictions apply to Call Waiting Activation/Deactivation:

- CWT must be assigned prior to assigning CWTACT.
- CWTACT must be deleted prior to deleting CWT.
- CWTACT is only assigned to 500/2500 sets and line class code IBN.

Call Waiting Activation/Deactivation (continued)

Interactions

The following paragraphs describe the interactions between Call Waiting Activation/Deactivation and other functionalities.

- When CWTACT is assigned to a set and is set to N, Call Forwarding operates as if CWT is not active.
- When CWTACT is set to Y, CWT and Call Forwarding interact normally.
- CWT takes precedence over CFB and CFD.
- CWTACT disables the CWT tone for any other feature attempting to call wait.
- Call Waiting Origination and Dial Call Waiting receive busy tone, when CWTACT is set to N.
- PCWT is not affected by CWTACT.

Station Message Detail Recording

Call Waiting Activation/Deactivation does not affect Station Message Detail Recording.

Datafill sequence

The following table lists the tables that require datafill to implement Call Waiting Activation/Deactivation. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Call Waiting Activation/Deactivation

Table	Purpose of table
IBNFEAT	IBN Line Feature table contains the options for a single-line MDC station.
IBNXLA	IBN Translation table contains IBN translations. Table IBNXLA must be datafilled to include the appropriate translations selector used for Call Waiting Activation/Deactivation.
Note: Table IBNFEAT is datafilled through SERVORD; therefore, no datafill procedure is provided.	

Datafilling table IBNXLA

The following table shows the datafill specific to Call Waiting Activation/Deactivation for table IBNXLA. Only those fields that apply

Call Waiting Activation/Deactivation (continued)

directly to Call Waiting Activation/Deactivation are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key This field consists of subfields XLANAME and DGLIDX.
	XLANAME	1 to 8	Translator Name This subfield specifies the name that is assigned to the translator. Enter the 1- to 8-character name.
	DGLIDX	1 to 18	Digilator Index This subfield specifies the access code. Enter a 1- to 18-digit number assigned as the access code.
RESULT		see subfield	Result This field consists of subfield TRSEL.
	TRSEL	FEAT	Translations Selector This subfield specifies the translations selector to be used. Enter FEAT. ***Note:*** If TRSEL is set to FEAT, subfields ACR, SMDR, VCDR, and FEATURE require datafill.
	ACR	Y or N	Account Code Entry This subfield specifies whether an account code is required. Enter Y or N.
	SMDR	Y or N	Station Message Detail Recording This subfield specifies whether SMDR is required. Enter Y or N.

Call Waiting Activation/Deactivation (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	VCDR	Y or N	Variable Call Detail Recording This subfield specifies whether VCDR is required. Enter Y or N.
	FEATURE	CWTACT or CWTDEACT	Feature This subfield specifies the feature assigned to a line. Enter CWTACT or CWTDEACT.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
              KEY
                                                  RESULT
 ________________________________________________________________
     FNV      22                        FEAT   N N CWTACT
     FNV      23                        FEAT   N N CWTDEACT
```

Translation verification tools

Call Waiting Activation/Deactivation does not use translation verification tools.

SERVORD

Table IBNFEAT is datafilled dynamically through SERVORD.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Call Waiting Activation/Deactivation:

- CWTACT must have CWT assigned prior to being assigned.
- CWT cannot be deleted before deleting CWTACT.
- CWTACT is only assigned to 500/2500 sets and line class code IBN.

SERVORD prompts

The following table shows the SERVORD prompts used to add Call Waiting Activation/Deactivation.

SERVORD prompts for Call Waiting Activation/Deactivation

Prompt	Valid input	Explanation
DN_OR_LEN	Valid LEN	Specifies what LEN assignment feature requires.
OPTION	CWTACT or $	Specifies the name of the option. Enter CWTACT. $ sign ends Servord transactions.
CWT_ACTIVE	Y or N	Enter Y to activate Call Waiting. Enter N to deactivate Call Waiting.

SERVORD example for adding Call Waiting Activation/Deactivation

The following SERVORD example shows how Call Waiting Activation/Deactivation is added to an existing line using the ADO command.

Call Waiting Activation/Deactivation (end)

SERVORD example for Call Waiting Activation/Deactivation in prompt mode

```
>ADO
SONUMBER: NOW 92 12 17 PM
>
DN_OR_LEN:
> 0 0 0 3
OPTION:
> CWTACT
CWT_ACTIVE:
> Y
OPTION:
> $
```

SERVORD example for Call Waiting Activation/Deactivation in no-prompt mode

```
> ADO  0 0 0 3  CWTACT  Y  $
```

CFTOD

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL09 and up

CFTOD was introduced in MSL09.

Prerequisites

CFTOD has no prerequisites.

Description

The current call forward features, Call Forward Internal (CFI) and Call Forward Universal (CFU), allow for call forwarding of sets on the MSL-100 switch both internally and externally. CFU and CFI do not have the capability to call forward for the time of day.

Call Forward Time of Day (CFTOD) provides a new functionality and enhancements to the existing call forwarding features to allow for provisioning of phone sets to be call forwarded for certain times of the day. This feature also provides capabilities to forward for time of the week and time of the year.

CFTOD is a new line option that is assigned through SERVORD and provides this new functionality for the following types of sets:

- Meridian business sets (MBS)
- Integrated voice and data sets (IVD)
- Integrated Services and Digital Network (ISDN)
- Integrated Business Network (IBN)

All the sets are required to have CFI or CFU assigned before CFTOD can be assigned. CFTOD is assigned on the same key as CFI and CFU and must be assigned to key one on the set.

CFTOD allows for separate forwarding of DNs for both internal and external calls. This feature provides this capability for each phone by providing separate Time of Day names (TODNAME) in the table.

CFTOD (continued)

Each phone can be provided its own forwarding scheme as they are assigned in SERVORD. SERVORD provides the prompts necessary for CFTOD after the appropriate tables have been datafilled.

This module covers the necessary datafill for the translation tables for the CFTOD feature before it can be assigned in SERVORD.

Translations table flow

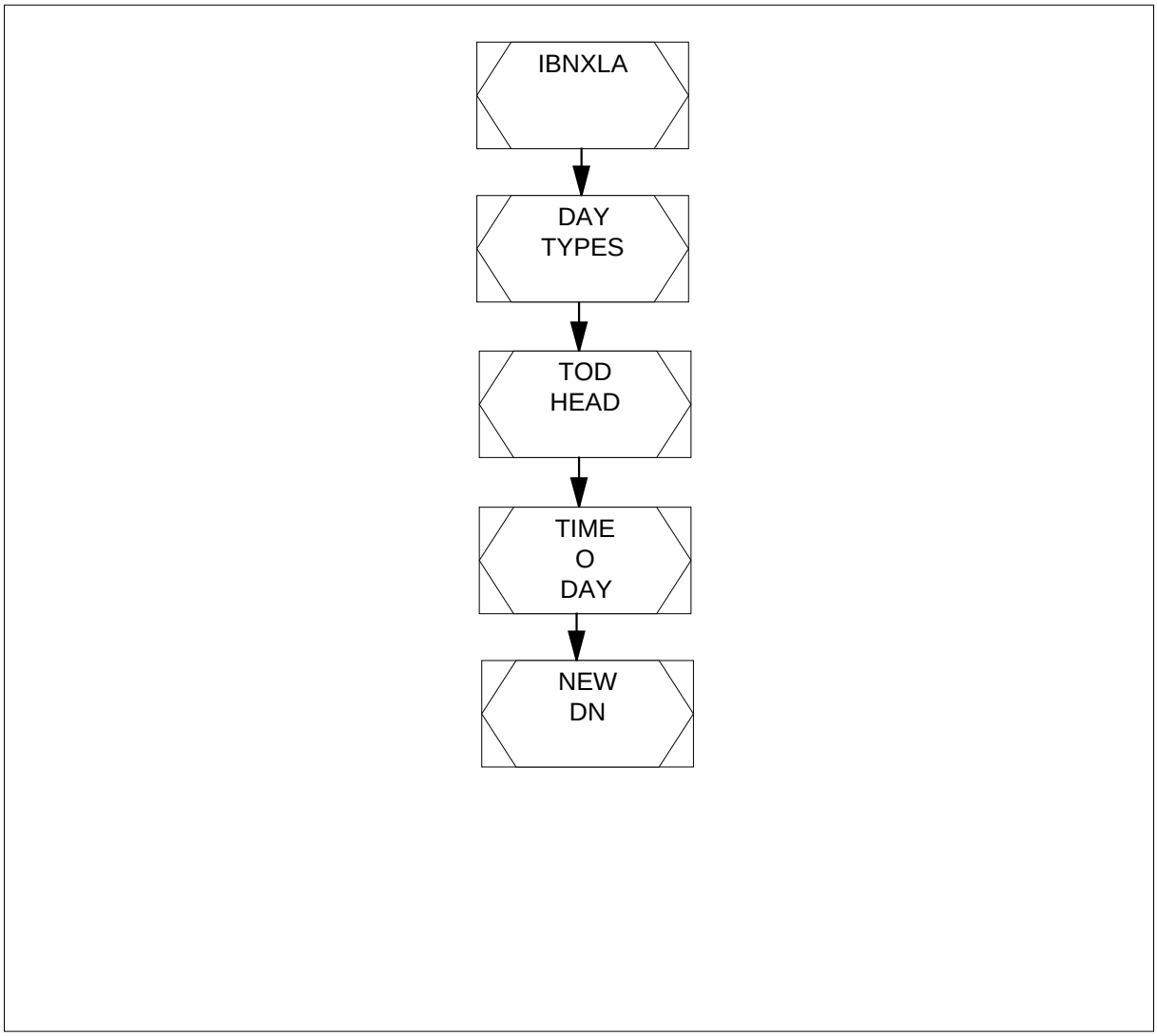
The CFTOD translations tables are described in the following list:

- Table IBNXLA
- Table DAYTYPES
- Table TODHEAD
- Table TIMEODAY
- Table NEWDN

The CFTOD translation process is shown in the flowchart that follows.

CFTOD (continued)

Table flow for CFTOD



The following table lists the datafill content used in the flowchart.

Datafill example for CFTOD (Sheet 1 of 2)

Datafill table	Example data
IBNXLA	FRCH 88 FEAT N Y CFTODACT
DAYTYPES	WEEKDAY
TODHEAD	ENGREXT CFTOD 8645000 (WEEKDAY) $

CFTOD (continued)

Datafill example for CFTOD (Sheet 2 of 2)

Datafill table	Example data
TIMEODAY	ENGREXT WEEKDAY 9 0 $
NEWDN	ENGINEERING 1 9975120

Limitations and restrictions

The following limitations and restrictions apply to CFTOD:

- CFI or CFU must be assigned before CFTOD can be assigned.
- CFTOD can be assigned only to key one on the set.
- CFTOD can be assigned only to MBS, IVD, ISDN, and IBN sets.
- The maximum number of TODNAMES defined in table TODNAME is 256.
- All CFI and CFU restrictions apply to CFTOD.

Interactions

The following describe the interactions between CFTOD and functionalities CFI and CFU:

- When CFI, CFU, CFTOD are inactive, calls on the set are not forwarded.
- When CFI and CFU are active and CFTOD is inactive, the call is forwarded to the DN by CFI and CFU.
- When CFI and CFU are inactive, and CFTOD is active, CFTOD is in effect.
- When CFI and CFU are active and CFTOD is active, CFI and CFU work with CFTOD having priority.

Billing

CFTOD does not affect billing.

Datafilling office parameters

CFTOD does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement CFTOD. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for CFTOD

Table	Purpose of table
IBNXLA	IBN Translation table contains IBN translations. Table IBNXLA must be datafilled to include the appropriate translations selector used for CFTOD.
DAYTYPES	Type of Day table contains the names of all day types in the time of day system.
TODHEAD	Time of Day Head table contains the information to determine how tables Dayoweek, Dayoyear and Timeoday are used.
TIMEODAY	Time of Day table contains the definitions for the time of day (TOD) result for a given TOD system and day type.
NEWDN	New Directory Number table contains information for the time of day system in relation to the forwarding DN.

Datafilling table IBNXLA

The following table shows the datafill specific to CFTOD for table IBNXLA. Only those fields that apply directly to CFTOD are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key This field consists of subfields XLANAME and DGLIDX.
	XLANAME	1 to 8	Translator Name This subfield specifies the name that is assigned to the translator. Enter the 1 to 8 character name.
	DGLIDX	1 to 18	Digilator Index This subfield specifies the access code. Enter a 1 to 18 digit number assigned as the access code.
RESULT		see subfield	Result This field consists of subfield TRSEL.

CFTOD (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	TRSEL	FEAT	Translations Selector This subfield specifies the translations selector to be used. Enter FEAT. ***Note:*** If TRSEL is set to FEAT, subfields ACR, SMDR, VCDR, and FEATURE require datafill.
	ACR	Y or N	Account Code Entry This subfield specifies whether an account code is required. Enter Y or N.
	SMDR	Y or N	Station Message Detail Recording This subfield specifies whether SMDR is required. Enter Y or N.
	VCDR	Y or N	Variable Call Detail Recording This subfield specifies whether VCDR is required. Enter Y or N.
	FEATURE	CFTODACT, CFTODDEACT, CFTOVRACT, CFTOVRDACT	Enter feature. This subfield specifies the feature assigned to a line. Enter CFTODACT, CFTODDEACT, CFTOVRACT, OR CFTOVRDACT.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
              KEY
                                             RESULT
 ______________________________________________________
    FRCH     88                         FEAT  N N CFTODACT
    FRCH     89                         FEAT  N N CFTODDEACT
```

Datafilling table DAYTYPES

The following table shows the datafill specific to CFTOD for table DAYTYPES. Only those fields that apply directly to CFTOD are shown. For

a description of the other fields, refer to the data schema section of this document.

Datafilling table DAYTYPES

Field	Subfield or refinement	Entry	Explanation and action
DAYTYPE		alphanumeric (1 to 8 characters)	Type of Day. Enter the name assigned to the type of day. Typical entries are Weekday, Weekend, XMAS, Holiday, the days of the week or any other day (or set of days) that is treated in a different manner.

Datafill example for table DAYTYPES

The following example shows sample datafill for table DAYTYPES.

MAP display example for table DAYTYPES

```
DAYTYPE
--------------------------------------------------------
PSHOL
SATDAY
WEEKDAY
```

CFTOD (continued)

Datafilling table TODHEAD

The following table shows the datafill specific to CFTOD for table TODHEAD. Only those fields that apply directly to CFTOD are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TODHEAD

Field	Subfield or refinement	Entry	Explanation and action
TODNAME		see subfield	Time of day name key. This field consists of subfield TODNAME. This is the key to the table.
	TODNAME	alphanumeric (1 to 8 characters or blank)	Time of day name. Enter choice of name for TODNAME. Examples can be formal names or names associated with specific departments.
TODTYPE		CFTOD	Time of day type. Name type and DN make up this field. Enter CFTOD for this feature and applicable DN.
DAYTYPES		alphanumeric (1 to 8 characters)	Types of day. Enter up to 32 day types assigned to this TOD entry. Day types are defined in table DAYTYPES. Examples are: SATDAY, WEEKDAY, HOLIDAY. End list with $.

Note: Tables DAYOYEAR and DAYOWEEK are optional tables for datafill and only add additional configuration to the TOD system tables.

Datafill example for table TODHEAD

The following example shows sample datafill for table TODHEAD.

MAP display example for table TODHEAD

```
TODNAME        TODTYPE             DAYTYPES
-------------------------------------------------------
ENGREXT       CFTOD  8645010       (WEEKDAY) $
ENGRINT       CFTOD  8645000       (WEEKDAY) (WEEKEND) $
ENGRDATA      CFTOD  8645020       (WEEKDAY) $
ENGRUNIV      CFTOD  8645010       (WEEKDAY) (HOLIDAY) $
```

Datafilling table TIMEODAY

The following table shows the datafill specific to CFTOD for table TIMEODAY. Only those fields that apply directly to CFTOD are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TIMEODAY

Field	Subfield or refinement	Entry	Explanation and action
TODNAME		alphanumeric (1 to 8 characters)	Time of day name. Enter name for time of day. Examples can be formal names or names associated with specific departments or groups.
DAYTYPE		alphanumeric (1 to 8 characters)	Day type. Enter the day type assigned to this TOD entry. The day type must be previously defined in table DAYTYPES.
TIME		see subfields	
	HOUR	0 TO 23	Hour. Enter the starting hour for the TOD result. Note that time is in military time.
	MINUTE	0 TO 59	Minute. Enter the starting minute for the TOD result.
DATA		numeric or $	Enter the appropriate data for the data field for time of day. Entry can be DN or $ as determined by switch office personnel. DNs listed as a $ are used to terminate the call to the station's DN or be processed by other features or line options.

Datafill example for table TIMEODAY

The following example shows sample datafill for table TIMEODAY.

MAP display example for table TIMEODAY

```
TODNAME     DAYTYPE     TIME     DATA
-------------------------------------------------------
ENGREXT     WEEKDAY      9   0   8645010
ENGRINT     WEEKEND      16  30  8645010
ENGRUNIV    HOLIDAY      0   0   9974567
```

CFTOD (continued)

Datafilling table NEWDN

The following table shows the datafill specific to CFTOD for table NEWDN. Only those fields that apply directly to CFTOD are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table NEWDN

Field	Subfield or refinement	Entry	Explanation and action
TODNAME		alphanumeric (1 to 8 characters)	Enter time of day name as listed in table TODHEAD. Valid names must be listed in table TODHEAD prior to datafill of this table field. Default value is nil_todname.
TIMEODAYREF		numeric (0 to 32767)	Enter numeric data ranging from 0 to 32767. This references data in table TIMEODAY to select forwarding DN. Default is 0.
FORWARDING_ DN		numeric (up to 18 digits)	Enter forwarding DN information specified for CFTOD feature. DN specified must be valid entry in switch dialing plan. No default value is provided.

Datafill example for table NEWDN

The following example shows sample datafill for table NEWDN.

MAP display example for table NEWDN

```
TODNAME       TIMEODAYREF           FORWARDING_DN
------------------------------------------------------
ENGINEERING        1                  9975120
ENGINEERING        2                  9975001
```

Translation verification tools

CFTOD does not use translation verification tools.

SERVORD

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to CFTOD:

- Applicable tables must be datafilled prior to assignment of CFTOD in SERVORD.
- CFI or CFU must be assigned prior to assigning CFTOD.
- CFTOD can be assigned only to key one on a set.

CFTOD information is requested from the system by using the following Command Interpreter (CI) commands:

- Query LEN (QLEN)
- Query directory number (QDN)
- Query logical terminal (QLT)

Feature assignment

The following functionalities apply to this option:

- 500/2500: yes
- MDC set: yes
- MDC business set: yes
- Code: yes

CFTOD (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign CFTOD to a set.

SERVORD prompts for CFTOD

Prompt	Valid input	Explanation
SONUMBER	Refer to SONUMBER in the Prompts table in Chapter 2 for information on valid inputs.	The unique number of the service order to be entered.
DN_OR_LEN	Refer to DN and LEN_OR_LTID in the Prompts table in Chapter 2 for information on valid inputs.	Enter the line's DN or LEN. In the case of an MDN line or MLH/DLH hunt members, if a DN is specified then the user is prompted for the LEN. If the LEN is entered, then the user is not prompted for the DN.
OPTKEY	1-69 for business sets with the CFTOD feature. 1, 3, 4, 7 for data sets.	Identifies key on business set or data unit to which an option is assigned.
OPTION	CFTOD is the valid input for this feature. Refer to the "Line service options" table in Chapter 2 for a list of valid inputs for other features.	Enter CFTOD. Option(s) associated with a service to be established, modified, or deleted. A maximum of 20 options can be specified in any single ADD, ADO, EST, or NEW command.
TODNAME_INT	alphanumeric character (1 to 8 characters)	Enter valid internal TOD Name found in table TODHEAD.
TODNAME_EXT	alphanumeric character (1 to 8 characters)	Enter valid external TOD Name found in table TODHEAD.
TODNAME_DATA	alphanumeric character (1 to 8 characters)	Enter valid data TOD Name found in table TODHEAD.

SERVORD example for adding CFTOD

The following SERVORD example shows how CFTOD is added to a set using the ADO command.

SERVORD example for CFTOD in prompt mode

```
>ADO
SONUMBER:  NOW 98 2 06  AM
>
DN_OR_LEN
> 7895432
OPTKEY
> 1
OPTION
> CFTOD
TODNAME_INT:
> DESIGN1
TODNAME_EXT:
> DESIGN2
TODNAME_DATA:
> DESIGN3
OPTKEY
> $
```

SIMRING

Ordering codes

Functional group ordering code:

Functionality ordering code:

Release applicability

MSL09 and up

SIMRING was introduced in MSL09.

Prerequisites

SIMRING has no prerequisites.

Description

Simultaneous Ringing (SimRing) allows a pre-defined group of up to five directory numbers (DN) to be alerted simultaneously. This simultaneous alert occurs when a specific member of the group, referred to as the pilot DN, receives a call. The first alerted DN that answers the call connects to the calling party. Once the calling party connects to a DN, the other alerted member DNs release the call. The SimRing subscriber accesses the SimRing information on activating/deactivating, editing, adding and deleting the member DN (MDN) list. The SimRing subscriber accesses the SimRing information either locally or remotely.

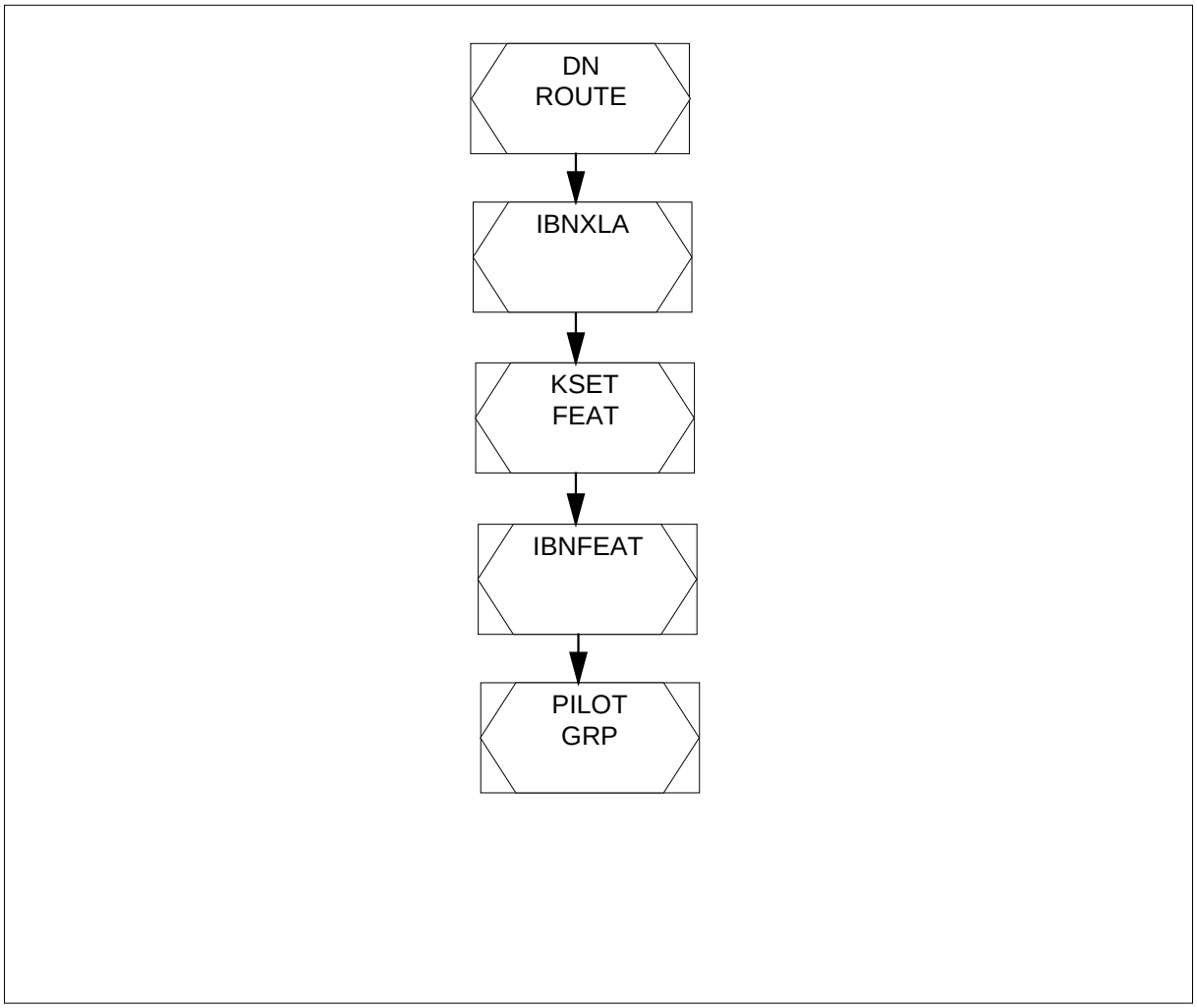
Translations table flow

The SIMRING translations tables are described in the following list:

- Table PILOTGRP
- Table IBNFEAT
- Table KSETFEAT
- Table IBNXLA
- Table DNROUTE

The SIMRING translation process is shown in the flowchart that follows.

Table flow for SIMRING



The following table lists the datafill content used in the flowchart.

Datafill example for SIMRING (Sheet 1 of 2)

Datafill table	Example data
DNROUTE	613 621 1000 FEAT DISA RESG200 0 Y Y Y Y (SIMRING) $
IBNXLA	RXCFNXXX 88 N N SIMRING
KSETFEAT	HOST 00 0 03 03 0 SIMRING SIMRING 7 ACT $

SIMRING (continued)

Datafill example for SIMRING (Sheet 2 of 2)

Datafill table	Example data
IBNFEAT	HOST 00 0 03 03 0 SIMRING SIMRING 7 ACT $
PILOTGRP	1 6136216076 2558 7236055 $

Limitations and restrictions

The following limitations and restrictions apply to Simultaneous Ringing:

- SimRing does not detect the presence of Call Forward Busy Line (CFBL/CFB) on a non-pilot directory number (NPMDN) if the connection between the pilot directory number (PDN) and the NPMDN is not ISUP-all-the-way.
- SimRing does not detect the presence of Call Forward Do Not Answer (CFDA/CFD) on an NPMDN except when using Nortel-proprietary ISUP messages.
- SimRing requires ISUP trunks on the first leg of PDN-to-NPMDN calls.
- SimRing does not support intra-switch calls between the PDN to NPMDN where the NPMDNs are non-supported agents.

A call to the PDN of group B only alerts its own NPMDNs if the call meets both of the following conditions:

- The PDN of SimRing group A is assigned as a member directory number (MDN) in SimRing group B.
- The PDN of SimRing group A is located on the same switch as the PDN of SimRing group B.

Note: If the PDN of groups A and B are on different switches, a call to the PDN of group B alerts the MDNs of both groups.

Interactions

The following list identifies the interactions between SIMRING and other functionalities. For detailed descriptions of the interactions, see the *Feature Description Manual* of this document.

- Automatic Call Back (not supported on M2000 series)
- Automatic Call Distribution/Uniform Call Distribution (not supported on M2000 series)
- Automatic Recall (not supported on M2000 series)
- Call Forward Busy Line

- Call Forward Don't Answer
- Call Forwarding/ Universal CFW/ Selective CFW/ CFW Intragroup/ CFW Universal (not supported on M2000 series)
- Calling Number Delivery/ Dialable Directory Number/ Calling Name Delivery (not supported on M2000 series)
- Call Pickup
- Call Waiting
- Denied Origination
- Denied Termination
- Directed Call Pickup
- Distinctive Ring (not supported on M2000 series)
- Dual Line Call Management (not supported on M2000 series)
- Government Emergency Telecommunication Service
- Group Intercom
- Make Set Busy All Calls
- Multi-Switch Business Group Feature Networking Control
- Ring Again
- Speed Call
- Spontaneous Call Waiting Identification/ Deluxe Spontaneous Call Waiting Identification (not supported on M2000 series)
- Station Controlled Conference
- SUSpend Service/ Requested SUSpend Service
- Teen Service (not supported on M2000 series)
- Three-way Calling

Billing

SIMRING does not affect billing.

Station Message Detail Recording

SIMRING does not affect Station Message Detail Recording.

SIMRING (continued)

Datafilling office parameters

The following table shows the office parameters used by SIMRING. For more information about office parameters and SIMRING, refer to *Office Parameters Reference Manual.*

Office parameters used by SIMRING

Table name	Parameter name	Explanation and action
OFCENG	NO_OF_CLONE_TIDS	Office parameter NO_OF_CLONE_TIDS defines the number of clone or virtual terminal identifiers available in the office. Virtual identifiers (VID)s are needed to simultaneously alert multiple terminating agents. It identifies the maximum number of Non-Pilot member DNs that can be alerted at one time.
OFCENG	SIMRING_CENTREX_CONTROL	SIMRING_CENTREX_CONTROL determines the availability of the SIMRING functionality on CENTREX agents (IBN and M5XXXX sets*) office wide.
OFCENG	SIMRING_RES_CONTROL	SIMRING_RES_CONTROL determines the availability of the SIMRING functionality on RES agents office wide.

Note: *M5XXXX series does not include ISDN M5XXXX series sets.

Datafill sequence

The following table lists the tables that require datafill to implement SIMRING. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for SIMRING (Sheet 1 of 2)

Table	Purpose of table
DNROUTE	Directory Number Route contains information for writable DNs in the system, such as a DN that identifies a route instead of a Line Equipment Number (LEN).
IBNXLA	IBN Translation table contains IBN translations. Table IBNXLA must be datafilled to include the appropriate translations selector used for SIMRING.
KSETFEAT	KSETFEAT contains the line features that are assigned to business and data sets listed in table KSETLINE.

Datafill tables required for SIMRING (Sheet 2 of 2)

Table	Purpose of table
IBNFEAT	IBN Line Feature table contains the options for a single-line MDC station.
PILOTGRP	Pilot Groups contains information for all the SIMRING groups defined in the switch.

Datafilling table DNROUTE

The following table shows the datafill specific to SIMRING for table DNROUTE. Only those fields that apply directly to SIMRING are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNROUTE

Field	Subfield or refinement	Entry	Explanation and action
DNRESULTS		see subfields	Directory Number Results. This field consists of subfields DNSEL, FEATURE, CUSTGRP, SUBGRP, AUTHREQ, SMDRTO, SMDRFROM, INTRAGRP and DISAOPT. Only subfield DISAOPT is modified by SIMRING. Therefore only subfield DISAOPT is described.
	DISAOPT	SIMRING	DISA Option. This field specifies the DISA option to be accessed with the corresponding DISA DN. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE   OFCCODE   STNCODE   DNRESULT
------------------------------------------------------------------
613  621  1000  FEAT  DISA   RESG200   0 Y Y Y Y  (SIMRING ) $
```

SIMRING (continued)

Datafilling table IBNXLA

The following table shows the datafill specific to SIMRING for table IBNXLA. Only those fields that apply directly to SIMRING are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
RESULTS		see subfields	Results. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE. Only subfield FEAT is modified by SIMRING. Therefore only subfield FEAT is described.
	FEATURE	SIMRING	Feature. This field specifies the feature that can have additional translation datafill. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY RESULT
-------------------------------------------------------
RXCFNXXX   88   FEAT  N  N  SIMRING
```

Datafilling table KSETFEAT

The following table shows the datafill specific to SIMRING for table KSETFEAT. Only those fields that apply directly to SIMRING are shown. For

a description of the other fields, refer to the data schema section of this document.

Datafilling table KSETFEAT

Field	Subfield or refinement	Entry	Explanation and action
FEATKEY		see subfields	Feature Key. This field consist of subfields LEN, KEY, FEAT. Only subfield FEAT is modified to support SIMRING. Therefore only subfield FEAT is described.
	FEAT	SIMRING	Feature. This field specifies the feature assigned to the line, in this case SIMRING. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.
FEATURE		SIMRING	Feature. This field specifies the feature assigned to the line, in this case SIMRING. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.
KVAR		see subfields	Data. This field contains subfields STATE and PIN. See following prompts for description.
	GRPKEY	numeric (0 to 9999 characters)	Group Key. This field specifies the value for the index of the SIMRING group. It provides mapping to table PILOTGRP.
	STATE	ACT or INACT	State. This field specifies the state of the SIMRING group whether or not the group is alerted by an call incoming to the PDN.
	PIN	numeric (2 to 10 characters)	Personal Identification Number. This field specifies the value for the PIN that can be required for remote access to the user interface. This field is not shown and always appears as a $.

Note: Table KSETFEAT is a read only table and cannot be changed through table editor. SERVORD is used to add or delete tuples to this table. Datafill shown here is for information purposes only.

Datafill example for table KSETFEAT

The following example shows sample datafill for table KSETFEAT.

SIMRING (continued)

MAP display example for table KSETFEAT

```
FEATKEY                              FEATURE       KVAR
-------------------------------------------------------------
HOST   00 0 03 03     0     SIMRING  SIMRING   7  ACT  $
```

Datafilling table IBNFEAT

The following table shows the datafill specific to SIMRING for table IBNFEAT. Only those fields that apply directly to SIMRING are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNFEAT (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DF		SIMRING	Data Feature. This field specifies the feature assigned to the line, in this case SIMRING. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.
FEATURE		SIMRING	Feature. This field specifies the feature assigned to the line, in this case SIMRING. For clarity, only the SIMRING feature is shown in the entry column although other features are available for input.
DATA		see subfields	Data. This field contains subfields STATE and PIN. See following prompts for description.
	GRPKEY	numeric (0 to 9999 characters)	Group Key. This field specifies the value for the index of the SIMRING group. It provides mapping to table PILOTGRP.

Note: Table IBNFEAT is a read only table and cannot be changed through table editor. SERVORD is used to add or delete tuples to this table. Datafill shown here is for information purposes only.

Datafilling table IBNFEAT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	STATE	ACT or INACT	State. This field specifies the state of the SIMRING group whether or not the group is alerted by an call incoming to the PDN.
	PIN	numeric (2 to 10 characters)	Personal Identification Number. This field specifies the value for the PIN that can be required for remote access to the user interface. This field is not shown and always appears as a $.
Note: Table IBNFEAT is a read only table and cannot be changed through table editor. SERVORD is used to add or delete tuples to this table. Datafill shown here is for information purposes only.			

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

MAP display example for table IBNFEAT

```
LEN                  DNNO     DF     FEATURE     DATA
-------------------------------------------------------
HOST   00 0 03 03     0     SIMRING  SIMRING   7  ACT  $
```

SIMRING (continued)

Datafilling table PILOTGRP

The following table shows the datafill specific to SIMRING for table PILOTGRP. Only those fields that apply directly to SIMRING are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PILOTGRP

Field	Subfield or refinement	Entry	Explanation and action
GRPKEY		numeric (0 to 9999)	Group Key. This field specifies the index reverenced by the SIMRING line option.
NPMDNS		numeric (4 to 30 digits). Up to four members.	List of Non-Pilot Members DN. This field is used to store the list of all the NPMDNs of the SIMRING group defined by this tuple. The list can have up to four members.

Datafill example for table PILOTGRP

The following example shows sample datafill for table PILOTGRP.

MAP display example for table PILOTGRP

```
GRPKEY     NPMDNS
-----------------------------------------------------------
1          6136216076   2558   7236055   $
2          8196246082    $
4          6137217146   8197217164   96211234   $
```

Translation verification tools

SIMRING does not use translation verification tools.

SERVORD

SERVORD limitations and restrictions

The following SERVORD incompatibilities apply to SIMRING:

- ACD
- DLCM
- DLH
- DNH

- KSH
- MDN
- MLH
- MPH
- UCD

Feature assignment

The following functionalities apply to this option:

- 500/2500: yes
- MDC set: yes
- MDC business set DN: yes

SERVORD prompts

The following table shows the SERVORD prompts used to add SIMRING to a phone set.

SERVORD prompts for CFTOD (Sheet 1 of 2)

Prompt	Valid input	Explanation
SONUMBER	Refer to SONUMBER in the Prompts table in Chapter 2 for information on valid inputs.	The unique number of the service order to be entered.
DN_OR_LEN	Refer to DN and LEN_OR_LTID in the Prompts table in Chapter 2 for information on valid inputs.	Enter the line's DN or LEN. In the case of an MDN line or MLH/DLH hunt members, if a DN is specified then the user is prompted for the LEN. If the LEN is entered, then the user is not prompted for the DN.
OPTION	SIMRING is the valid input for this feature. Refer to the “Line service options" table in Chapter 2 for a list of valid inputs for other features.	Enter SIMRING. Option(s) associated with a service to be established, modified, or deleted. A maximum of 20 options can be specified in any single ADD, ADO, EST, or NEW command.

SIMRING (continued)

SERVORD prompts for CFTOD (Sheet 2 of 2)

Prompt	Valid input	Explanation
STATE	ACT or INACT	Enter valid entry for SIMRING, ACTive or INACTive. Default is INACT.
PIN	numeric (2 to 10 digits)	Enter valid PIN assigned to the SIMRING group. The PIN is for security when a user attempts to access the interface remotely.
PILOT_LEN	LEN. Line Equipment Number	Enter valid LEN to PDN line to where SIMRING is assigned. See note.
MEMBER_DN	numeric (4 to 30 digits)	Enter valid NPMDN. NPMDN is a member DN that is not the pilot DN. Calls to the PDN also ring the members simultaneously. See note.
Note: This text is prompted when using the ADD, EST, or DEL command.		

SERVORD example for adding SIMRING

The following SERVORD example shows how SIMRING is added to a phone set using the ADO command.

SERVORD example for SIMRING in prompt mode

```
>ADO
SONUMBER:      NOW 98 7  7 AM
>
DN_OR_LEN
> 6218000
OPTION:
> SIMRING
STATE:
> ACT
PIN:
> 159
OPTION:
> $
```

PRI on RCC2

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL11

Prerequisites

PRI on RCC2 has no prerequisites.

Description

This feature provides support for primary rate interface (PRI) national ISDN-2 (NI-2) trunks on the Meridian SL-100 enhanced remote cluster controller (RCC2).

The RCC2 is a single shelf remote peripheral module that provides control and switching functions for the remote system. The RCC2 connects to the host with up to 16 C-side DS1 links. The host connects to the RCC2 through the line and trunk controller (LTC), line group controller (LGC), or ISDN line and trunk controller (LTCI).

The RCC2 main shelf supports up to 24 DS1 links on its peripheral side (P-side). The RCC2 main shelf with an extension supports up to 48 DS1 links. The following functions are supported by the RCC2.

- line concentrating modules (LCM) and ISDN line concentrating modules (LCME) using DS30A links
- remote line concentrating modules (RLCM) using DS1 links
- star remotes using DS1 links
- ISDN line drawers (ILD) in the following configurations with LCMs and RLCMs:
  - — up to two ILDs
  - — up to six ILDs (in a star remote)
- up to 16 remote ILDs (RLD) with the star remote over DS1 links
- intraswitching using P-side to P-side connections
- emergency stand alone (ESA), including warm entry and exit
- dual RCC2s
- trunks

The following features are supported by the PRI on RCC2 feature.

- PRI static trunks on the RCC2
- PRI dynamic trunks on the RCC2
- PRI in ESA mode
- ESA warm entry and exit for PRI calls
- dual RCC2 configuration for PRI calls
- interworking for the following connections:
  - POTS lines to and from PRI trunks
  - electronic business sets (EBS) to and from PRI trunks
  - basic rate interface (BRI) to and from PRI trunks
  - per trunk signalling (PTS) trunks to and from PRI trunks
  - signalling system number 7 (SS7) trunks to and from PRI trunks
  - emergency service bureau (ESB) trunks to and from PRI trunks
  - PRI trunks to and from PRI trunks

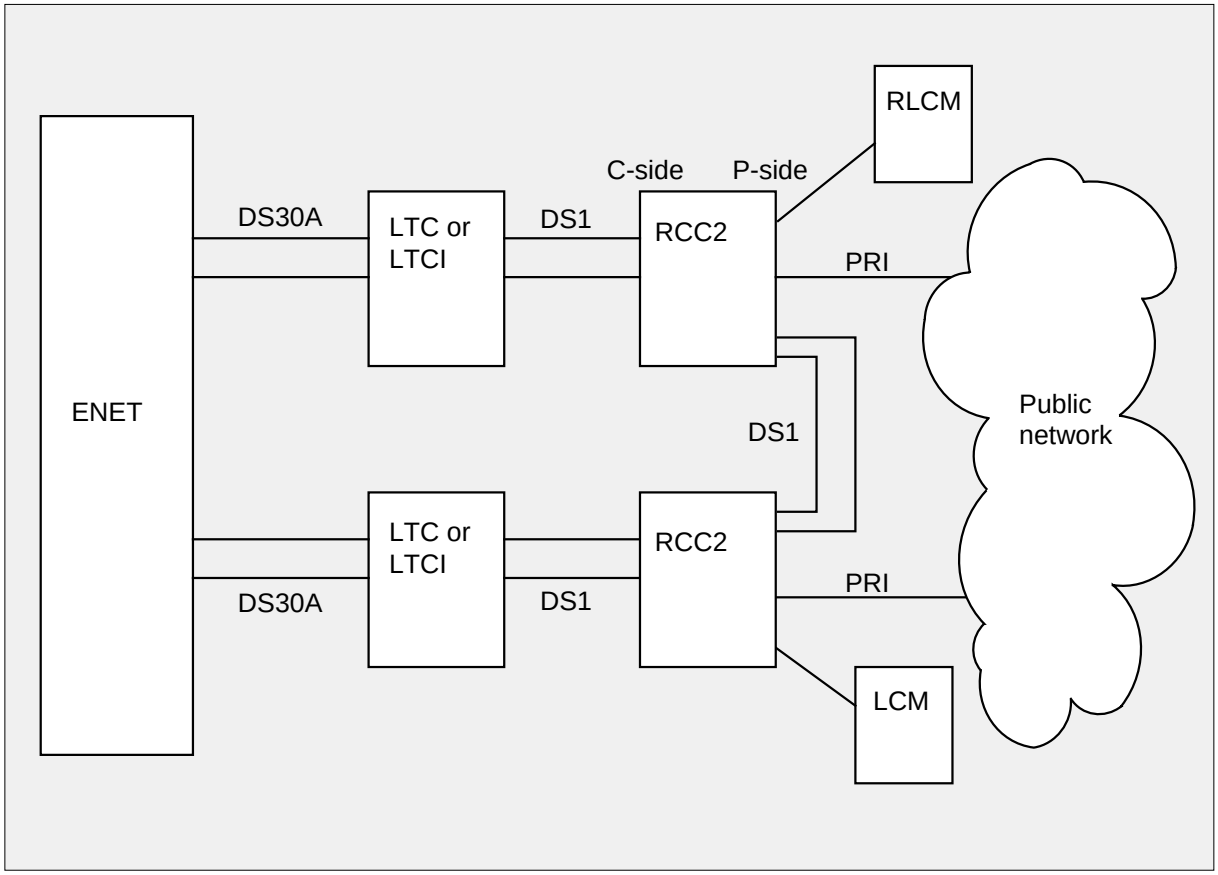
PRI on RCC2 configuration

The RCC2 can be configured in a single or dual configuration. When two RCC2s are connected to each other by DS1 links on their P-side, they are in dual configuration. The P-side links are called interlinks. Calls originating in one RCC2 and terminating in the mate RCC2 can be completed using channels available on interlinks, with no need to use C-side speech channels. These calls are referred to as interswitched calls.

The following figure shows a typical dual RCC2 configuration.

PRI on RCC2 (continued)

Dual RCC2 configuration



Translations table flow

The PRI on RCC2 translations tables are described in the following list:

- Table TRKGRP contains trunk group information.
- Table RCCINV contains all inventory data for the RCC except P-side link assignments.
- Table RCCPSINV contains P-side links assignments for RCC peripheral modules (PM).
- Table ISTRKGRP contains trunk group common language location identifiers (CLLI).
- Table TRKSGRP contains supplementary information for each subgroup assigned to a trunk group listed in table TRKGRP.

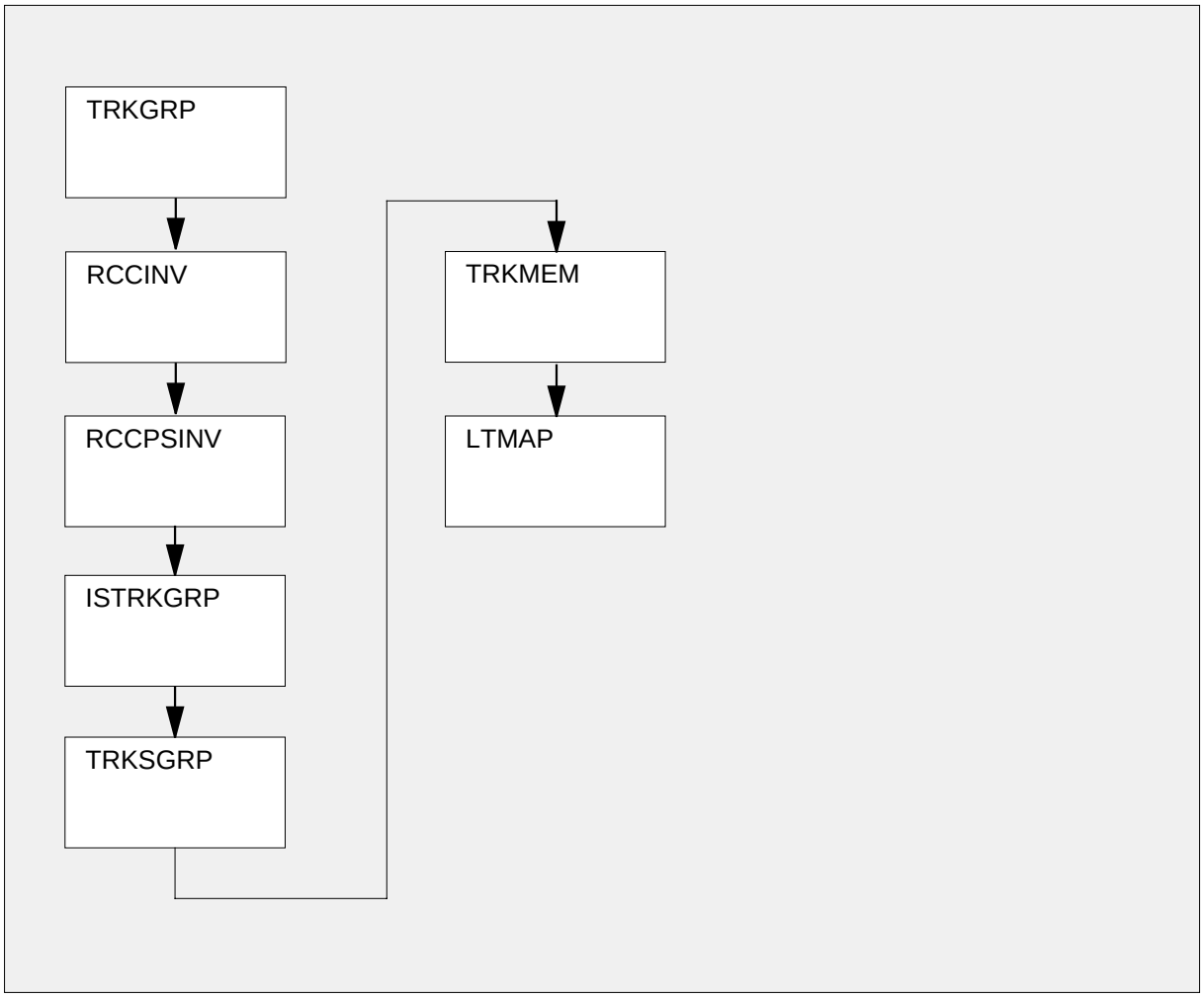
PRI on RCC2 (continued)

- Table TRKMEM contains the data for each trunk specified in tables TRKGRP and TRKSGRP.
- Table LTMAP maps logical terminals to line equipment numbers and the terminal equipment interface depending on logical terminal access privileges.

Note: Table TRKGRP contains no datafill specific to PRI on RCC2. Trunks used for PRI on RCC2 are datafilled as normal PRI trunks on an LTCI.

The PRI on RCC2 translation process is shown in the flowchart that follows.

Table flow for PRI on RCC2



PRI on RCC2 (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for PRI on RCC2

Datafill table	Example data
TRKGRP (Note)	PRI1 IBNT2 0 NPDGP NCRT NV 0 MIDL 0 N ANSDISC 0 Y N N N N Y Y 0 0 Y 0 0 0 0 N N N N N N N N N NATL LTID ISDN 62 $
RCCINV	REM1 RCC2 4 5 CRSC 3 18 2 B 5 MX85AA XRI11AP POTS POTSEX KEYSET KSETEX ABTRK DTCEX RMM_TERM RSMEX ESALINES ESAEX PRAB DTCEX $ LTC 0 0 1 2 4 3 5 $ Y N N UTR6 MSG6X69 ISP 16 $ NORTHAM AX74AA AX74AA BNK0NI05 N $
RCCPSINV	REM1 RCC2 4 0 NILTYPE 1 DS1 DEFAULT Y 2 DS1PRA PRI N 0 NIL $
ISTRKGRP	PRI1 REM1 RCC2 4
TRKSGRP	PRI1 0 DS1SIG ISDN 20 20 87Q931 2 N STAND USER PT_PT USER N UNEQ 50 N DEFAULT RCC2 4 12 24 64K HDLC $ $
TRKMEM	PRI1 1 0 RCC2 4 12 2
LTMAP	PRI 234 CLLI RCC2_PRI1 TEI 0 $

Note: Table TRKGRP contains no datafill specific to PRI on RCC2. Trunks used for PRI on RCC2 are datafilled as normal PRI trunks on an LTCI.

Limitations and restrictions

The following limitations and restrictions apply to PRI on RCC2:

- This feature development supports only the NTNIPRI variant, NI-2 PRI.
- This feature is designed for an RCC2 with an AX74 processor and an NTMX75BA (or later) matrix.
- If more than 15 D-channels are needed, the NTBX01AC card must be used.
- Basic calls in normal mode provide the following:
  - — speech
  - — back-up D-channel support
  - — call-by-call
  - — NX64
  - — calling name delivery

- Basic calls in ESA mode provide the following:
  - — speech
  - — 3.1 KHz audio
  - — 64 Kbps unrestricted digital
  - — 64 Kbps unrestricted digital, rate-adapted from 56 Kbps
  - — Call establishment and normal call clearing from both the user and network side. For each call the RSC-S maintains a call state variable. The call state variable is capable of assuming call establishment and call clearing values.
- Only IBNT2, ISDN, and PRA trunks are supported for PRI.
- C-side speech channels are used to connect the enhanced ISDN signalling processor (EISP) with the PRI D-channels.
- B-channel negotiation is not supported in either ESA or normal mode.
- PRI trunks can only be defined on the first 20 DS1 links on the RCC2 P-side.
- The number of PRI D-channels depends on the number of ILDs and RLDs. Conversely, the number of ILDs and RLDs depends on the number of PRI D-channels. The following table provides sample numbers. Exact numbers can be calculated by extrapolation.

ILD, RLD, and PRI D-channel provisioning

Number of DCH cards	Number of ILDs and RLDs	Number of PRI D-channels
10 or more	9	20
10 or more	27	16
10 or more	54	10
10 or more	82	4
10 or more	100	0

Interactions

PRI on RCC2 has no functionality interactions.

Activation/deactivation by the end user

PRI on RCC2 requires no activation or deactivation by the end user.

PRI on RCC2 (continued)

Billing

PRI on RCC2 does not affect billing.

Station Message Detail Recording

PRI on RCC2 does not affect Station Message Detail Recording.

Datafilling office parameters

PRI on RCC2 does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement PRI on RCC2. The tables are listed in the order in which you enter data.

Datafill tables required for PRI on RCC2

Table	Purpose of table
RCCINV	The remote cluster control inventory table contains inventory data for the EISP card for PRI trunks.
RCCPSINV	The remote cluster control P-side link inventory table contains the P-side link assignments for the RCC.
ISTRKGRP	The remote cluster controller dynamic trunk groups table provides the CLLI, site name, and RCC to which the dynamic PRI trunk is assigned.
TRKSGRP	The trunk subgroup table contains the D-channel information for PRI trunk groups.
TRKMEM	The trunk member table contains B-channel information for PRI trunk groups.
LTMAP	The logical terminal mapping table defines the logical terminal identifier and access privileges for PRI trunk groups.

Note: Table TRKGRP contains no datafill specific to PRI on RCC2. Trunks used for PRI on RCC2 are datafilled as normal PRI trunks on an LTCI.

Datafilling table RCCINV

The enhanced ISDN signal preprocessor (EISP) card must be assigned in table RCCINV before datafilling a PRI trunk on an RCC2. Once the PRI trunk is datafilled, it is not possible to delete the EISP tuple unless the PRI trunk entries are removed.

PRI on RCC2 (continued)

The following table shows the datafill specific to PRI on RCC2 for table RCCINV. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table RCCINV

Field	Subfield or refinement	Entry	Explanation and action
OPTCARD		ISP	Optional card. This field contains up to 10 entries. Enter ISP to assign the EISP card.
	SLOT_ NUMBER	3 through 19	Slot number. this field must be datafilled when ISP is entered in the OPTCARD field. the recommended optional slot number for most North American XPMs is 16.

Datafill example for table RCCINV

The following example shows sample datafill for table RCCINV.

MAP display example for table RCCINV

```
RCCNAME
         ADNUM FRTYPE FRNO SHPOS FLOOR ROW FRPOS EQPEC  LOAD
                                                          EXECTAB
         CSPM
                                                          CSLNKTAB
ESA INTRASW ADDMSGL
                                                          OPTCARD
 TONESET
                                                          PROCPEC
                              E2LOAD                 EXTINFO
OPTATTR
------------------------------------------------------------------------
REM1      RCC2   4
             5   CRSC   3   18    2    B    5   MX85AA XRI11AP
 (POTS POTSEX) (KEYSET KSETEX) (ABTRK DTCEX) (RMM_TERM RSMEX)
 (ESALINES ESAEX) (PRAB DTCEX) $
      LTC   0
                (     0) (     1) (     2) (     4) (     3) (     5)$
  Y      N      N
                             (     UTR6 ) (     MSG6X69 ) (    ISP 16)$
 NORTHAM
                                                       AX74AA  AX74AA
                      BNK0NI05                            N
       $
```

PRI on RCC2 (continued)

Datafilling table RCCPSINV

The following table shows the datafill specific to PRI on RCC2 for table RCCPSINV. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table RCCPSINV

Field	Subfield or refinement	Entry	Explanation and action
PSLINKTAB		see subfields	P-side link table. This field consists of subfields PSLINK and PSDATA.
	PSLINK	0 through 53	P-side link. Enter the P-side port number of the RCC2.
	PSDATA	see subfield	P-side data. this subfield consists of subfield AREASELECT.
	AREASELECT	DS1PRA	Area selector. Enter DS1PRA for DS1 PRI trunks.
	CARRIDX	alphanumeric (up to 16 characters)	Carrier index. Enter the name to index into table CARRMTC for carrier maintenance information. Enter PRI for PRI trunks.

Datafill example for table RCCPSINV

The following example shows sample datafill for table RCCPSINV.

MAP display example for table RCCPSINV

```
RCCNAME
                                                        PSLINKTAB
------------------------------------------------------------
REM1        RCC2   4
(0 NILTYPE )  (1 DS1 DEFAULT Y)  (2 DS1PRA PRI N 0 NIL $)
(3 DSIPRA PRI N 0 NIL $)  (4 DS1PRA PRI N 0 NIL $)
(5 DSIPRA PRI N 0 NIL $)  (6 DS1PRA PRI N 0 NIL $)
```

Datafilling table ISTRKGRP

The following table shows the datafill specific to PRI on RCC2 for table ISTRKGRP. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table ISTRKGRP

Field	Subfield or refinement	Entry	Explanation and action
ISTRKEY		alphanumeric (1 to 16 characters)	Dynamic trunk group CLLI. Enter the dynamic trunk group CLLI. The CLLI entered in this field must also appear in table TRKGRP.
XPMNAME		see subfields	Peripheral module name. This field consists of subfields SITE_ID, PMT, and EXT_PMNO.
	SITE_ID	alphanumeric (up to 4 characters)	Site identification. Enter the site of the RCC2. The site entered here must also appear in the NAME field in table SITE.
	PMT	RCC2	Peripheral module type. Enter RCC2 for PRI trunks on the RCC2.
	EXT_PMNO	numeric (0 to 63)	Peripheral module number. Enter the PM number of the RCC2 associated with the PRI trunk group.

Datafill example for table ISTRKGRP

The following example shows sample datafill for table ISTRKGRP.

MAP display example for table ISTRKGRP

```
ISTRKEY                          XPMNAME
-------------------------------------
PRI1    REM1            RCC2       4
```

Datafilling table TRKSGRP

When a PRI trunk is defined in table TRKGRP (group type IBNT2 or PRA), the D-channel information for the trunk is defined in table TRKSGRP.

PRI on RCC2 (continued)

The following table shows the datafill specific to PRI on RCC2 for table TRKSGRP. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
SGRPVAR		see subfield	Area refinements. This field includes subfield LOGICAL_D_CHANNEL_VAR_AREA.
	LOGICAL_D_CHANNEL_VAR_AREA	RCC2	D-channel area refinements. This field identifies the type of PM to which the ISDN D-channel belongs. Enter RCC2. When RCC2 is entered in this field, subfields RCC2NO, RCC2CKTNO, RCC2CKTTS, DCHRATE, and HDLCTYPE must also be datafilled.
	RCC2NO	0 to 511	RCC2 number. Enter the CLLI number of the PRI trunk.
	RCC2CKTNO	0 to 19	RCC2 circuit number. Enter the circuit number for the PRI D-channel.
	RCC2CKTTS	1 to 24	RCC2 circuit time slot. Enter the time slot number for the PRI D-channel.
	DCHRATE	56K or 64K	D-channel data rate. Enter the D-channel data rate (56 Kbps or 64 Kbps). The data transmission rate of the DS1 and the D-channel must be compatible.
	HDLCTYPE	HDLC or INVHDLC	High-level data link type. Enter HDLC for high-level data link or INVHDLC for inverted high-level data link.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

```
          SGRPKEY    CARDCODE
SGRPVAR
                                                                    SGRPVAR
-------------------------------------------------------------------------
           PRI1 0     DS1SIG
   ISDN 20 20    87Q931 2 N STAND    USER     PT_PT     USER N       UNEQ
50 N DEFAULT      RCC2    4 12 24 64K    HDLC
                             $
                                          $
```

Datafilling table TRKMEM

The following table shows the datafill specific to PRI on RCC2 for table TRKMEM. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table TRKMEM

Field	Subfield or refinement	Entry	Explanation and action
MEMVAR		see subfield	Variable data for members. This field consists of subfield PMTYPE.
	PMTYPE	RCC2	Peripheral module type. This is the PM type to which the trunk belongs. Enter RCC2. When RCC2 is entered in this field, subfields RCC2NO, RCC2CKTNO, and RCC2CKTTS must also be datafilled.
	RCC2NO	0 to 511	RCC2 number. Enter the CLLI number of the PRI trunk.
	RCC2CKTNO	0 to 19	RCC2 circuit number. Enter the circuit number for the PRI D-channel.
	RCC2CKTTS	1 to 24	RCC2 circuit time slot. Enter the time slot number for the PRI D-channel.

Datafill example for table TRKMEM

The following example shows sample datafill for table TRKMEM.

PRI on RCC2 (continued)

MAP display example for table TRKMEM

```
      CLLI       EXTRKNM SGRP              MEMVAR
-----------------------------------------------------------
      PRI1             1    0      RCC2   4 12  2
```

Datafilling table LTMAP

The following table shows the datafill specific to PRI on RCC2 for table LTMAP. Only those fields that apply directly to PRI on RCC2 are shown. For a description of the other fields, refer to the data schema document.

Datafilling table LTMAP

Field	Subfield or refinement	Entry	Explanation and action
LTKEY		see subfields	Logical terminal key. This field consists of subfields LTGRP and LTNUM.
	LTGRP	alphanumeric (maximum 8 characters)	Logical terminal group. Enter the group to which the logical terminal belongs.
	LTNUM	1 to 1022	Logical terminal number. Enter the logical terminal number within the group.
MAPPING		see subfield	Logical terminal mapping. This field consists of subfield MAPTYPE.
	MAPTYPE	CLLI	Logical terminal mapping type. For PRI trunks, the logical terminal identifier must be mapped to a CLLI. Enter CLLI.
	CLLI	alphanumeric (maximum 16 characters)	Common language location identifier. Enter the CLLI for the PRI trunk to which the logical terminal is assigned.

Datafill example for table LTMAP

The following example shows sample datafill for table LTMAP.

PRI on RCC2 (end)

MAP display example for table LTMAP

```
LTKEY              MAPPING                    OPTION
-------------------------------------------------------
  PRI  234  CLLI       RCC2_PRI               (  TEI  0)$
```

Translation verification tools

PRI on RCC2 does not use translation verification tools.

SERVORD

PRI on RCC2 does not use SERVORD.

Virtual Office Worker

Ordering codes

Functional group ordering code: N/A

Functionality ordering code: N/A

Release applicability

MSL10 and up

Prerequisites

Virtual Office Worker has no prerequisites.

Description

This feature allows telecommuters who do not have dedicated physical phone sets to access their dedicated directory number (DN) and associated features and options by logging into their dedicated DN from any of a pre-designated group of phone sets. Once logged in, all features and options operate normally, and all calls to the dedicated DN terminate to the set on which the login occurred. When logged in, all calls originated from the set are billed to the dedicated DN.

This feature enables a Virtual Office Worker (VOW) to access the dedicated DN and features from any of a pre-designated group of Meridian business set (MBS), integrated voice and data (IVD), or integrated business network (IBN) phone sets. The VOW can access features and associated data assigned to the set and originate and receive calls using the dedicated DN. With this feature, a VOW can log into or log out of the dedicated DN from any set in the group of pre-designated sets. Provisioning, operational measurements, and log functionality and support is also provided.

Virtual Office Worker (continued)

Operation

Set-up

In order for VOW to function, the following must be datafilled and provisioned for each customer group that allows VOW functionality:

- At least one VOWDN must be datafilled in table DNROUTE. A VOWDN is required for each set in the customer group to be used for VOW functionality.
- The VOWDN feature must be datafilled in table CUSTSTN. The CUSTSTN tuple contains the following:
  - — NCOS and SUBGRP values for translations purposes on the pre-designated VOW sets when no VOW is logged in
  - — A boolean value specifying whether or not a VOW authorization code is required within the associated customer group during use of the VOWIN feature access code
  - — A boolean value specifying whether the personal (SW) authorization code is required within the associated customer group during use of the VOWIN feature access code
  - — A boolean value specifying whether the associated customer group is to be audited, and if so, a value specifying the hour of the day the audit is to occur
  - — A boolean value specifying whether or not VOW functionality interacts with call forwarding to enable call forwarding for a VOW when logging out and to disable call forwarding for a VOW when logging in
  - — The length of the VOW personal ID code (passcode) length values used to uniquely identify a VOW within a customer group
  - — The line class code of the sets which make use of VOW functionality
- Feature translators VOWIN, VOWOUT, VOWPCC, and VOWROUT must be datafilled in table IBNXLA.
- VOW and SW authorization codes must be datafilled in table AUTHCDE. These codes are used with the VOWIN feature access code if the VOW authorization codes are enabled through the VOWDN tuple in table CUSTSTN.

Within customer groups that offer VOW functionality, a VOW's dedicated DN and features must be provisioned on a phone set pre-designated for use with VOW functionality. On this set, the line option VOW must be assigned. Assignment of the VOW line option includes the specification of the initial passcode for the associated VOW. Once assigned, the VOW is logged into the

Virtual Office Worker (continued)

dedicated DN and features. The VOW's dedicated DN and features remain associated with the physical set on which they were provisioned prior to the assignment of the VOW line option. This association is maintained until the VOW logs out, or is logged out by the VOW audit.

The value of the passcode associated with the VOW line option must have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN. Once a VOW's passcode has been set, it can be changed by the user through the use of the VOWPCC feature access code in table IBNXLA or by switch personnel by changing the VOWPID field in the appropriate tuple in table VOWINV. When changed, the passcode must still have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN.

If the value of the PCCLEN field in the VOWDN tuple in table CUSTSTN changes, the associated VOWPID fields in table VOWINV is immediately impacted. If the PCCLEN value is changed to a smaller value, then the VOWPID values for VOWs in the corresponding customer group are truncated to match the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 4 changes a VOWPID value of 123456 to 1234.) If the PCCLEN value is changed to a larger value, then the corresponding VOWPID values are right-padded with zeros up to the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 8 changes a VOWPID value of 123456 to 12345600.)

> ***Note:*** If the PCCLEN value for a customer group is changed, all VOWs within the corresponding customer group must be notified of the resulting impact to their passcode values. If this notification does not occur, the VOWs within the customer group can not log in.

All pre-designated sets that are to be used by VOWs need to have the VOWDN line option assigned within the customer groups that are to offer VOW functionality.

Switch personnel can log a VOW in or out of the dedicated DN and features through the use of CKLN or CLN SERVORD commands. When used, the CKLN or CLN commands work as they would normally, but a VOW LEN is provided as either the source or target LEN of the change LEN command.

VOW audit process

In the VOWDN tuple in table CUSTSTN, a customer group can specify whether an audit is to be run on the VOWs in the customer group every 24 hours, and if so, the specific hour at which the audit runs. If enabled, the audit runs at the specified hour every day, and logs out VOWs who are still logged in. Logs are generated and OMs are pegged to record any actions taken by the audit.

If the set at which a VOW is logged in is not in an idle state when the audit runs, that VOW is not logged out by the audit. At the next hour, the audit checks the set again, and if the VOW is still logged in and the set is in an idle state, the audit logs the VOW out. If the VOW is still logged in and the set is not in an idle state, the audit attempts to log out the VOW at the next hour. This process repeats until the VOW is logged out, either manually or through the audit process.

VOWs who are logged out through the audit can log back in just as if they had logged themselves out.

Translations table flow

The Virtual Office Worker translations tables are described in the following list:

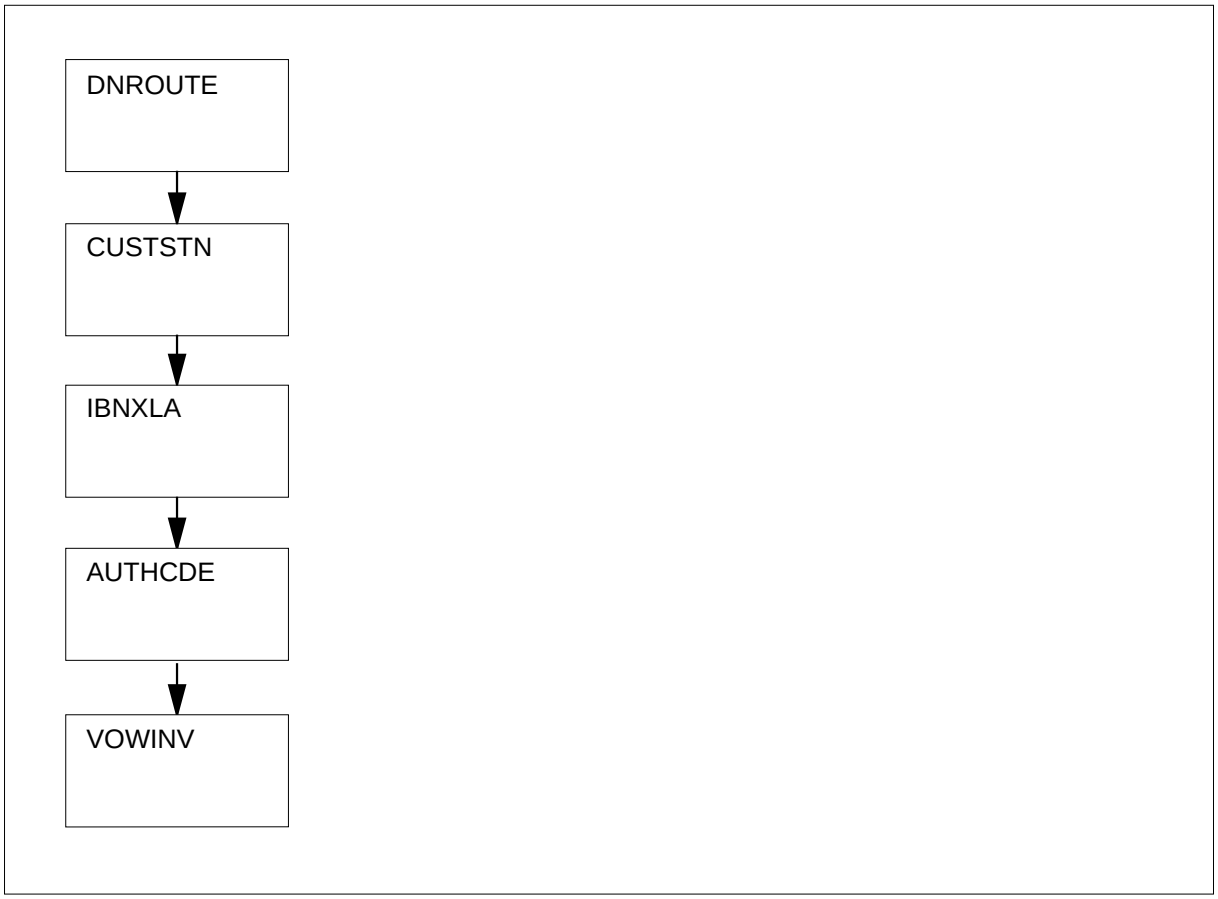
- Table DNROUTE
- Table CUSTSTN
- Table IBNXLA
- Table AUTHCDE
- Table VOWINV

Table DNINV also contains VOW related information, however, this table is not listed in the translations table flow. Table DNINV is automatically datafilled when a VOW user is logged out.

The Virtual Office Worker translation process is shown in the flowchart that follows.

Virtual Office Worker (continued)

Table flow for Virtual Office Worker



The following table lists the datafill content used in the flowchart.

Datafill example for Virtual Office Worker (Sheet 1 of 2)

Datafill table	Example data
DNROUTE	919 657 7293 FEAT VOWDN 23 BNRRTP
CUSTSTN	BNRRCH VOWDN VOWDN 0 0 Y Y Y 0 Y 7 PSET
	BNRRTP VOWDN VOWDN 0 40 Y N N N 4 M2616
IBNXLA	FRCH 30 FEAT N N VOWIN
	FRCH 31 FEAT N N VOWOUT
	FRCH 32 FEAT N N VOWPCC

Datafill example for Virtual Office Worker (Sheet 2 of 2)

Datafill table	Example data
AUTHCDE	BNRRCH 7654321 IBN 0 N $ VOW $
VOWINV	BNRRCH VOW 2149975134 VOW 839943 VOW 2 66 N N IPE0 0 0 2 3 N

Limitations and restrictions

The following limitations and restrictions apply to Virtual Office Worker:

- Up to 20,500 VOWs can exist within a single switch, if all VOWs require only a single LEN. Within a customer group, there is no limitation on the number of VOWs, except for the maximum number per switch of 20,500. This limit facilitates having more actual VOWs (VOW set data with the VOW line option assigned) than VOWDN sets (physical sets with the VOWDN line option assigned).
- IVD sets can be configured with a second (mate) LEN. If a VOW's dedicated DN and features are associated with such a set, then that VOW requires two VOW LENs, thus reducing the maximum possible number of VOWs.
- Within a customer group, all VOWs dedicated DNs and features must be associated with the same type of set. The pre-designated physical sets from which these VOWs log in must be of the same set type.
- The calls that can be originated from a set with VOWDN assigned are determined and restricted by the translations set up for the corresponding customer group and the NCOS and SUBGRP values in the VOWDN tuple in table CUSTSTN. Translations can limit these VOWDN sets to make only E911 calls, E911 and local calls, E911, local, and long distance calls, etc.
- One DN is required for each set in a customer group that allows VOW functionality. The maximum number of VOWDNs instances is 4095, which is shared by all the customers within the system.
- Once the VOW line option is assigned, the associated set can only be further provisioned wit SERVORD commands when the associated VOW is logged in. If a VOW is logged out, the set data is associated with a VOW

Virtual Office Worker (continued)

logical terminal instead of with a physical LEN, and any provisioning by switch personnel must be performed as follows:

— Use the appropriate CKLN or CLN SERVORD command to move the set data from a VOW logical terminal to a physical LEN. This causes the VOW to be logged in to the specific physical LEN.

Note: The audit time should be considered when performing these actions. If these provisioning tasks are performed when the VOW audit runs for the associated customer group, the VOW user is effectively logged out by the audit process.

— Perform the required provisioning through SERVORD.

— Use the appropriate CKLN or CLN SERVORD command to move the set data from the physical LEN back to a VOW logical terminal. This causes the VOW to be logged out of the previously specified LEN.

- A VOW login can occur only from a set with VOWDN assigned which is in the same customer group as the VOW's set data for the VOW who is attempting to log in.
- Due to the number of tables modified when moving VOW set data from a physical LEN to a virtual LEN and vice versa, access to VOW functionality through the VOWIN, VOWOUT, VOWROUT, and VOWPCC feature access codes are not allowed during an ONP. This is to ensure data consistency over a software upgrade. Once the ONP is complete, VOW access is again permitted.
- The VOW line option is not compatible with multiple appearance directory numbers (MADN), automatic call distribution (ACD), or hunt groups. It is also not compatible with the network facility access (NFA) line option: ACB, ACD, AR, BLF, C2USER, CALLLOG, DLH, DNH, DOR, DRING, MLH, NFA, SIMRING, SLU, TRANSFER, VOWDN, XFER.

Interactions

The following paragraphs describe the interactions between Virtual Office Worker and other functionalities.

When logged in, existing features associated with a VOW's dedicated DN operate as if the VOW's set were originally provisioned like the set from which the user logged in. This includes originating and receiving calls, billing, message waiting indication, and calling and caller name and number display.

When logged out, options associated with the VOW dedicated DN such as call forwarding operate as if the VOW were actually logged in, assuming that such features were active at the time the VOW logged out.

If the VOWDN tuple in table CUSTSTN enables the VOW functionality to interact with call forwarding, when a VOW logs out, call forwarding is activated. Similarly, when a VOW logs in, call forwarding is deactivated. This interaction applies only to the basic call forwarding types CFU, CFF, and CFI. It does not apply to any other call forwarding types such as CFK, CFB or CFD.

When logged out, VOW data is moved from a physical LEN to a virtual LEN. When this occurs, the DNs on a VOW's set data that was moved appear to the system to be in a busy (offline) state. As such, calls to logged out VOW DNs do not ring, but receive busy tones. The following table outlines how calls to a logged out VOW DN forward using CFB and CFD. As in normal call forward operation, and active CFU, CFF, CFI, and CFK call forwarding type takes precedence over active CFB and CFD call forwarding types on a logged out VOW's set data.

CFB/CFD interactions for logged out VOWs

	CFB active	**CFB inactive**	**CFB not provisioned**
CFD active	Calls are forwarded using CFD	Calls are forwarded using CFD	Calls are not forwarded
CFD inactive	Calls are forwarded using CFB	Calls are not forwarded	Calls are not forwarded
CFD not provisioned	Calls are forwarded using CFB	Calls are not forwarded	Calls are not forwarded

Activation/deactivation by the end user

VOW login

On a set with the VOWDN line option assigned, a VOW performs the following steps to log in:

1. Go off-hook.
2. Upon receipt of dial tone, dial the VOWIN feature access code (for example, *80) for the appropriate customer group. This access code is datafilled in table IBNXLA.
3. Upon receipt of dial tone, dial the VOW authorization code (for example, 7654321) for the appropriate customer group and NCOS. The VOW authorization code and VOW authorization code length is datafilled in table AUTHCDE. If a mistake is made when entering the VOW

Virtual Office Worker (continued)

authorization code, pressing the * key restarts collection of the VOW authorization code.

4. Upon receipt of dial tone, dial the personal (SW) authorization code (for example, 1234567) for the appropriate customer group and NCOS. The SW authorization code and SW authorization code length is specified in table AUTHCDE. If a mistake is made when entering the personal authorization code, pressing the * key restarts collection of the personal authorization code.
5. Upon receipt of dial tone, dial the passcode unique to that VOW (for example, 99750564496). The length of this passcode is specified in table CUSTSTN in the VOWDN tuple associated with the customer group. If a mistake is made when entering the passcode, pressing the * key restarts collection of the passcode.

At this point, logs are generated and OMs are pegged to indicate a successful login attempt. If an error occurred, either due to user input or otherwise during any of the preceding steps, OMs are pegged to indicate that an error occurred during a login attempt, and the set returns to an idle state.

If successfully logged in, the VOW can make and receive calls using the dedicated DN associated with the VOW set on which the login took place. Also, any features previously provisioned for the dedicated DN operates normally and retains any settings from the previous logout.

Once logged in, the VOW's dedicated DN and associated data is associated with a physical LEN.

VOW logout

On a set with the VOW line option assigned, a VOW performs the following to log out:

1. Go off-hook.
2. Upon receipt of dial tone, dial the VOWOUT feature access code (for example, *81) for the appropriate customer group. The VOWOUT feature access code is datafilled in table IBNXLA.

At this point, logs are generated and OMs are pegged to indicate a successful logout attempt. If an error occurred either due to user input or otherwise during any of the preceding steps, OMs are pegged to indicate that an error occurred during a logout attempt, and the set returns to an idle state.

If successful, the VOW is logged out. Calls can be originated from the set on which the logout attempt took place, but calls no longer terminate to the set.

All data, including the dedicated DN and features, associated with the logged out VOW is disassociated with the set.

Once logged out, the VOWs dedicated DN and associated data is not associated with a physical LEN. Instead, it is associated with a VOW logical terminal.

VOW pass code change

On a set with the VOW line option assigned, a VOW can change the VOW passcode used during login as follows:

1. Go off-hook.
2. Upon receipt of dial tone, dial the VOWPCC feature access code (for example, *82) for the appropriate customer group. The VOWPCC feature access code is datafilled in table IBNXLA.
3. Upon receipt of dial tone, dial the PDN for the VOW set data to whose passcode is being modified (for example, 2149975005). If a mistake is made when entering the current passcode, pressing the * key restarts collection of the current passcode.
4. Upon receipt of dial tone, dial the current passcode unique to that VOW (for example, 99750564496). The length of this passcode is specified in table CUSTSTN in the VOWDN tuple associated with the customer group. If a mistake is made when entering the current passcode, pressing the * key restarts collection of the current passcode.
5. Upon receipt of dial tone, dial the new passcode for that VOW (for example, 99750569448). The length of this passcode is specified in table CUSTSTN in the VOWDN tuple associated with the customer group. If a mistake is made when entering the new passcode, pressing the * key restarts collection of the new passcode.
6. Upon receipt of dial tone, redial for confirmation the new passcode for that VOW (for example, 99750569448). The length of this passcode is specified in table CUSTSTN in the VOWDN tuple associated with the customer group. If a mistake is made when re-entering the new passcode, pressing the * key restarts collection for the re-entry of the new passcode.

If the first new passcode does not match the confirmation of the new passcode, then the VOW's passcode is not changed. Also, if another VOW in the same customer group should have the same passcode as the new passcode, then passcode is not changed.

Whether successful or not, OMs are pegged to record the result of the passcode change attempt.

Virtual Office Worker (continued)

VOW remote logout

On a set within the same customer group on the same switch as the VOW's set data, a VOW can perform a remote logout as follows:

1. Go off-hook.
2. Upon receipt of dial tone, dial the VOWROUT feature access code (for example, *83) for the appropriate customer group. The VOWROUT feature access code is datafilled in table IBNXLA.
3. Upon receipt of dial tone, dial the PDN for the VOW set data which is being remotely logged out (for example, 2149975005). If a mistake is made when entering the current passcode, pressing the * key restarts collection of the current passcode.
4. Upon receipt of dial tone, dial the current passcode unique to that VOW (for example, 99750564496). The length of this passcode is specified in table CUSTSTN in the VOWDN tuple associated with the customer group. If a mistake is made when entering the current passcode, pressing the * key restarts collection of the current passcode.

If the VOW was logged in, this forces a logout from a remote station. At this point, logs are generated and OMs are pegged to indicate a successful remote logout attempt. If an error occurs either due to user input or otherwise during any of the preceding steps, OMs are pegged to indicate that an error occurred during a logout attempt, and the set returns to an idle state.

The VOW set data is modified as described in the section describing VOW logout if the remote logout attempt is successful.

Billing

Virtual Office Worker does not affect billing.

Station Message Detail Recording

Virtual Office Worker does not affect Station Message Detail Recording.

Datafilling office parameters

Virtual Office Worker does not affect office parameters.

Virtual Office Worker (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Virtual Office Worker. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Virtual Office Worker

Table	Purpose of table
DNROUTE	The directory number route table lists information for writable DNs in the switch rather than the line equipment numbers (LEN). Table DNROUTE associates a DN with a specific trunk group member.
CUSTSTN	The customer group station option table customizes the use of customer telephone sets.
IBNXLA	The integrated business network translation table defines the dialing plan for each customer group.
AUTHCDE	The authorization code table defines authorization codes and the NCOS account option and security digits.
VOWINV	The VOW inventory table is contains the physical or virtual LENs and additional data associated with a VOW's dedicated DN, the personal VOW ID code, and the primary VOW DN. The VOW personal ID field, VOWPID, is the only field that can be modified with the table editor.

Datafilling table DNROUTE

The following table shows the datafill specific to Virtual Office Worker for table DNROUTE. Only those fields that apply directly to Virtual Office Worker are shown. For a description of the other fields, refer to the table DNROUTE description in the *Customer Data Schema Reference Manual.*

Datafilling table DNROUTE

Field	Subfield or refinement	Entry	Explanation and action
FEATURE		VOWDN	This field identifies the DNROUTE feature type. When field FEATURE is datafilled as VOWDN, use field CUSTGRP to identify the customer group to which the VOW belongs.
VOWDNIDX		Numeric, 0-4095	Unique index value for VOWDN type. If not unique, available value is provided.
CUSTGRP		alphanumeric	This field provides the customer group name associated with the VOW.

Virtual Office Worker (continued)

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE   OFCCODE   STNCODE   DNRESULT
-------------------------------------------------------
919        657       7293       FEAT VOWDN 23 BNRRTP
```

Datafilling table CUSTSTN

The following table shows the datafill specific to Virtual Office Worker for table CUSTSTN. Only those fields that apply directly to Virtual Office Worker are shown. For a description of the other fields, refer to the table CUSTSTN description in the Customer Data Schema document.

Datafilling table CUSTSTN (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTNAME		VOWDN	This field provides the name of the customer group option. Enter VOWDN for VOW functionality.
OPTION			This field consists of subfield OPTION.
	OPTION	VOWDN	This field identifies the customer group option. Enter VOWDN for VOW functionality.
NCOS		0 to 511	This field identifies the network class of service of the physical sets that are assigned the VOWDN line option in this customer group.
SUBGRP		0 to 7	This field specifies the sub-group associated with the physical sets that are assigned the VOWDN line option.
VOWAUTH		Y or N	This field specifies whether a VOW authorization code is required for VOW login.
SWAUTH		Y or N	This field specifies whether a personal authorization code is required for VOW login.
AUDIT		Y or N	This field specifies whether a VOW audit is performed on this customer group. If AUDIT is set to Y, then HOUR must also be specified.

Datafilling table CUSTSTN (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
HOUR		0 to 23	This field sets the hour at which the VOW audit is performed on this customer group. (0 denotes midnight, or 12 AM. 12 denotes noon, or 12 PM.)
CFW		Y or N	This field specifies whether call forwarding interaction with VOW logins and logouts is enabled.
PCCLEN		4 to 10	This field specifies the length of the passcodes for VOWs in this customer group.
VOWLCC		alphanumeric	This field identifies the line class code of the sets making use of VOW functionality in this customer group.

The PCCLEN value has a direct relationship on the VOWPID value specified with the VOW line option and the VOWPID field in table VOWINV. When initially set with the VOW line option, the VOWPID value must have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN. Once a VOW's passcode has been set, it can be changed by the user through the use of the VOWPCC feature access code in table IBNXLA. It can also be changed by switch personnel in the VOWPID field in table VOWINV. When changed, the passcode must have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN.

If the value of the PCCLEN field in table CUSTSTN changes, the associated VOWPID fields in table VOWINV are immediately impacted. If the PCCLEN value is changed to a smaller value, then the VOWPID values for VOWs in the corresponding customer group are truncated to match the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 4 changes a VOWPID value of 123456 to 1234.) If the PCCLEN value is changed to a larger value, then the corresponding VOWPID values are right-padded with zeros to match the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 8 changes a VOWPID value of 123456 to 12345600.)

Note: If the PCCLEN value for a customer group is changed, all VOWs within the customer group must be notified of the resulting impact to their passcode values. If this notification does not occur, the VOWs within the customer group can not log in.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN.

Virtual Office Worker (continued)

MAP display example for table CUSTSTN

```
CUSTNAME OPTNAME OPTION
-------------------------------------------------------
BNRRCH   VOWDN   VOWDN 0 0 Y Y Y 0 Y 7 PSET
BNRRTP   VOWDN   VOWDN 0 40 Y N N N 4 M2616
```

Datafilling table IBNXLA

The following table shows the datafill specific to Virtual Office Worker for table IBNXLA. Only those fields that apply directly to Virtual Office Worker are shown. For a description of the other fields, refer to the table IBNXLA description in the *Customer Data Schema Reference Manual.*

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
FEATURE		VOWIN VOWOUT VOWPCC VOWROUT	This field identifies the IBN translations feature type. Enter VOWIN to indicate the VOW login feature. Enter VOWOUT to indicate the VOW logout feature. Enter VOWPCC to indicate the VOW passcode change feature. Enter VOWROUT to indicate the VOW remote logout feature.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY     RESULT
-------------------------------------------------------
FRCH 30 FEAT N N VOWIN
FRCH 31 FEAT N N VOWOUT
FRCH 32 FEAT N N VOWPCC
FRCH 33 FEAT N N VOWROUT
```

Datafilling table AUTHCDE

The following table shows the datafill specific to Virtual Office Worker for table AUTHCDE. Only those fields that apply directly to Virtual Office Worker are shown. For a description of the other fields, refer to the table AUTHCDE description in the *Customer Data Schema Reference Manual.*

Datafilling table AUTHCDE

Field	Subfield or refinement	Entry	Explanation and action
AUTHTYPE		VOW	This field identifies the authorization code type. Enter VOW to denote a VOW authorization code.

Datafill example for table AUTHCDE

The following example shows sample datafill for table AUTHCDE.

MAP display example for table AUTHCDE

```
AUTHPART AUTHCODE INFO
------------------------------------------------------
BNRRCH   7654321  IBN 0 N $ VOW $
```

Datafilling table VOWINV

Table VOWINV is automatically datafilled when VOWs log in and log out and when switch personnel manipulate VOW set data through the CKLN and CLN commands. It is also updated when VOWs are logged out through the VOW audit. Switch personnel can modify only the VOWPID value within this table. Tuples can not be added, deleted, or otherwise modified through the table editor.

Virtual VOW LENs are pre-assigned when the VOW line option is added to a set with SERVORD and a tuple is created in table VOWINV. Virtual VOW LENs are unassigned only when the VOW line option is removed from a set with SERVORD and the corresponding tuple is deleted from table VOWINV.

The following table shows the datafill specific to Virtual Office Worker for table VOWINV. Only those fields that can be modified are shown. For a

Virtual Office Worker (continued)

description of the other fields, refer to the table VOWINV description in the *Customer Data Schema Reference Manual.*

Datafilling table VOWINV

Field	Subfield or refinement	Entry	Explanation and action
VOWPID		numeric (4 to 10 digits)	This field provides a VOW passcode value of 4 to 10 digits.

Datafill example for table VOWINV

The following example shows sample datafill for table VOWINV.

MAP display example for table VOWINV

```
VOWKEY VOWDATA
------------------------------------------------------
BNRRCH VOWDN LCM1 00 1 09 31 VOWDN 214 997 5700
BNRRCH VOW 2149975134 VOW 839943 VOW 2 66 N N IPE0 0 0 2 3 N
BNRRTP VOWDN IPE0 00 0 00 12 VOWDN 918 657 7700
BNRRTP VOW 9196577665 VOW 5576643 VOW 4 644 Y VOW 4 645 Y DLM0 0 0 4 12
Y DLM0 0 0 4 13
```

Translation verification tools

Virtual Office Worker does not use translation verification tools.

SERVORD

Two line options, VOW and VOWDN, provide VOW functionality. Both the VOW and VOWDN line options must be assigned to the PDN of a keyset or IBN set. The keyset must have a line format of DN in table KSETLINE. The IBN set must have a line format of STN in table IBNLINES.

VOW line options are valid on the following types of sets.

VOW- and VOWDN-compatible line class codes (Sheet 1 of 2)

Set type	Line class code
MBS	PSET, M5009, M5112, M5209, M5312, M5212, M5008, M5208, M5216, M5316

VOW- and VOWDN-compatible line class codes (Sheet 2 of 2)

Set type	Line class code
IVD	M2009, M2112, M2018, M2317, M2008, M2616, M2016S, M2216A, M2216B, M2006, M2616CT
IBN	IBN

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Virtual Office Worker:

- VOW is not compatible with MADN, ACD, NFA, group intercom (GIC), attendant console lines, ACB, AR, BLF, C2USER, CALLLOG, DLH, DNH, DOR, DRING, ,MLH,IMRING, SLU, TRANSFER, VOWDN, XFER.or hunt related options. VOWDN is incompatible with all options except the SET_MODEL option.
- The value of the passcode associated with the VOW line option must have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN. Once a VOW's passcode has been set, it can be changed by the user through the use of the VOWPCC feature access code in table IBNXLA or by switch personnel by changing the VOWPID field in the appropriate tuple in table VOWINV. When changed, the passcode must still have a length matching the PCCLEN value in the associated VOWDN tuple in table CUSTSTN.

  If the value of the PCCLEN field in the VOWDN tuple in table CUSTSTN changes, the associated VOWPID fields in table VOWINV is immediately impacted. If the PCCLEN value is changed to a smaller value, then the VOWPID values for VOWs in the corresponding customer group is truncated to match the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 4 changes a VOWPID value of 123456 to 1234.) If the PCCLEN value is changed to a larger value, then the corresponding VOWPID values are right-padded with zeros up to the new PCCLEN value. (For example, changing the PCCLEN value from 6 to 8 changes a VOWPID value of 123456 to 12345600.)

Virtual Office Worker (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign an initial passcode to a line with the Virtual Office Worker feature.

SERVORD prompts for Virtual Office Worker

Prompt	Valid input	Explanation
VOWPID	10-digit directory number	When adding VOW to a set, an initial passcode must be specified for the associated VOW user. This value is a number between 4 and 10 digits in length. The passcode length is specified by the PCCLEN field of the VOWDN tuple for the corresponding customer group in table CUSTSTN.

SERVORD examples for adding and changing Virtual Office Worker

The following SERVORD example shows how a VOW line is established for a Virtual Office Worker having a keyset. This example uses the NEW command.

Establishing a VOW line for a keyset

```
>NEW
SONUMBER:  NOW  98  9  24  AM
>
DN
> 9975059
LCC_ACC:
> PSET
GROUP:
> BNRRCH
SUBGROUP:
> 0
NCOS:
> 0
SNPA:
> 214
KEY:
> 1
RINGING:
> Y
LTG:
> 0
LEN_OR_LTID:
> LCM2 00 0 06 31
OPTKEY:
> 1
OPTION:
> VOW
VOWPID:
> 12345
OPTKEY
> $
COMMAND AS ENTERED:
NEW NOW 98 9 24 AM 9975059 PSET BNRRCH 0 0 214 1 Y 0
LCM2 00 0 06 31 ( 1 VOW ) $
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOWDN line is established for a Virtual Office Worker having a keyset. This example uses the NEW command.

Virtual Office Worker (continued)

Establishing a VOWDN line for a keyset

```
>NEW
SONUMBER:  NOW  98  9  24  AM
>
DN
> 9975059
LCC_ACC:
> PSET
GROUP:
> BNRRCH
SUBGROUP:
> 0
NCOS:
> 0
SNPA:
> 214
KEY:
> 1
RINGING:
> Y
LTG:
> 0
LEN_OR_LTID:
> LCM2 00 0 06 31
OPTKEY:
> 1
OPTION:
> VOWDN
OPTKEY
> $
COMMAND AS ENTERED:
NEW NOW 98 9 24 AM 9975059 PSET BNRRCH 0 0 214 1 Y 0
LCM2 00 0 06 31 ( 1 VOWDN ) $
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOW line is established for a Virtual Office Worker having a non-keyset. This example uses the NEW command.

Virtual Office Worker (continued)

Establishing a VOW line for a non-keyset

```
>NEW
SONUMBER:  NOW  98  9  24  AM
>
DN
> 9975057
LCC_ACC:
> IBN
GROUP:
> BNRRCH
SUBGROUP:
> 0
NCOS:
> 0
SNPA:
> 214
LTG:
> 0
LEN_OR_LTID:
> LCM1 00 1 18 00
OPTION:
> VOW
VOWPID:
> 12345
OPTION:
> $
COMMAND AS ENTERED:
NEW NOW 98 9 24 AM 9975057 IBN BNRRCH 0 0 214 0 LCM1 00
1 18 00 ( VOW ) $
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOWDN line is established for a Virtual Office Worker having a non-keyset. This example uses the NEW command.

Virtual Office Worker (continued)

Establishing a VOWDN line for a non-keyset

```
>NEW
SONUMBER:  NOW  98  9  24  AM
>
DN
> 9975057
LCC_ACC:
> IBN
GROUP:
> BNRRCH
SUBGROUP:
> 0
NCOS:
> 0
SNPA:
> 214
LTG:
> 0
LEN_OR_LTID:
> LCM1 00 1 18 00
OPTION:
> VOWDN
OPTION:
> $
COMMAND AS ENTERED:
NEW NOW 98 9 24 AM 9975057 IBN BNRRCH 0 0 214 0 LCM1 00
1 18 00 ( VOWDN ) $
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOW line option is added to a Virtual Office Worker having a keyset. This example uses the ADO command.

Virtual Office Worker (continued)

Adding a VOW line option for a keyset

```
>ADO
SONUMBER:  NOW  98  9  24  AM
>
DN_OR_LEN
> 9975053
OPTKEY:
> 1
OPTION:
> VOW
VOWPID
> 12345
OPTKEY:
> $
COMMAND AS ENTERED:
ADO NOW 98 9 24 AM 9975053 ( 1 VOW )$
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOWDN line option is added to a Virtual Office Worker having a non-keyset. This example uses the ADO command.

Virtual Office Worker (continued)

Adding a VOWDN line option for a non-keyset

```
>ADO
SONUMBER:  NOW  98  9  24  AM
>
DN_OR_LEN
> 9975053
OPTION:
> VOWDN


OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 98 9 24 AM 9975053 ( 1 VOWDN )$
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

The following SERVORD example shows how a VOW line option is deleted for a Virtual Office Worker having a keyset. This example uses the DEO command.

Deleting a VOW line option for a keyset

```
>DEO
SONUMBER:  NOW  98  9  24  AM
>
DN_OR_LEN
> LCM2 00 0 06 31
OPTKEY:
> 1
OPTION:
> VOW
OPTKEY:
> $
COMMAND AS ENTERED:
DEO NOW 98 9 24 AM LCM2 00 0 06 31 ( 1 VOW )$
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

Virtual Office Worker (end)

The following SERVORD example shows how a VOWDN line option is deleted for a Virtual Office Worker having a non-keyset. This example uses the DEO command.

Deleting a VOWDN line option for a non-keyset

```
>DEO
SONUMBER:  NOW  98  9  24  AM
>
DN_OR_LEN
> LCM2 00 0 06 31
OPTION:
> VOWDN


OPTKEY:
> $
COMMAND AS ENTERED:
DEO NOW 98 9 24 AM LCM2 00 0 06 31 ( VOWDN)$
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
MACHINES OUT OF SYNC OR NO JF, OVERRIDE IN EFFECT.
>
```

2 Introduction to CLASS translations

CLASS translations

This chapter introduces CLASS features. These features are supported with MSL07 and above product computing loads (PCL) only.

The following CLASS features are described in this section.

- CNAB: Calling Name Blocking
- CNAMD: Calling Name Display
- CND: Calling Number Display
- CNDB: Calling Number Blocking
- COT: Customer Originated Trace
- CNNB: Calling Name/Number Blocking
- CMWI: CLASS Message Waiting Indication
- CLID: Calling Line Identification

The following table displays the hardware requirements for each feature:

Table 2-1 (Sheet 1 of 2)

Feature	6X17AC 6X17BA	6X51AB 6X51AC	XPM+	6X69AC	6X69AD	6X78AB	1X80AA 1X80BA
CNAB	M	M	M	M	O	M	O
CNAMD	M	M	M	M	O	M	O
CND	M	M	M	M	O	M	O
CNDB	M	M	M	M	O	M	O
COT	M	M	M	M	O	O	O
CNNB	M	M	M	M	O	M	O

Table 2-1 (Sheet 2 of 2)

Feature	6X17AC 6X17BA	6X51AB 6X51AC	XPM+	6X69AC	6X69AD	6X78AB	1X80AA 1X80BA
CMWI	M	M	M	M	O	M	O
CLID	M	M	M	M	O	M	O

Hardware notes

The following hardware notes are related to the implementation of CLASS features.

- XPM-plus requires MSL07 and above PCLs.
- Calling Number and Name Display do not function with the NT2X17 line card.
- NT6X17AA/AB cards do not support Calling Name and Calling Number features.
- MBS sets do not support Calling Name and Calling Number features.
- The enhanced line concentrating module (ELCM) and line concentrating module (LCM) require the NT6X51AB/AC card and the 256K pmload to support Calling Number Delivery.
- EDRAM card NT1X80AA/BA is required to support CLASS messages.
- Sites installing an expanded subscriber carrier module access (ESMA) require an MX76CA card.

Functional groups for CLASS features

To operate, CLASS requires the following functional group, functionality, and function code:

- MDC Name/DN Blkng, MDC Name/Num Blocking, MDC 00033
- RES Disp Func and Prvcy, RES Call Name Disp SW/TCAP, RES00023
- RES Disp Func and Prvcy, RES Calling Name Del Blkng, RES00022
- RES Disp Func and Prvcy, RES Calling Number Del Blkng, RES00022
- RES Disp Func and Prvcy, RES Calling Number Disply, RES00023
- RES Disp Func and Prvcy, RES Visual Msg Waiting, RES00027
- RES Non-Disp Service, RES Customer Tracing, RES00030
- RES Disp Func and Prvcy, RES Call Nm Disp, RES00003

3 Introduction to ISDN DWS translations

Understanding ISDN DWS

Dialable Wideband Service (DWS) is Nortel Networks' multirate ISDN switched service aimed at satisfying end-user needs for flexible, wideband connectivity. DWS offers a dialable, real-time switched service that allows the end user to establish network connections with rates from 128 kbit/s to 1.536 Mbit/s in 64-kbit/s increments. The following table describes the bandwidth rates available.

Table 3-1 DWS bandwidth rates (Sheet 1 of 2)

Rate multiplier	Bandwidth (kbit/s)
2	128
3	192
4	256
5	320
6 (H0)	384
7	448
8	512
9	576
10	640
11	704
12	768
13	832
14	896

Note: Two T1 spans are needed to provide H11 (1.536 Mbit/s) bandwidth: one T1 for 24 B-channels and one T1 for D-channel signaling.

Table 3-1 DWS bandwidth rates (Sheet 2 of 2)

Rate multiplier	Bandwidth (kbit/s)
15	960
16	1024
17	1088
18	1152
19	1216
20	1280
21	1344
22	1408
23	1472
24 (H11)	1536

Note: Two T1 spans are needed to provide H11 (1.536 Mbit/s) bandwidth: one T1 for 24 B-channels and one T1 for D-channel signaling.

With DWS, the end user dials a directory number to establish the wideband connection to any other bandwidth-compatible DWS subscriber. The bandwidth rate is selectable for each call.

DWS is particularly useful for applications that require large continuous bandwidth for a short period of time (minutes or hours); however, the end user is also able to establish connections, which are maintained for hours, days or months.

DWS in the DMS network

DWS provides MSL-100 users with DS-1 and fractional DS-1 bandwidth to customer premise equipment (CPE) through ISDN primary rate interface (PRI). The PRI link uses an extension of standard Q.931 ISDN signaling.

Figure 3-1, "Single node application of DWS" on page 3-3 and Figure 3-2, "DWS shared access" on page 3-4 illustrate typical DWS network configurations in an MSL-100 environment.

Figure 3-1 Single node application of DWS

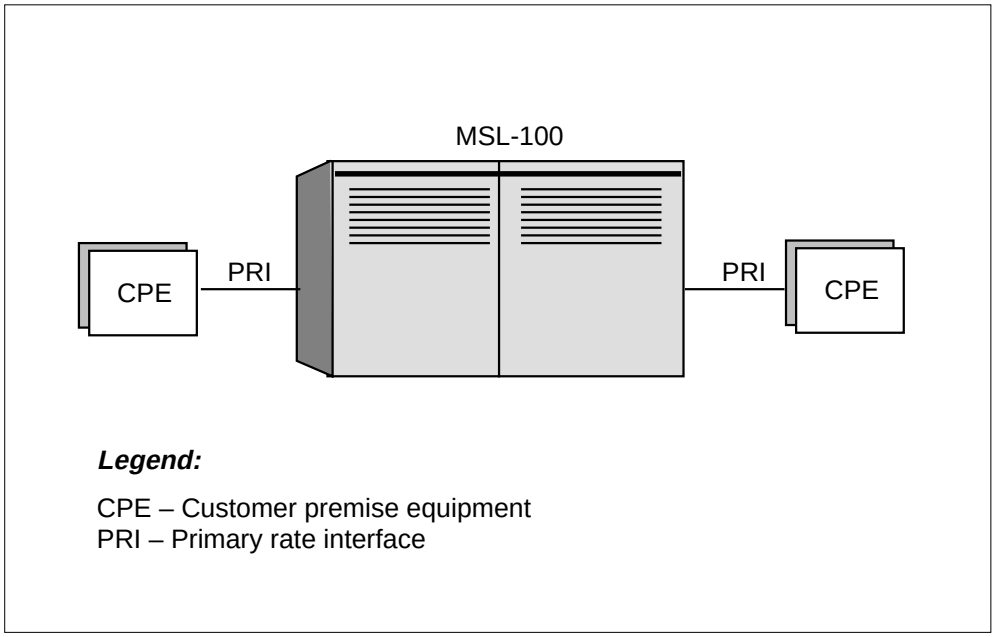
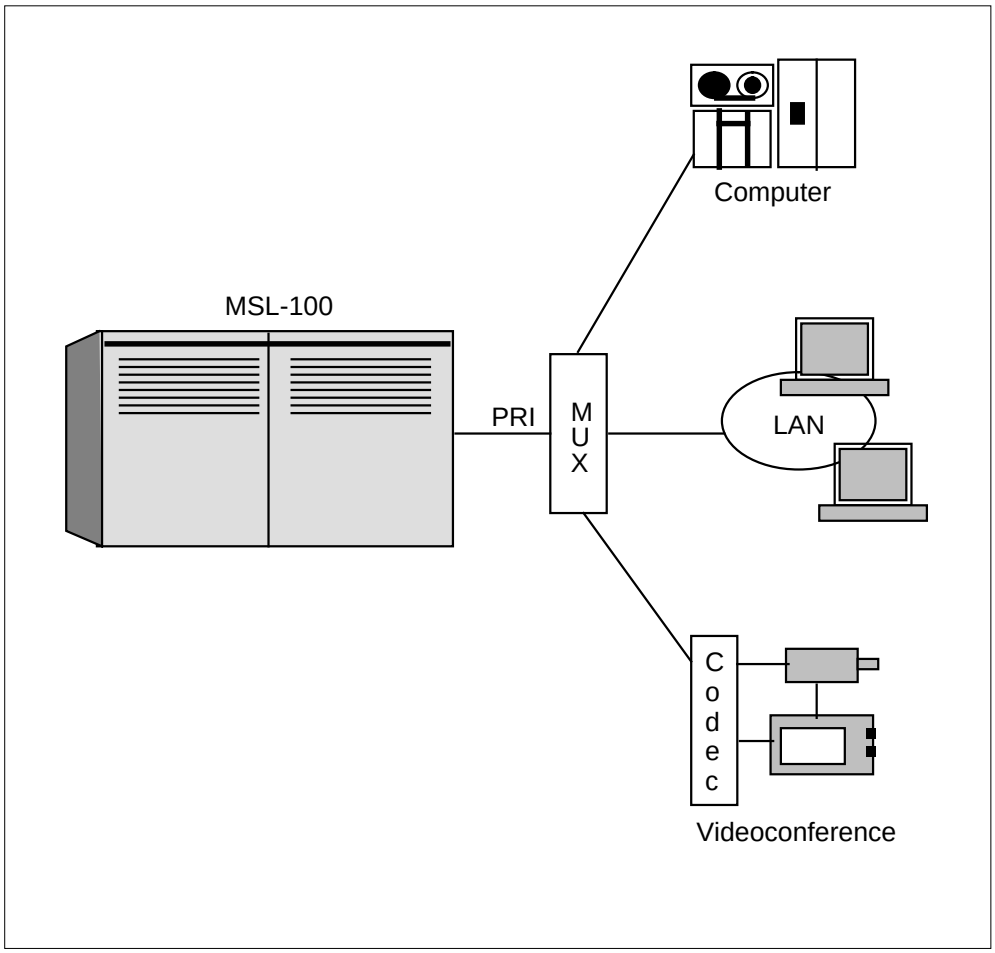


Figure 3-2 DWS shared access



Call routing for DWS

DWS is provided to the subscriber through nx64 signaling extensions to the PRI standards. DWS behaves the same as a standard PRI call. The main difference between a PRI call and DWS is that the subscriber, using customer premises equipment (CPE), signals the MSL-100 to indicate the required bandwidth. All information for a PRI call with DWS is included in the SETUP message.

Based on the translations of the called party number, the MSL-100 routes the wideband call to the terminating customer premise equipment (CPE) using PRI signaling. Once connected to the called subscriber, user-to-user communication occurs. The call is terminated when either party hangs up.

Billing for DWS

The called party number, calling party number, call duration and bandwidth allocated for the call are recorded on the automatic message accounting (AMA) system to allow downstream processing and billing.

Limitations and restrictions

Dialable Wideband Service in the MSL-100 market will initially be offered with the following limitations and restrictions:

- IBN agent interworking and IBN translations are not supported.
- All B-channels used on an incoming or outgoing wideband call must reside on the same physical PRI facility and be in the same trunk group.
- Wideband and narrowband calls should not share the same T1 facility.
- The DWS PRI product currently supports only the existing Bellcore Automatic Message Accounting (AMA) billing system. Station Message Detail Record (SMDR) billing is not currently supported for DWS.
- INBAND DTMF digit collection (PIN digits, account codes, authorization codes) is not supported.
- Wideband calls routed to an operator receive the ORIGINATION_ DENIED treatment.
- Offhook and onhook queueing are not supported for wideband trunk groups.
- A satellite hop is not supported.
- Internal echo canceller control is not supported.
- B-channel negotiation is not supported.
- Testing and support for the AT&T P41449 or ANSI T1.607 protocols are not provided.
- BERT testing is supported on individual DS-0 channels but not on a group of channels.
- Wideband test calls are not supported.
- Continuity testing is not supported for wideband trunk group agencies.

Software requirements

Table 3-2, "DWS base software" on page 3-6 lists the basic functional groups and functionalities required to support DWS capabilities.

Table 3-2 DWS base software

Functional group and name	Functionality code and name	Feature package number and name
NI000004 NI0 NI-2 DWS	None	NTXS08AA - Enhanced Time Switch
	None	NTXS25AA - DWS Base
	None	NTXS26AA - DWS PRI Base
	None	NTXR49AA - DWS PRI
	None	NTXR27AA - DWS PRI Test Tools
	NI000027 DWS Flexible Acc	NTXR65AA - Flexible DWS Access
NI000007 NI0 ISDN Base	None	NTXS36AA - XPM PLUS on DTCI
BAS00003 BAS Generic	None	NTX142AA - DS-1 64 Kbps Clear Channel Signaling
	None	NTX143AA - DS-1 Extended Superframe Format

NI000004 NI0 NI-2 DWS

This functional group provides a variety of functions and services formerly described as feature packages. The following list gives the former feature package number and name, and describes the function or service.

- NTXS08AA Enhanced Time Switch provides the tracking mechanism for the NTAX78AA circuit card (enhanced time switch).
- NTXS25AA DWS Base provides the base functions for DWS such as trunk selection, datafill, maintenance, channel management, integrity, network management, SWACT support, glare recovery, operational measurements, overload controls, trunk audit, and robustness.
- NTXS26AA DWS PRI Base provides wideband switched services and PRI messaging.
- NTXR49AA Dialable Wideband Service PRI implements DWS according to the current standards. It provides access to customer premises equipment (CPE) through PRI.

- NTXS27AA DWS PRI Test Tools allows the initiation of a DWS PRI test call from the trunk test position (TTP) level of the MAP display by use of the outpulse (OP) command.
- NI000027, formerly NTXR65AA DWS Flexible PRI Access, enhances Dialable Wideband Service by allowing flexible wideband trunk selection on PRI trunks. NI000027 DWS Flexible Access is included in functional group NI000004 (NTXR49AA DWS PRI).

Note: NI000004 (NTXR49AA DWS PRI) and NI000027 (NTXR65AA Flexible DWS Access) require translations datafill, which is described in the "DWS Datafilling" section within this document.

NI000007 NI0 ISDN Base

This functional group, formerly NTXS36AA XPM PLUS on DTCI, supports a Unified Processor (UP) load, which replaces the Master Processor (MP) and Signaling Processor (SP) loads of the XPM product. XPM PLUS on DTCI is required for software releases MSL03 and higher.

BAS00003 BAS Generic

This functional group provides a variety of functions and services formerly described as feature packages. The following list gives the former feature package number and name, and describes the function or service.

- NTX142AA DS-1 Kbps Clear Channel Signaling provides support for clear 64-kbit/s signaling on DS-1 carriers.
- NTX143AA DS-1 Extended Superframe Format provides ongoing measurement of the performance of DS-1 links by way of CRC-6 code without interrupting the data being transmitted.

Software dependencies

The following table lists the common functional groups and functionalities required to support DWS capabilities.

Table 3-3 DWS software dependencies

Functional group and name	Feature package number and name
BAS00003 BAS Generic	NTXE01AA Enhanced Network—Basic
NI000022 NI0 ISDN PRI Base	NTX790AC ISDN Primary Rate Access Base

BAS00003 BAS Generic

This functional group provides a variety of functions and services formerly described as feature packages. The following list gives the former feature package number and name, and describes the function or service.

- NTXE01AA Enhanced Network—Basic implements the enhanced network (ENET) as a switching matrix subsystem type for DMS SuperNode systems.

NI000022 NI0 ISDN PRI Base

This functionality, formerly packaged as NTX790AC ISDN Primary Rate Access Base, provides the basic services for ISDN PRI.

Architecture

This section describes the architecture of the key components of DWS as follows:

Exchange termination illustrates the key DMS SuperNode components required for DWS.

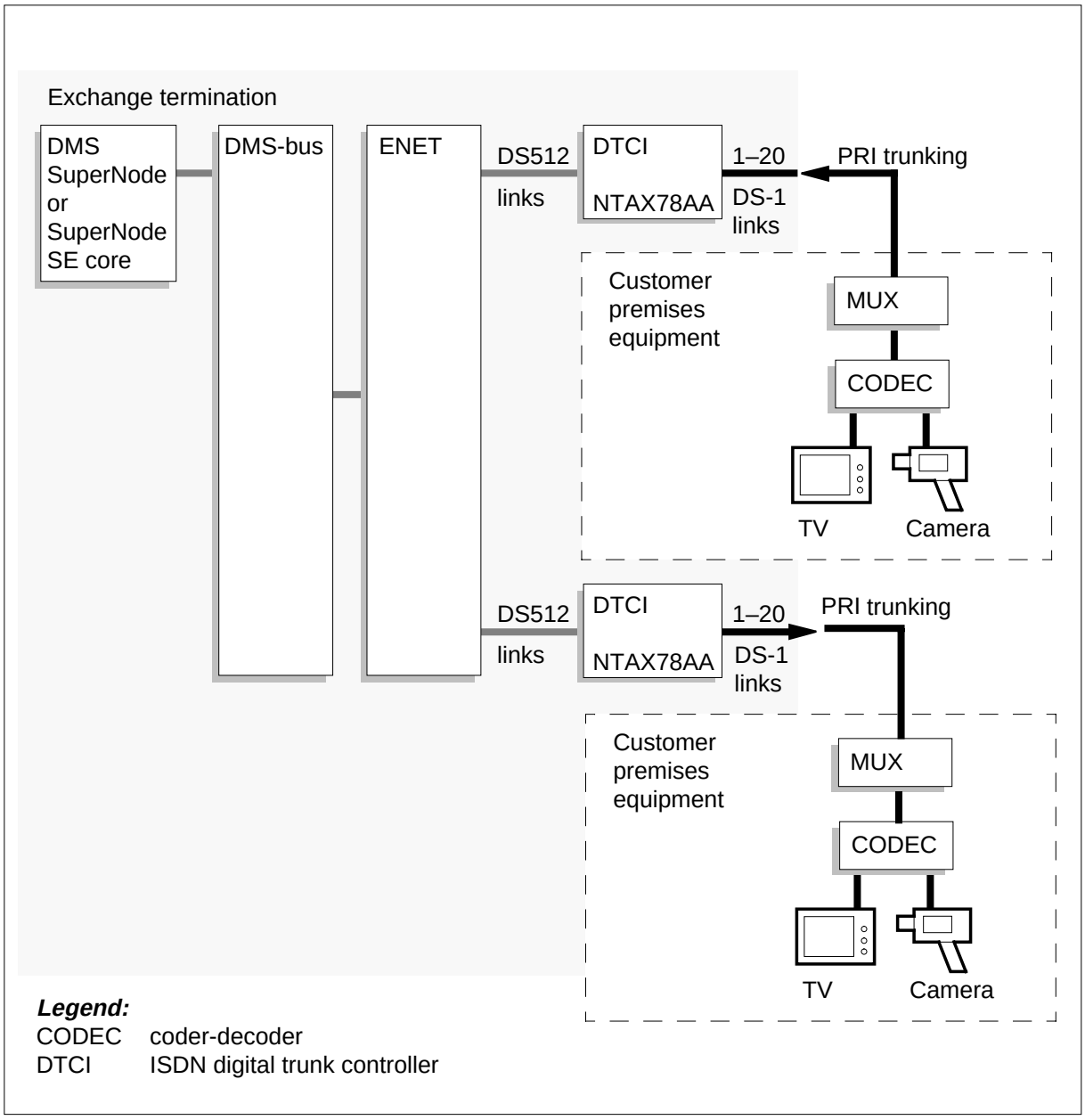
Peripheral equipment describes the peripheral equipment required to provide DWS. Equipment includes the enhanced network (ENET) and ISDN digital trunk controller (DTCI).

Exchange termination

The exchange termination is based on standard DMS-100 Family switches, peripherals, and software. Exchange termination routes the B- and D-channels for outgoing and incoming calls through the appropriate peripheral.

The exchange termination can be configured for a variety of applications, using a combination of peripherals. DWS can be configured using the hardware components shown in Figure 3, "Introduction to ISDN DWS translations" on page -1. Full details on DMS SuperNode core components, configurations, frame, cabinet, and shelf layouts are described in subsequent paragraphs.

Figure 3-3 DWS system architecture



Peripheral equipment

The DWS product requires the following switching matrix and peripherals:

- enhanced network (ENET)
- ISDN digital trunk controller (DTCI)

Enhanced network

The enhanced network (ENET) is a nonblocking, junctorless, full availability, single-stage time switch that provides a high performance switching matrix path for voice and data connections, and for peripheral-to-DMS-core messaging. Four ENET configurations are available: the single cabinet 64K (base configuration), the 16K single shelf, the 128K dual cabinet, or the SuperNode combined core (SCC) 16K single shelf version. No modifications are made to ENET configurations for DWS deployment.

DWS requires the nonblocking architecture of ENET to ensure that the time synchronization associated with a given DWS call (incoming DS-1 to outgoing DS-1) retains the channel alignment while passing through the DMS SuperNode switch.

The DTCI connects PRI (T1) trunks using the DS-1 protocol on T1 carriers from the customer's premises to ENET. The DTCI peripheral is modified for DWS capability by replacing the existing NT6X44AA (time switch card) housed in slot 14 of a digital trunk controller shelf with an NTAX78AA (enhanced time switch card).

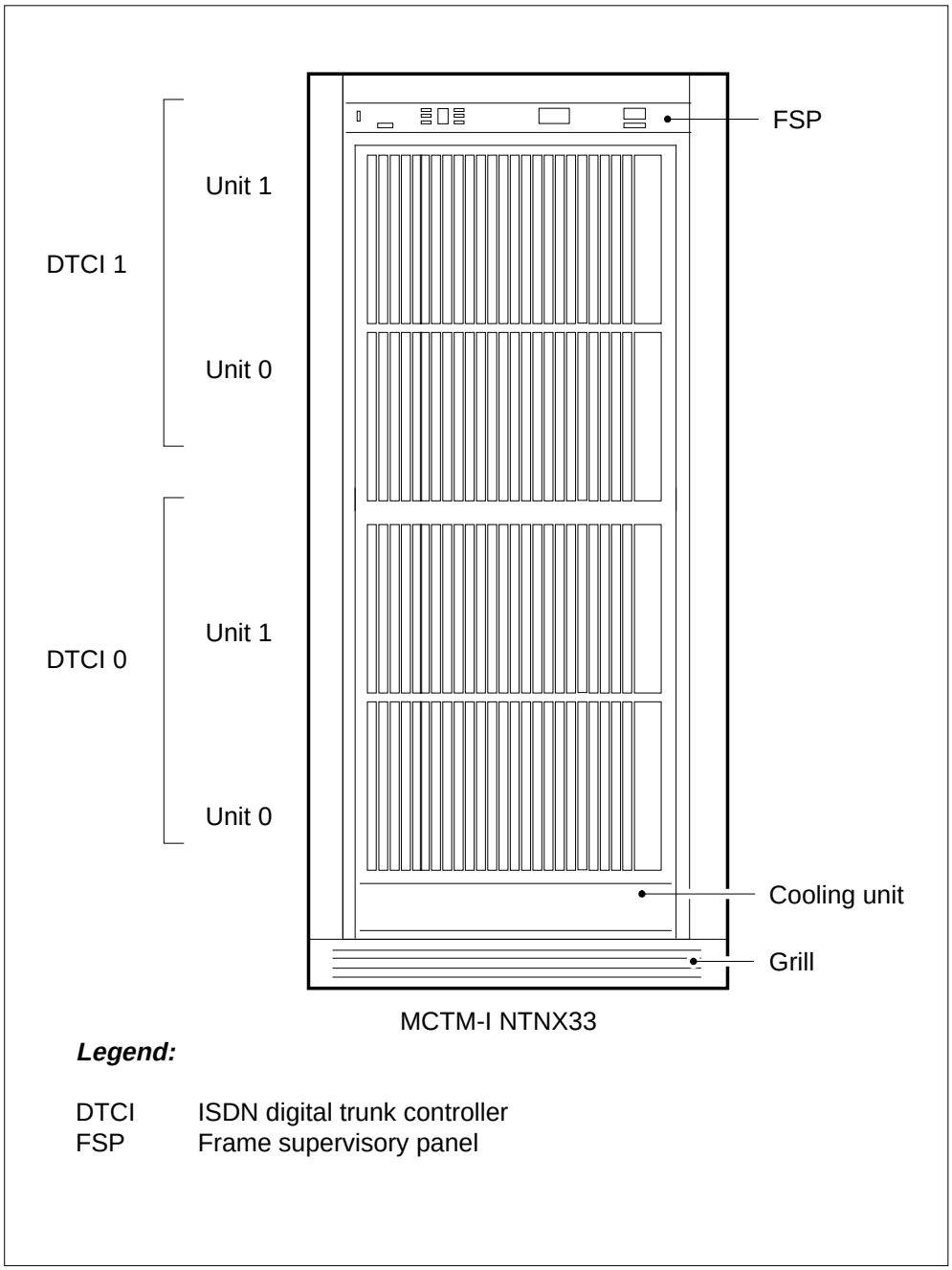
ISDN digital trunk controller

DWS capability is built on the ISDN digital trunk controller (DTCI) XPM PLUS-based peripheral in the existing DMS product family. DTCIs reside in either an ISDN Meridian cabinet trunk module (MCTM-I) or ISDN digital trunk controller equipment (DTEI) frame.

Both MCTM-I and DTEI hold two DTCIs, a cooling unit, and a frame supervisory panel (FSP). The MCTM-I and DTEI are illustrated in Figures 3, "Introduction to ISDN DWS translations" on page -1 and Figure 3-4, "ISDN Meridian cabinet trunk module (MCTM-I) NTNX33" on page 3-11 and Figure 3, "Introduction to ISDN DWS translations" on page -1 and Figure 3-5, "ISDN digital trunk controller equipment (DTEI) frame NT6X01" on page 3-12.

Up to five NT6X50AB cards (DS-1 interface) can be installed on each DTCI shelf. The maximum configuration for a DTCI provides up to 10 PRI links in each shelf and up to 20 PRI links in each module.

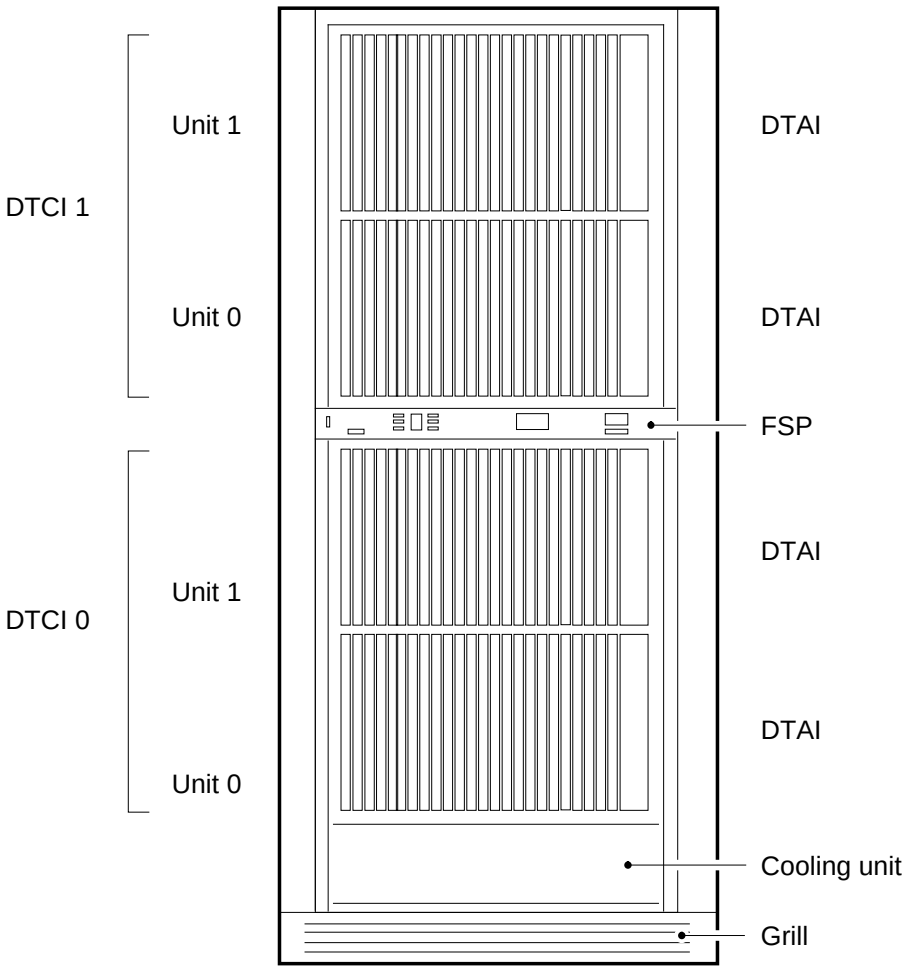
Figure 3-4 ISDN Meridian cabinet trunk module (MCTM-I) NTNX33



Legend:

DTCI ISDN digital trunk controller
FSP Frame supervisory panel

Figure 3-5 ISDN digital trunk controller equipment (DTEI) frame NT6X01



Legend:

DTAI	ISDN digital trunk array
DTCI	ISDN digital trunk controller
DTEI	ISDN digital trunk equipment
FSP	Frame supervisory panel

DTCI configuration

The following engineering rules apply to DTCI DWS configurations:

- To enable 64-kbit/s unrestricted data capabilities, T1 carriers for DWS PRI must have B8ZS coding.
- ESF framing is required.

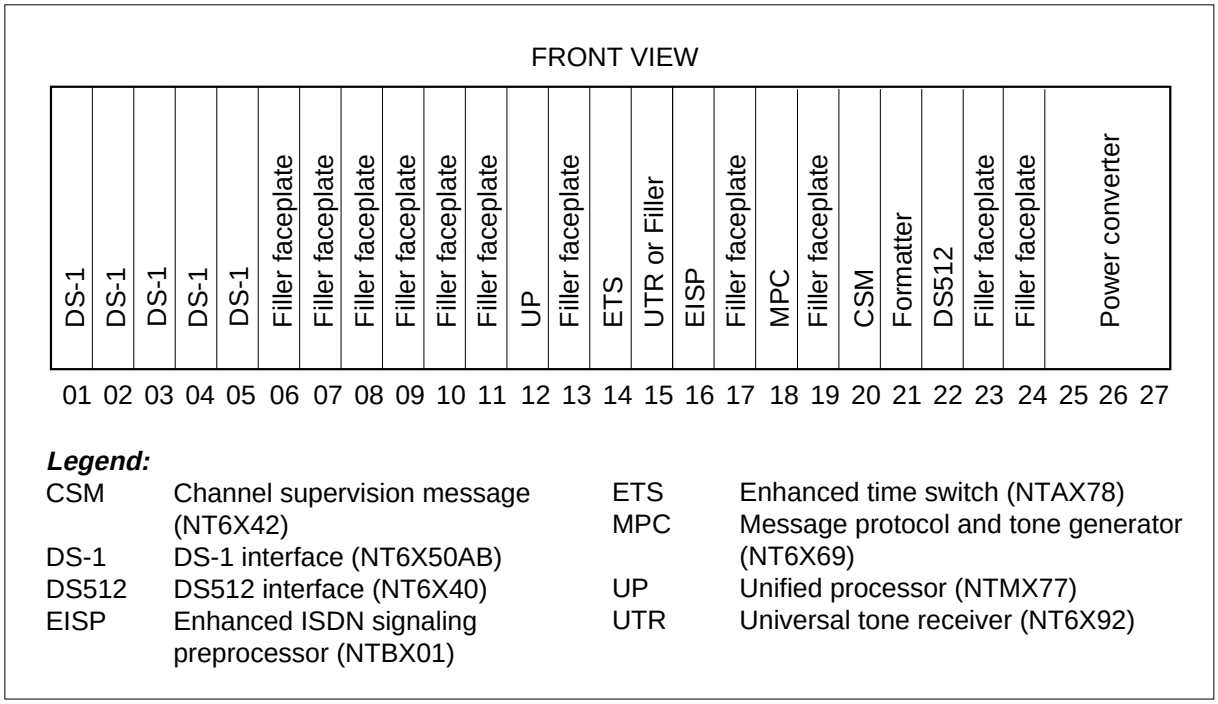
- The NT6X50AB DS-1 interface card is required for Dialable Wideband Service, since it supports ESF framing. The NT6X50AA DS-1 card may be included in the same shelf as the NT6X50AB, but can only be used for non-DWS trunks.
- Slot 15 may be provisioned with a universal tone receiver (UTR) card, NT6X92AA.
- XPM PLUS is required.

DTCI card locations

The arrangement of cards in an XPM PLUS configuration is shown below. The XPM PLUS uses a UP (unified processor) and an EISP (Enhanced ISDN signaling preprocessor).

Figure 3, "Introduction to ISDN DWS translations" on page -1 illustrates the shelf layout of an XPM PLUS configuration for DWS.

Figure 3-6 DTCI shelf layout for DWS in an XPM PLUS configuration



Enhanced time switch card (NTAX78AA)

The enhanced time switch card provides the following functions:

- time switching of DS-0 samples with constant frame delay
- parallel-to-serial and serial-to-parallel formatting of DS-0 samples

- logic for transmission and reception of DS-1 signaling information to and from the unified processor (UP)
- looparound capability for diagnostic purposes

The NTAX78AA circuit card consists of the following functional blocks:

- microprocessor interface
- switching block
- signaling block
- processor (peripheral side) interface block
- peripheral side (P-side) switch matrix block
- control side (C-side) switch matrix block
- three delay blocks
- frame generation block

Pinouts, descriptions, and timing diagrams for the NTAX78AA circuit card are provided in the *Hardware Description Reference Manual*.

DTCI interface to ENET

To make better use of ENET ports, the NT6X40AC (DS30 interface card) in slot 22 of a DTCI shelf should be replaced with an NT6X40FA (DS512 interface card). To better use the cross-point circuit card with the DS30 speech link interface, most extended peripheral modules should be equipped for a DS512 fiber speech link interface to the enhanced network. Another circuit card, the NT9X45BA, can be used for both copper and fiber links. The DTCI peripheral can use the fiber connections, while other peripherals such as maintenance trunk modules (MTM) can use the copper links of the card.

Trunk and channel recommendations

The following recommendations for provisioning wideband ports are based on efficient port use:

- All channels that make up an instance of a wideband call termination must be located on the same physical carrier facility (DWS calls must be contained within a single DS-1).
- All DS-0 members located on the DS-1 should be members of the same trunk group.
- Any physical interface that contain members of a trunk group which supports DWS should be fully used (for example, all 24 channels of a DS-1).
- The first fit trunk selection method should be used to minimize glare on 384- and 1536-kbit/s DWS calls.

- To support DWS, all T1 carriers must have B8ZS coding.
- ESF framing is required for DWS.

Channel type selection guidelines

This section outlines the three types of channel selections available for wideband — fixed, floating, and flexible — and includes restrictions and advantages of each.

Fixed channel selection

The following conditions apply to the fixed channel selection method:

- a call must remain within the boundary of a single T1
- the only values supported are n = 6 or 24. For n = 6, the H0 (384 kbit/s) DWS call starting channel must be one of channel 1, 7, 13, or 19. For n = 24 (H11), all channels (1-24) on a T1 are used.
- only H0 or H11 wideband calls (384 kbit/s or 1.536 Mbit/s) are allowed
- contiguous channels must be selected

> ***Note:*** With the restrictions of fixed channel selection, there may be times when a wideband call cannot be completed despite having sufficient DS-0 slots available.

Floating channel selection

The following conditions apply to the floating channel selection method:

- a call must remain within the boundary of a single T1
- full nx64 wideband calls are supported (n = 2 to 24)
- contiguous channels must be selected (such as 1 to 6, 2 to 7)

The advantages of floating channel selection over fixed channel selection are as follows:

- Floating channel selection can use channels 19 to 23 when the D-channel consumes channel 24.
- Channels can cross the artificial boundaries imposed by the fixed channel selection scheme (such as 1 to 6, 7 to 12).
- By implementing the full nx64 kbit/s range, greater flexibility is provided to end users in determining the appropriate bandwidth for their specific application. Additionally, with the full nx64 range available, no calls are blocked to the called party due to incompatible bandwidth selection (for example, the calling party selects n=12 [768 kbit/s], but the called party is

using the fixed channel selection method and can only support n=6 or n=24).

- Channel packing algorithms are also used that minimize blocking and maximize overall link efficiency.

  Note: With the restrictions of floating channel selection, there may be times when a wideband call cannot be completed despite having sufficient DS-0 slots available.

Flexible channel selection

The following conditions apply to the flexible channel selection method:

- a call must remain within the boundary of a single T1
- full nx64 wideband calls are supported (n = 2 to 24)
- noncontiguous channels can be selected

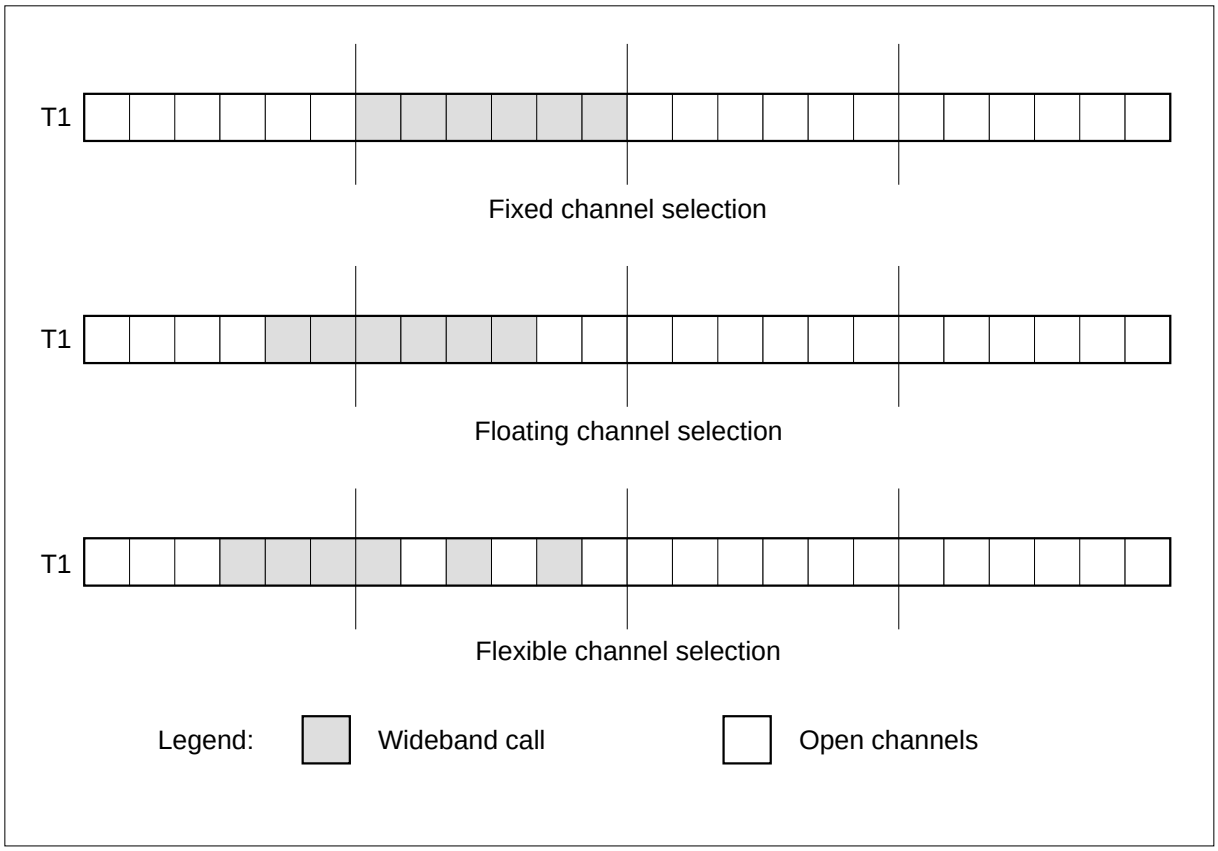
The advantages of flexible channel selection include all the benefits of floating channel selection and the following:

- Flexible channel selection provides maximum flexibility in unpredictable traffic conditions. Channel packing algorithms can be thwarted by multiple calls with a long holding time.
- Flexible channel selection provides the most flexibility for trunk groups.
- Flexible channel selection ensures, if there are sufficient DS-0s, that a call will be completed regardless of whether the available DS-0s are contiguous or noncontiguous.

  Note: With the restrictions of flexible channel selection, there may be times when a wideband call cannot be completed despite having sufficient DS-0 slots available.

Figure 3, "Introduction to ISDN DWS translations" on page -1 and Figure 3-7, "Trunk selection methods for T1 links" on page 3-17 illustrate the three trunk selection methods.

Figure 3-7 Trunk selection methods for T1 links



Circuit and network provisioning

DWS uses either a BESTFIT or FIRSTFIT trunk selection algorithm to select the group of channels which most closely matches the desired bandwidth. BESTFIT minimizes fragmentation of the DS-1 by allowing the largest group of contiguous channels to remain unused, thus remaining available for large bandwidth calls. FIRSTFIT selects the first available channel that satisfies the call size request. It helps to avoid glare.

Glare occurs when two offices simultaneously select the same trunk members of a two-way trunk group for two different calls. To reduce glare, priority is assigned for all trunk members to one of the switches. Preference may be given, with trunk group engineering, to the switch which is higher up in the hierarchical network so that terminating traffic is favored. Glare can be completely avoided by using one-way trunk groups in the network.

With fractional DS-1 service, if more than one group of channels satisfy the criteria, the first DS-1 (in order) is selected. The carrier must specify either ascending or descending sequential selection and must use opposite schemes at adjacent offices to minimize the occurrences of dual seizure.

The trunks at both switches connecting the wideband trunk groups must be datafilled to indicate which selection method is supported. If an MSL-100 switch is connected to customer premises equipment (CPE), both the PRI trunk and the CPE equipment should support the most restrictive channel selection capabilities, either fixed or floating.

The selection order of trunks is determined by the route list, the wideband selection sequence, and the trunk selection algorithm. The MSL-100 places the DS-1 links of a trunk group in the order within the trunk group based upon the first trunk member (DS-0) that is datfilled in TRKSGRP.

The DS-1 order within a trunk group is not visible in the switch. Since the selection order chosen could be affected if both ends of two-way trunks are not datafilled properly, it is important to enter trunks in the proper sequence to ensure that the order is known. Since each wideband call must be carried within a single DS-1, it is important to ensure that the DS-1 order does not obstruct the ability of traffic managers to monitor and adjust the trunk selection algorithms on wideband trunk groups.

Network management

Network management controls have been designed for a voice-oriented, single-channel telephony environment. There are some differences in how they are used in a wideband environment. Figure 3, "Introduction to ISDN DWS translations" on page -1 and Table 3-4, "DWS controls" on page 3-18 list the controls that apply to DWS.

Table 3-4 DWS controls (Sheet 1 of 2)

Abbreviation	Control Name
AOCR	automatic out-of-chain reroute
CANF	cancel from
CANT	cancel to
CBK	code blocking
DRE	directional reservation equipment
FRR	flexible reroute
HTRF	hard-to-reach flag
IDOC	internal dynamic overload control
ITB	incoming trunk busy
PPLN	preplanned control

Table 3-4 DWS controls (Sheet 2 of 2)

Abbreviation	Control Name
PRE	protection reservation equipment
PRP	preroute peg count
RRTE	reroute control
SKIP	skip control
STR	selective trunk reservation

Automatic out-of-chain reroute

This control provides extended routing when the route has been exhausted. It is applied on a trunk group basis. This command is supported for DWS calls.

Cancel from

This control diverts the traffic attempted on outgoing or two-way trunks. Calls that are affected are those that are overflowing the trunk group to which the control is applied. This command is supported for DWS calls.

Cancel to

This control limits the traffic attempted on outgoing or two-way trunks. Calls are routed to treatment. This control may be activated on a percentage of alternate routed call or on all alternate routed calls and a percentage of direct routed calls. This command is supported for DWS calls.

Code blocking

This control blocks calls to specified destinations and routes them to treatment. This command is supported for DWS calls.

Directional reservation equipment

This control applies only to two-way trunks. It reserves a number of idle trunks for incoming traffic. Originating traffic is skip-routed (route-advanced) to the next trunk group. However, for DWS calls, there is the possibility that DWS calls could use some of the reserved trunks for completion.

Flexible reroute

FRR allows a network manager to route traffic without making table changes. This command is supported for DWS calls.

Hard-to-reach flag

This works with STR to flag traffic to specified destinations. This command is supported for DWS calls.

Incoming trunk busy

ITB is a group control that restricts incoming attempts by selectively making busy a percentage of incoming trunks that have the remote-make-busy capability. Trunk groups are defined for remote-make-busy in field REMBSY of table TRKSGRP. This will work properly for wideband calls on wideband trunk groups.

Internal dynamic overload control

IDOC is triggered when an overload threshold is met. This is, in general, on an office level. IDOC causes one of three signal levels to be sent to adjacent switches. Since the detection of the overload is not related to a particular call type, this control will not affect wideband trunks.

Preplanned control

This is also referred to as remote dynamic overload control (RDOC). This control is triggered when a signal is received from an external source, usually another switch. This control has no special affects on wideband calls or wideband trunks.

Preroute peg count

This control pegs OMs for calls made to specified destinations. It does not block calls. This command is supported for DWS calls.

Protection reservation equipment

This is similar to DRE except it is applied only to traffic that has been alternate-routed. For DWS calls, there is the possibility that DWS calls could use some of the reserved trunks for completion.

Reroute control

This control allows a percentage of traffic to be routed to a different route list. This does not affect wideband traffic.

Selective trunk reservation

This control is an extension of DRE and PRE. It blocks destinations defined as hard-to-reach (HTR) codes. This command is supported for DWS calls as long as wideband calls use standard translations.

Skip control

This control limits a percentage of direct routed and a percentage of alternate routed calls offered to selected outgoing trunk groups. It skip-routes (route-advances) a call to the next trunk group in the route list. This control will perform the same way for wideband calls as for narrowband calls as long as there are other wideband trunk groups in the route list.

Network management restrictions and limitations

Certain restrictions and limitations exist for DWS network management as follows:

- TASI is not supported for wideband trunks groups.
- When DRE and PRE controls are in place, it is possible that outgoing wideband calls could use trunks that are reserved as incoming.
- Any time a wideband call is alternate-routed, a wideband trunk group must be in the alternate route list. Since this restriction cannot be enforced, it is up to the operating company representative to engineer this properly.

Impact on processing resources

The figures detailed in this section are incremental to existing narrowband calls and are draft estimates. Timing figures reflect use of the DMS Series 20 processor and assume that the first trunk selected is idle.

DMS-core

The impact of the DWS product is approximately 32 ms for a 384-kbit/s call and approximately 71 ms for a 1536-kbit/s call.

DTCI

The impact of the DWS product on a given DWS PRI call in the unified processor (UP) can be determined from the *System Engineering Bulletin*, SEB 93-03-001 (Issue 2 and up).

Connection setup

The average DWS connection setup time is lower than the time required for *n* narrowband connections. For example, the time required to establish a 1536-kbit/s connection is significantly less than the cumulative time required to set up twenty-four 64-kbit/s connections.

Real-time impact

For the number of call attempts (disregarding bandwidth), the DWS product decreases the amount of call carrying capacity on all call processing nodes (DMS-core and DTCI). The impact is dependent on the amount of actual wideband traffic and the number of trunks provisioned for DWS. There is less than 0.5% real-time impact to a traffic mix that does not include trunks provisioned for DWS. The real-time impact of enabling DWS for all trunk groups is less than 2% for each call.

DWS test tools

The following test tools have been modified to support wideband service:

- peripheral module intercept system test (PMIST)
- primary rate interface test (PRITST)

PMIST

PMIST is a low-level internal diagnostic tool that records messages sent between the central control (CC) and the peripheral modules (PM).

PMIST monitors and records incoming and outgoing (I/O) messages to assist in determining whether the CC is responding properly to PM signals.

PMIST has been modified to display the transfer rates that are used in a wideband call. PMIST also displays the channels associated with the controlling wideband TID in the wideband call.

For more information, refer to technical assistance manual TAM-1001-007, *PMIST User's Guide*.

PRITST

The PRI test allows the initiation of a DWS PRI test call from the trunk test position (TTP) level of the MAP display by use of the outpulse (OP) command.

The digits entered after the OP command correspond to an index in table PRITST. The information contained in this table is used to build the PRI messaging required to initiate and release DWS calls.

For more information, refer to feature AD4439, *DWS Test Tools and Maintenance*.

4 IPE features

The Intelligent Peripheral Equipment (IPE) provides a common peripheral for the Meridian SL-100 (MSL) product line. The IPE also provides a single common peripheral with common line cards for the Meridian SL-100 system, Meridian 1 system, and Meridian SuperNode system, as well as a cost-effective solution for upgrades and extensions.

Telephones supported by IPE

The following is a list of telephones supported by the IPE:

- M3000 Touch phone
- Touch Asynchronous Data Option (TADO)
- Meridian Modular Telephones (MMT)
  - M2006
  - M2008
  - M2008HF
  - M2216ACD-1
  - M2216ACD-2
  - M2616
  - M2616CT
- Meridian Programmable Data Adapter (MPDA)
- Meridian Asynchronous Data Option (MADO)
- Meridian Communication Adapter (MCA)
- Analog Terminal Adapter (ATA)

All digital telephones can transmit or receive voice and data communications simultaneously. This capability allows a user to talk on a directory number (DN) loop while using an attached data terminal.

The MADO, TADO, MCA, and MPDA use RS-232-C interfaces for data terminal equipment (DTE) and support data speeds from 110 bps to 19.2 kbps.

The MADO, TADO, MCA, and MPDA have auto baud capability and are compatible with existing MSL-100 Datapath products. MADO, TADO, MCA, and MPDA support MSL-100 keyboard dialing or keyboard dialing compatible with the Hayes Smart modem command protocol.

The IPE supports the following analog telephone sets and attendant console:

- analog sets
  - — 500/2500 sets (includes sets with adjunct displays)
  - — 500/2500 sets with message waiting lamp
  - — M9000 sets: M9316CW, M9516CW, M9417CW, M9417, M9516
  - — Maestro sets: 1500, 2500, 3500, 4525, 4625
  - — Power Touch sets: 225, 250, 350, 360
  - — M8000 sets: M8001, M8003, M8009, M8314, M8417
  - — Venture Multi-Line Communications Systems
- MSL-100 attendant console (uses analog ports)

CLASS features for IPE

The following tables display the limitations and restrictions for CLASS features on the IPE. These features were tested under three categories of hardware and sets. IPE with analog sets, LCM/LCME with analog sets, and IPE with digital sets were tested. All three categories were tested under three

conditions of trunking: intragroup, CCS7, and PRI. The following tables depict the results of that testing.

Table 4-1 (Sheet 1 of 2)

Class Feature: IPE with analog sets	Intra-group	CCS7	PRI
Screen List Editing (SLE)	NOTE 4	NOTE 4	NOTE 4
Distinctive Ring/ Call Waiting Tone (DRCW)	N	N	Y
Selective Call Acceptance (SCA)	Y	Y	Y
CALLOG Option Network Callog Feature	Y/Note 5	Y/Note 5	N
SCWID	Y	Y	Y
DSCWID	Note 6	Note 6	Note 6
Customer Originating Trace (COT)	Y	Y	Y
Calling Name Delivery (CNAMD)	Y	Y	Y
Calling Number Delivery (CND)	Y	Y	Y
Calling Number Delivery Blocking (CNDB)	Note 7	Note 7	Note 7

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. Visual SLE (VSLE) only works on the Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup and CCS7. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end.

Note 8: These features will function on the IPE as designed through intragroup and CCS7.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Table 4-1 (Sheet 2 of 2)

Class Feature: IPE with analog sets	Intra-group	CCS7	PRI
Selective Call Rejection (SCRJ)	Y	Y	Y
Anonymous Caller Rejection (ACRJ)	Y	Y	Y
Automatic Recall (AR)	Note 8	Note 8	Note 8
Automatic Callback (ACB)	Note 9	Note 9	N
Calling Name Delivery Blocking (CNAB)	Note 7	Note 7	Note 7
Calling Number Delivery Blocking (CNDB)	Note 7	Note 7	Note 7
Calling Number/Name Delivery Blocking (CNNB)	Note 7	Note 7	Note 7
Calling Number Blocking (CNB)	Note 7	Note 7	Note 7
Selective Call Forwarding (SCF)	Y	Y	Y
CLASS Message Waiting Indication (CMWI)	Note 10	Note 10	Note 10
Dialable Number Delivery (DDN)	Y	Y	N

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. Visual SLE (VSLE) only works on the Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup and CCS7. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end.

Note 8: These features will function on the IPE as designed through intragroup and CCS7.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

The following table depicts the results of testing under the condition of LCM/LCME with analog sets.

Table 4-2 (Sheet 1 of 3)

Class Feature: LCM/LCME with analog sets	Intra-group	CCS7	PRI
Screen List Editing (SLE)	Y	Y	Y
Distinctive Ring/ Call Waiting Tone (DRCW)	Y	Y	Y
Selective Call Acceptance (SCA)	Y	Y	Y
CALLOG Option Network Callog Feature	Y	Y	N
SCWID	Y	Y	Y
DSCWID	Y	Y	Y

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Table 4-2 (Sheet 2 of 3)

Class Feature: LCM/LCME with analog sets	Intra-group	CCS7	PRI
Central Office Trace (COT)	Y	Y	Y
Calling Name Delivery (CNAMD)	Y	Y	Y
Calling Number Delivery (CND)	Y	Y	Y
Calling Number Delivery Blocking (CNDB)	Y	Y	Y
Selective Call Rejection (SCRJ)	Y	Y	Y
Anonymous Caller Rejection (ACRJ)	Y	Y	Y
Automatic Recall (AR)	Y	Y	Y
Automatic Callback (ACB)	Y	Y	N
Calling Name Delivery Blocking (CNAB)	Y	Y	Y
Calling Number/Name Delivery Blocking (CNNB)	Y	Y	Y
Calling Number Blocking (CNB)	Y	Y	Y

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Table 4-2 (Sheet 3 of 3)

Class Feature: LCM/LCME with analog sets	Intra-group	CCS7	PRI
Selective Call Forwarding (SCF)	Y	Y	Y
CLASS Message Waiting Indication (CMWI)	Y	Y	Y
Dialable Number Delivery (DDN)	Y	Y	Y

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

The following table depicts the results of testing under the condition of IPE with digital sets.

Table 4-3 (Sheet 1 of 3)

Class Feature: IPE with digital sets	Intra-group	CCS7	PRI
Screen List Editing (SLE)	N/A	N/A	N/A
Distinctive Ring/ Call Waiting Tone (DRCW)	N/A	N/A	N/A
Selective Call Acceptance (SCA)	N/A	N/A	N/A
CALLOG Option Network Callog Feature	N/A	N/A	N/A
SCWID	N/A	N/A	N/A
DSCWID	N/A	N/A	N/A
Central Office Trace (COT)	N/A	N/A	N/A
Calling Name Delivery (CNAMD)	Y	Note 12	Note 12

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Note 12: Tested with “NO AMA” and passed.

Table 4-3 (Sheet 2 of 3)

Class Feature: IPE with digital sets	Intra-group	CCS7	PRI
Calling Number Delivery (CND)	Note 12	Note 12	Note 12
Calling Number Delivery Blocking (CNDB)	Y	Y	Y
Selective Call Rejection (SCRJ)	N/A	N/A	N/A
Anonymous Caller Rejection (ACRJ)	N/A	N/A	N/A
Automatic Recall (AR)	N/A	N/A	N/A
Automatic Callback (ACB)	Y	Y	N/A
Calling Name Delivery Blocking (CNAB)	Y	Y	Y
Calling Number/Name Delivery Blocking (CNNB)	Y	Y	Y
Calling Number Blocking (CNB)	Y	Y	Y
Selective Call Forwarding (SCF)	N/A	N/A	N/A

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Note 12: Tested with “NO AMA” and passed.

Table 4-3 (Sheet 3 of 3)

Class Feature: IPE with digital sets	Intra-group	CCS7	PRI
CLASS Message Waiting Indication (CMWI)	N/A	N/A	N/A
Dialable Number Delivery (DDN)	Note 12	Note 12	Note 12

Note 1: Display of incoming calling name or calling name is not provided for CLASS sets on the IPE.

Note 2: The IPE does send the calling line I.D. information out.

Note 3: Features that work on analog sets on the IPE are activated using feature access codes. If a Power Touch 350 is installed, feature scripts may be used to activate the feature.

Note 4: SLE features SCA, SCF, and SCFJ work on the IPE and are defined separately. DRCW does not work at this time on Power Touch.

Note 5: This feature is switched based and should not be confused with the CALLOG feature available on some CLASS sets. It requires an ADSI set & CCS7.

Note 6: Although these features will function on the IPE through intragroup, CCS7, & PRI, without display of the name/number, there is no benefit. These features require an ADSI set.

Note 7: If CNDB or CNAB is activated on an analog set on the IPE, the calling number/name will be blocked at the terminating end. Default message is not displayed.

Note 8: These features will function on the IPE as designed through intragroup, CCS7, and PRI; However, there is no display on Power Touch.

Note 9: This feature will function on the IPE as designed through intragroup and CCS7, but does not work over PRI. There is no display on Power Touch.

Note 10: CMWI works on IPE with NT8D09 Line card; however, cannot turn off reminder ring.

Note 11: Y = feature works as design; N = feature does not work; N/A = not tested or not applicable.

Note 12: Tested with “NO AMA” and passed.

CLASS feature interaction

The following is identified for the CNNB feature for implementation to IVD sets on the MSL-100 switch:

- Table CUSTSTN must have CNDB and CNAB added to the applicable customer group.
- Line to line calls originating from an M2616 set preceded by the access code displays (OUTSIDE CALL) on the terminating PSET.
- PTS, PRI, and CCS7 trunk calls originating from an M2616 preceded by the access code displays the trunk CLLI to the terminating set.
- CNNB cannot be activated using Last Number Redial because LNR cannot store the activation codes.

- M2616s datafilled as Multiple Appearance Directory Number (MADN) are compatible with CNNB.
- Directed Call Park is compatible with CNNB. After the park time out expires the call is recalled and outside call is displayed.
- Line to line calls using conference call features are compatible with CNNB.
- Ring Again is compatible with CNNB.

All other interactions related to the CNNB feature can be found under the feature interactions section for Calling Number Delivery Blocking (CNDB).

The following is identified for the CABOP feature for implementation on the MSL-100 switch:

- CABOP functions with IPE analog lines.
- CABOP does not function with IVD sets after modifying table LCCOPT to make Auto Recall (AR) compatible with IVD sets. Upon dialing the ARA access code a station receives treatment of Feature Not Allowed (FNAL).
- CABOP does not interact with Defense Switch Network (DSN). Options Auto Recall (AR) and Autovon (AVT) are incompatible.

All other interactions related to the CABOP feature can be found under the feature interactions section for CABOP.

IPE product architecture

This section describes the hardware requirements for an Intelligent Peripheral Equipment Column (IPEC). This section also describes the Extended System Monitor (XSM) located in the IPEC pedestal and includes configuration dependencies and switch settings information. Finally, an alternative to the XSM is briefly described.

Each IPEC consists of the following components:

- up to four universal equipment modules (UEM) to house IPEs
- up to four IPE modules, each with the following components:
  - — peripheral equipment power supply (PEPS), dc version
  - — controller card
  - — up to 16 line cards (analog, digital, or both)
  - — dc ringing generator (for analog line cards only)

- pedestal base (which contains the XSM, listed below)
  - — power distribution unit (PDU)
  - — blower unit
- expansion kit (used when two columns are configured side-by-side)
- two module side cover panels
- top cap
- cable harnesses
- trim panels and labels
- XSM card (contained in the pedestal)

Minimum and maximum IPEs in one IPEC

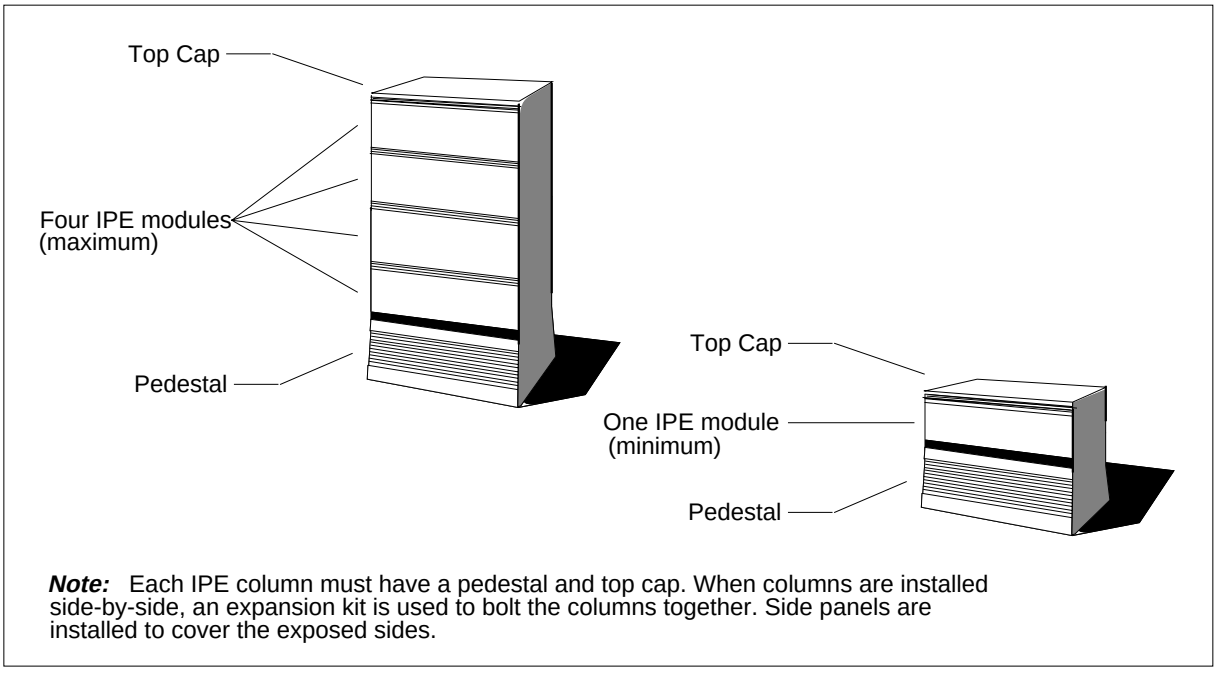
The smallest single-column configuration for an IPEC contains only one UEM, which contains the housing framework for one IPE module. The largest single-column configuration for an IPEC contains four UEMs.

Figure 4-1, "Minimum and maximum modules in an IPEC" on page 4-12 shows the minimum and maximum modules allowed in an IPEC.

Universal equipment module

The universal equipment module (UEM, NT8D37) provides the framework for housing the IPE module.

Figure 4-1 Minimum and maximum modules in an IPEC



Note: Each IPE column must have a pedestal and top cap. When columns are installed side-by-side, an expansion kit is used to bolt the columns together. Side panels are installed to cover the exposed sides.

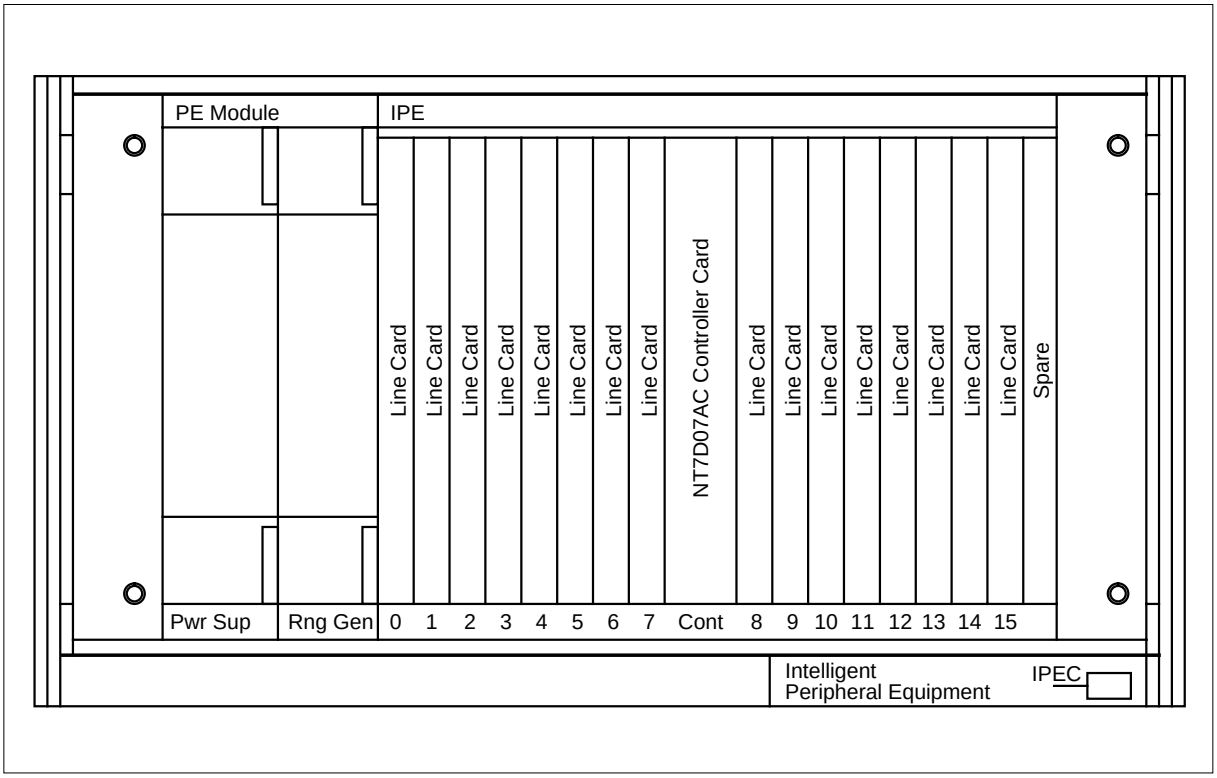
IPE module components

An IPE module is a single shelf. A maximum of four IPE modules can be stacked into one IPE column. Each IPE shelf can contain the following components:

- one peripheral equipment power supply (PEPS, NT6D40) card—provisioned at the far left end of the IPE module
- one controller card (NT7D07)—provisioned between card slots 07 and 08
- up to 16 line cards—any mix of Digital Line Cards (DLCs, NT8D02) or analog message waiting line cards (MLCs, NT8D09) may be provisioned in slots 00 through 15.
- one dc ringing generator—the ringing generator (NT6D42) is required only when one or more MLC line cards are equipped.

Figure 4-2, "IPE shelf card slots" on page 4-13 shows the card layout for an IPE shelf.

Figure 4-2 IPE shelf card slots



Peripheral equipment power supply

A PEPS card resides on each IPE shelf. The PEPS provides power to the IPE shelf and regulates all the voltages required by the cards on the IPE shelf.

For all IPE power supplies, the following status and fault reports can be detected by the XSM and transmitted to the MSL-100 Central Controller (CC).

- card functioning properly
- card completely shutdown
- card partially shutdown
- card not present

Controller card

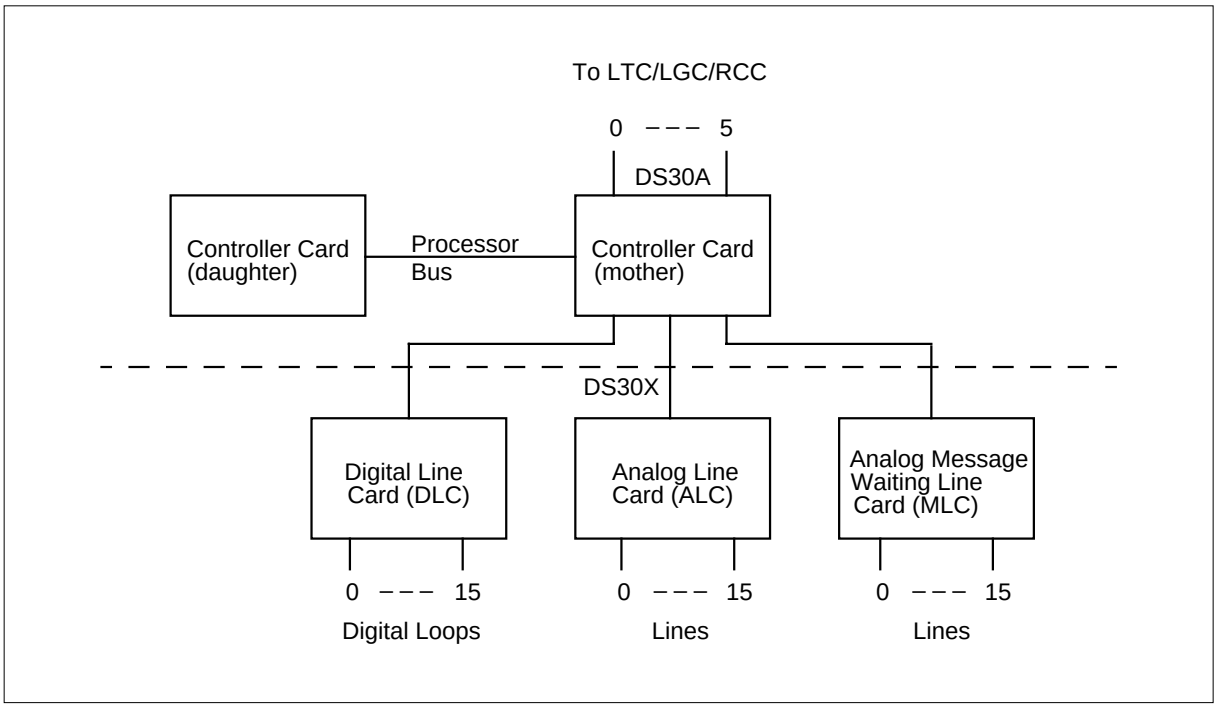
The controller card is a single pack that consists of a mother board and a daughter board. The card resides in the IPE shelf and serves up to 16 peripheral cards.

All network interfaces are handled through the line trunk controller (LTC), line group controller (LGC), and remote cluster controller (RCC). The controller card uses an MC68020 microprocessor that provides the primary interface for the IPE shelf, processing power for general control, maintenance functions, and signaling format conversion between the network and line cards. The controller card receives messages from the host XPM (line trunk controller, line group controller, or remote cluster controller), peripheral line cards, and terminating devices (such as sets).

The IPE has an additional function as a central controller for the CARD-LAN bus, which is internal to each IPE module. The CARD-LAN bus is a serial bus on the IPE back plane used to communicate with the line cards. The serial bus provides a path where maintenance and control messages, other than pulse code modulated (PCM) voice and data, can travel.

Figure 4-3, "IPE schematic" on page 4-15 shows the relationship of the controller card to the other cards in the IPE shelf.

Figure 4-3 IPE schematic



Line cards

The line cards can be provisioned in any order in the 16 slots for the IPE module. All cards within the IPE are simplex:

- digital line cards
- analog line cards (older systems only)
- analog message waiting line cards

Digital line card

The digital line card (DLC) interfaces to Integrated Voice and Data (IVD) digital terminals. These terminals include the M2000, M3000 series, and their respective data options. A DLC inserts into any line card slot on the IPE shelf and can interface with a maximum of 16 digital sets for each DLC card for a total of 32 ports.

The DLC is equipped with an Intel 8051-type microprocessor that performs functions such as control of card operation, card identification, self-test, status reporting to the controller, and maintenance diagnostics. The DLC interfaces to the controller card through a DS-30X interface that carries multiplexed PCM voice and data information from the 16 sets (32 ports). The CARD-LAN serial bus carries control and maintenance messages between the controller card and DLC.

Analog line card

The analog line card (ALC) interfaces with the controller card. The ALC allows analog sets such as 500 and 2500 sets to receive and make telephone calls. The ALC can be inserted into any line card slot in the IPE shelf.

Note: In later configurations of the IPE, MLCs are used instead of ALCs.

Each ALC supports a maximum of 16 analog sets (500/2500) and can support the MSL-100 attendant console. The ALC is equipped with an Intel 8051-type microprocessor that performs functions such as control of card operation, card identification, self-test, status reporting to the controller, and maintenance diagnostics.

The ALC provides the following functions:

- analog-to-digital and digital-to-analog conversion for the possible 16 analog telephone sets
- transmit and receive signaling messages over a DS-30X time slot
- dc current to the telephone sets
- On hook/off hook detection
- connection for ringing signal through the ringing generator
- status of board
- tip and ring conductor with balanced 600 ohm termination
- self ID and vintage ID

Analog message waiting line card

The MLC is basically an ALC that supports message waiting lamp sets in addition to the 500/2500 sets. The MLC functions the same as the ALC listed above and also provides the following additional functions:

- current limited connection for the message waiting lamp on the set
- flashing of the 1-Hz message waiting lamp signal at 150 vdc
- method to test the lamp on the set

Ringing generator

The ringing generator (NT6D42CB) provides analog (500/2500) set ringing capabilities for the ALC and MLC cards and is required if analog lines are configured in the shelf. The ringing generator also supplies -150 vdc to the message waiting lamp sets.

The dc ringing generator operates from a nominal -48 vdc input and provides selectable ac ringing voltage outputs superimposed on -48 vdc. The frequency and voltage options are 20/25/50 Hz and 70/80/86 vac. The ringing generator

also supplies 150 vdc for message waiting lamp voltage for 500/2500 set applications.

The ringing generator mounts in the IPE module to the right of the PEPS.

The following status and fault reports can be detected by the XSM and transmitted to the MSL-100 CC:

- card functioning properly
- card completely shutdown
- card partially shutdown
- card not present

Pedestal base

Each column rests on a pedestal base (NT7D09) made of die-cast construction. The pedestal base (hereafter called “pedestal” in this guide) consists of a blower unit (with two blowers) and a -48 vdc PDU. The pedestal can optionally be equipped with the XSM to monitor IPEC status and generate frame alarms. These items are described in this chapter.

The IPEC pedestal assembly provides the physical support and logical frame position for the stackable IPE modules and top cap. Besides the items listed in the above paragraph, the pedestal houses the leveling feet, grill, -48 vdc PDU assembly, and other items such as the product label, air filter, PDU harness, panels, gaskets, and a terminal block.

The pedestal can be installed with casters or leveling feet to provide mobility or stability. For IPECs with only one or two IPE modules installed, the casters can be used for standing equipment. For IPECs configured with three or four IPE modules, use of the leveling feet is required due to excess strain on the casters.

Blower unit

The blower unit (NT8D52) in the pedestal provides forced air cooling with two 2-speed fans. The fans normally operate at low speed; however, if a condition of thermal stress occurs, the fans are automatically switched to high speed. Both fans operate under normal conditions. If one of the two fans fails or the temperature reaches 149 °F (65 °C), an XSM fault report notifies the CC.

The IPE uses the following possible fan unit status and fault reports for the blower unit:

- Fan unit is operational.
- Fan unit is not operational, and temperature alarm has been triggered.

- Temperature correct.
- Unit has reached an excessively high temperature.

Power distribution unit

The PDU (NT7D67) receives dc power (-48 vdc nominal) from a battery source external to the IPEC and distributes the power to the IPE modules and to the blower unit in the pedestal through the circuit breakers.

Expansion kit

The expansion kit (NT8D49 or NT8D49) shown in Figure 2-4 bolts modules from separate IPECs together for side-by-side expansion. The kit includes an expansion spacer, radio frequency interference (RFI) gaskets, and eight bushings. There is one kit for each module after the first column.

Installations on concrete floors require expansion kit, NT8D49, and installations on raised computer floors require expansion kit, NT8D49 for earthquake risk areas.

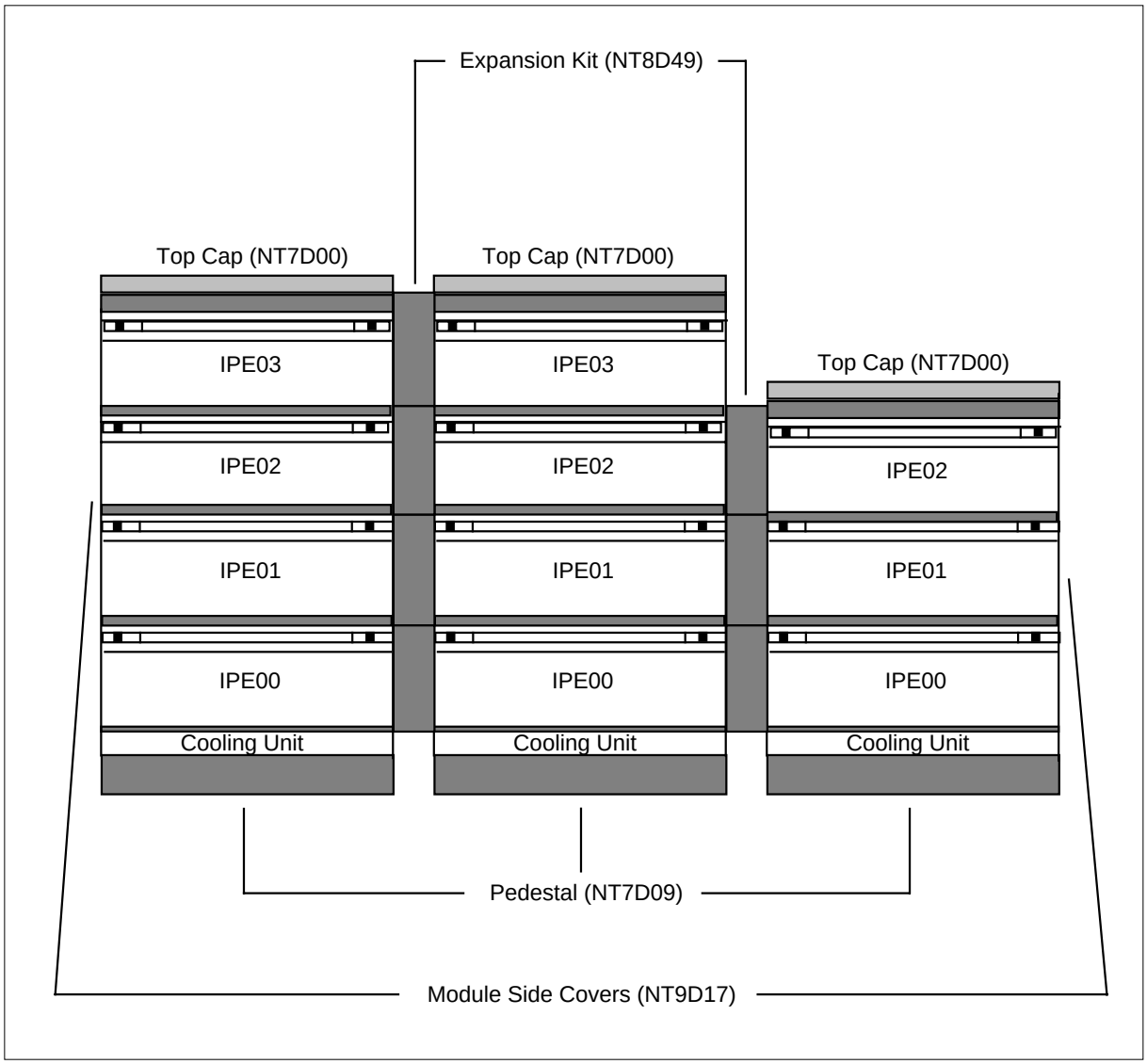
IPEC exterior completion

The exterior of the IPEC hardware is completed by the side panels and top cap, as described in the following information.

Module side panels

The module side panels (NT9D17) complete the column exterior. (See Figure 4-2, "IPE shelf card slots" on page 4-13 and Figure 4-4, "Standard growth configuration" on page 4-19.) There are two side panels, one to cover each side of each module in the IPEC. These are needed only for sides that are exposed, not for sides that are bolted to another module.

Figure 4-4 Standard growth configuration



Top cap

A top cap (NT7D00) completes each IPEC. It is mounted on the highest module of each column. (See Figure 4-2, "IPE shelf card slots" on page 4-13 and Figure 4-4, "Standard growth configuration" on page 4-19.)

The top cap consists of thermal sensors, a fan speed sensor, a front and rear exhaust grill, and a column alarm indicator. The sensors and alarm indicator interface with the XSM card located in the pedestal.

For sites requiring overhead cable entry to the IPEC, an optional top cap rear grill (P0699851) can be used.

Extended system monitor

The XSM (NT8D22) is a microprocessor-based circuit pack located in the IPE pedestal base. The XSM monitors the operation and status of the IPE power supplies, ringing generators, column thermal sensors, and blower units.

Master and slave XSMs

One IPEC may contain up to four IPE modules, numbered from 0 to 3 (bottom to top). Each IPEC requires one XSM that can be configured either as a master or a slave. Two 8-position dual inline pole (DIP) switches on the XSM indicate the system configuration, XSM function, and address.

One master XSM supports up to 64 columns (itself and up to 63 slave XSMs located in other columns) using a daisy chain of serial communication links. Only the master XSM reports the status (of itself and the slaves connected to it) to the system CPU or responds to the system status inquiry messages.

Slave XSMs under the control of a given master XSM must be numbered sequentially (DIP switch setting). Failure to do so results in incorrect fault reports being generated for any slave XSM missing from the sequence. For example, if slave XSMs are numbered 1, 3, 4, and 8, the master XSM would report that slaves 2, 5, 6, and 7 are not reporting.

If additional slaves are added to the daisy-chain with a previously configured and working master XSM, the DIP switch setting for the master XSM must be changed to reflect the new number of slave XSMs under the control of the master XSM.

The XSM status is reported to the system CPU over an RS-232-C communication path. The XSM reports monitored status, responds to system status inquiry commands, and performs automatic shutdown to prevent hazardous thermal (high temperature) conditions.

> ***Note:*** If the datalink between the MSL-100 and a master XSM is unavailable, the CC cannot determine any status information or fault reports from that XSM and any of its slaves.

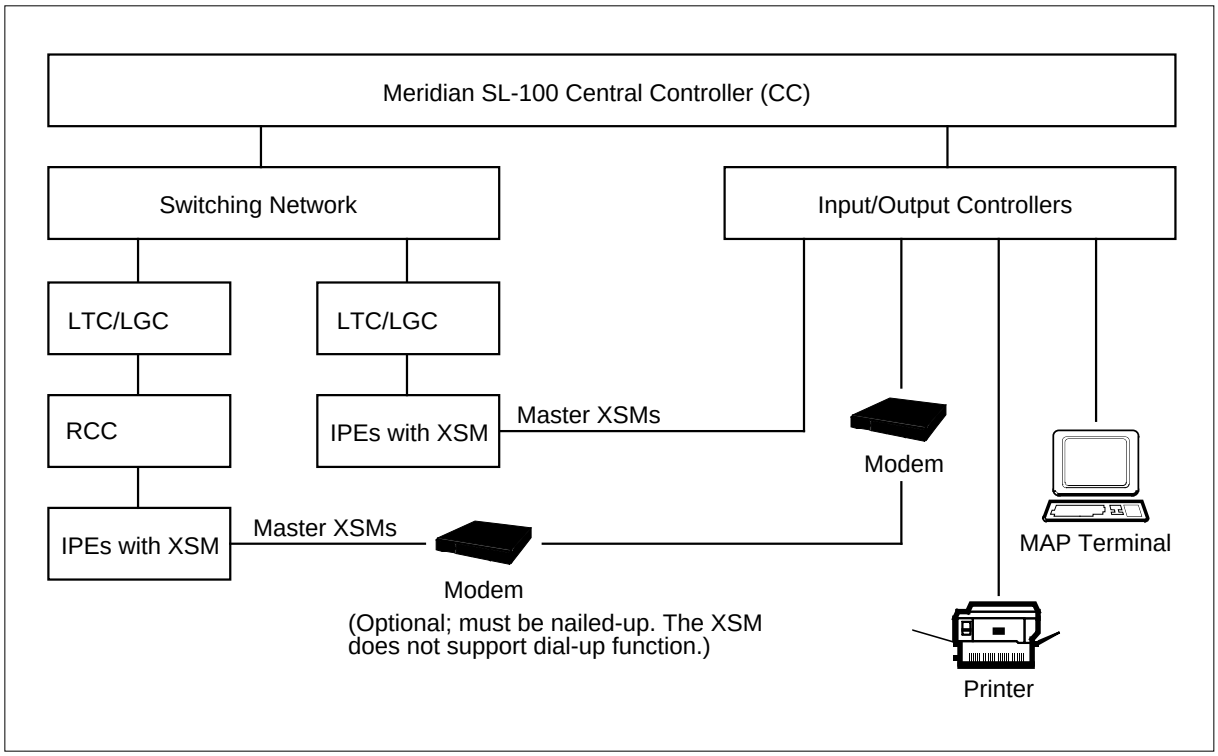
The XSM also performs the serial communication link between the master and slave XSMs in other columns. If a fault is detected, the XSM displays alarm light emitting diodes (LED) on the top column cabinet. The XSM trips the column circuit breakers or activates the tripping signals (for DC systems) when the column exceeds the high-temperature threshold. The XSM alarms the power fail transfer (PFT) unit to activate the system line transfer when required or when faults are detected.

> ***Note:*** The PFT card performs a transfer of lines to outside lines directly, bypassing the IPE line card. The PFT card is not supported in the MSL-100

environment, but an XSM may still report information for them, in some instances. Status messages for PFT cards are “Transferred” or “Not Transferred.” The MSL-100 CC ignores reports concerning PFT card status.

Figure 4-5, "XSM configuration in MSL-100 environment" on page 4-21 shows the XSM configuration in the MSL-100 environment.

Figure 4-5 XSM configuration in MSL-100 environment



XSM functionality

The XSM feature functionality can be broken down into the following areas: datalink interface, XSM configurations, and XSM maintenance interface. These functions, and an alternative to XSM, are described next.

Datalink interface

The MSL-100 datalink interface to the XSM is provided by SLLNK, which is a generic datalink interface residing in the CC. SLLNK supports a variety of data transfer applications. Table SLLNKDEV allows the XSM data application XSMDATA to use the SLLNK facility.

The multi-protocol controller (MPC) NT1X89 card connects the RS-232-C link from the XSM to the Input/Output Controller (IOC) on the CC. The MPC is a software-downloadable I/O device that resides on the IOC shelf. The MPC

supports two serial ports capable of RS-232-C synchronous and asynchronous transmission.

Datalink datafill requirements

Two data tables, MPC and MPCLINK, are used to datafill the datalink circuits for communicating with the XSMs. Table MPC defines MPC cards in the MSL-100 system. Table MPC includes fields such as the MPC number, the IOC shelf, the IOC circuit number, and the download file. Table MPCLINK defines the datalinks and protocol information to the MSL-100 system.

Figure 4-6, "XSM-to-SLLNK interface" on page 4-23 shows the software architecture of the XSM-to-SLLNK interface.

XSM configurations

The IPEC pedestal houses the XSM circuit pack. Each IPEC consists of a stack of up to four IPE modules, numbered from 0 to 3 (bottom to top). IPE modules are numbered according to their physical locations in an IPEC. One master XSM supports up to 64 columns, including itself. Thus, one master XSM can support up to 256 IPE modules.

The settings of the DIP switches on the XSMs assign an XSM identification code (XSMID) from 0 to 63. Number 0 always represents the master XSM, and numbers 1 to 63 represent the slaves.

The RS-232-C link connected to the master is called a loop. There can be a number of master XSMs configured; therefore, there can be an equal number of loops for the XSMs.

Figure 4-7, "Relationship of XSM loop to XSMID and modules" on page 4-24 shows the XSM loop/XSMID/module relationship that is the foundation of the XSM configurations.

Figure 4-6 XSM-to-SLLNK interface

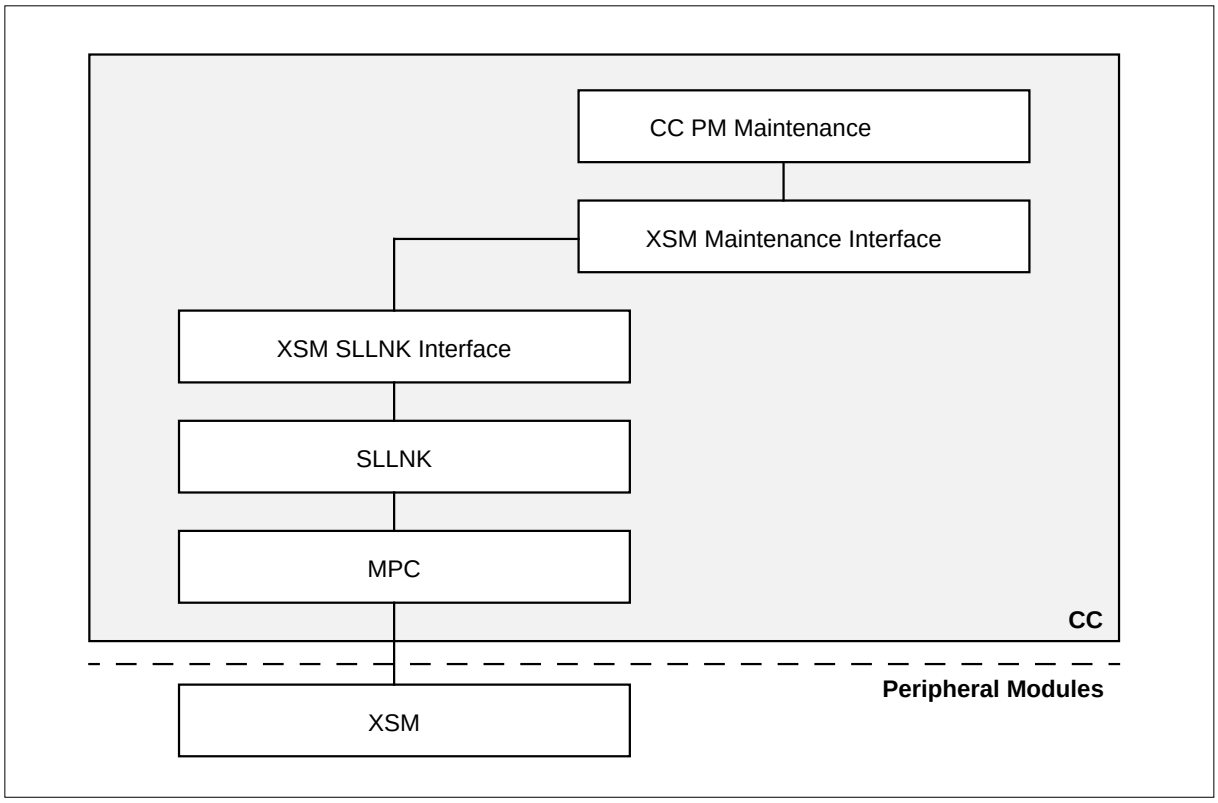


Figure 4-7 Relationship of XSM loop to XSMID and modules

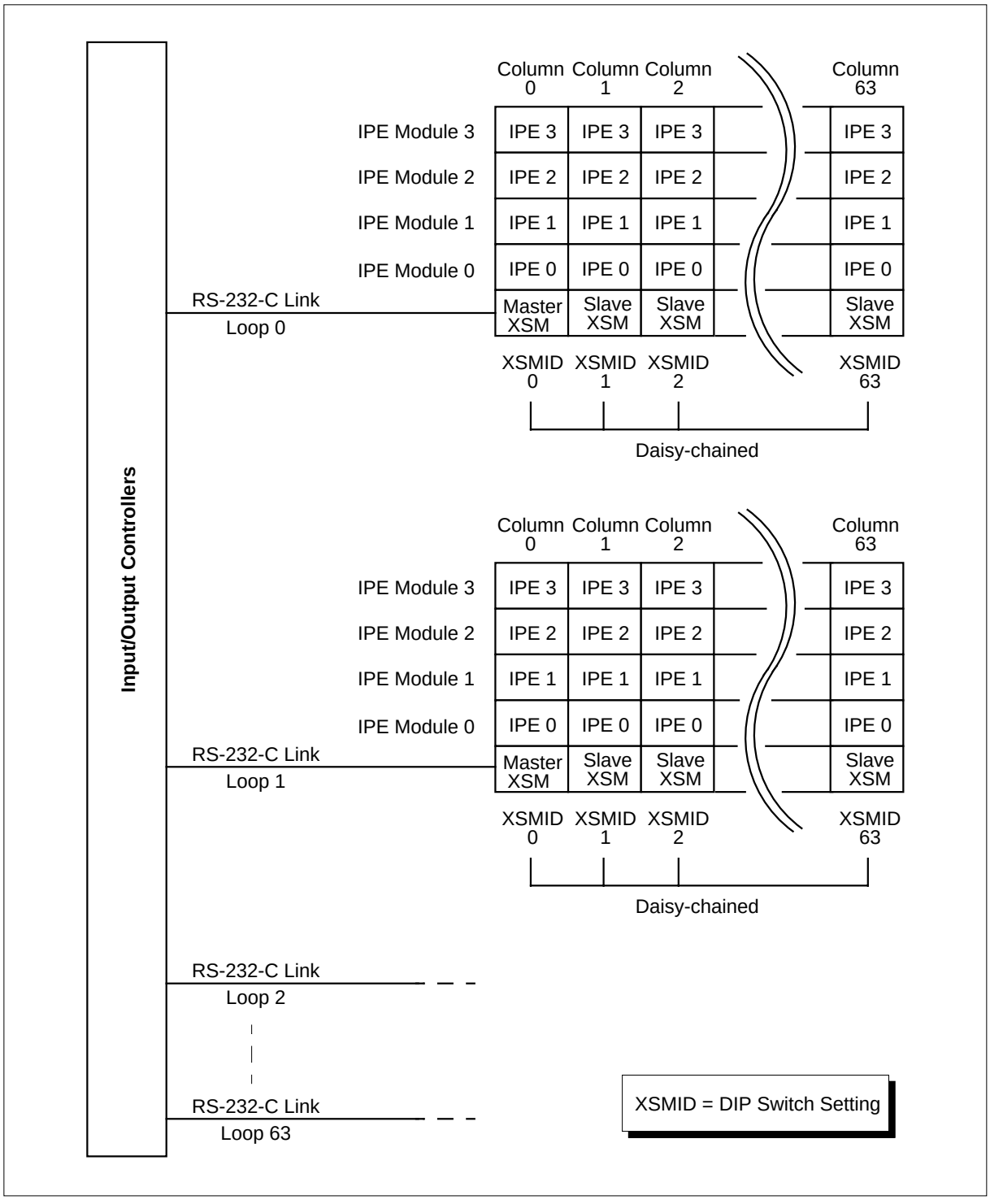


Table IPEINV controls the XSM configuration setup and changes. The XSM information given to an IPE tuple in the IPEINV table is in the format (Loop ID, XSMID, and Module Number) indicating how an IPE node is configured.

The command XSMSHOW enables the craftsperson to view current XSM configurations by specifying an XSM Loop ID or an XSM Loop ID/XSMID pair key.

An IOC on the controller card communicates with the Master XSM using an RS-232-C type interface. The XSM is always data terminal equipment (DTE).

To establish communications, the following communication parameters need to be entered:

- Asynchronous
- Full duplex
- 1200 bps
- 8 data bits
- 1 start bit
- 1 stop bit
- No parity

The MPC card must enable the MSL-100 system to communicate with the XSM. The MPC used must support the asynchronous protocol. Each MPC card supports two physical asynchronous ports that enable XSM/MPC and MPC/XSM direct link communication using modems. The RS-232-C ports on the MPC require the signal for digital carrier detect (DCD) to be asserted by the connected device.

One asynchronous data byte is transmitted over the RS-232-C link in the following manner:

```
D0:  Least Significant Bit (LSB)

D7:  Most Significant Bit (MSB)

D8:  Parity

START    D0  D1  D2  D3  D4  D5  D6  D7  D8 STOP

BIT                                  BIT
```

The following table describes the MPC port locations at the back plane of an IOC where the MPC card is inserted.

Note: The MPC NT1X89 card supports two RS-232-C datalinks. Therefore, only two master XSMs can be supported on one MPC card.

Table 4-4

Port	Cable	Location
0	RS-232-C	Maintenance port
1	RS-366	<- -> XSM
2	RS-232-C	(Not used)
3	RS-232-C	<- -> XSM

XSM maintenance interface

The XSM maintenance entails the need to react to the fault status reported by the XSMs, to alert the craftsperson so that the appropriate maintenance action can be taken, or to query the XSM for system fault status. When the XSM detects a fault received by the CC through the RS-232-C link, depending on the severity of the fault, the IPE maintenance software is notified. Maintenance actions are taken and logs are generated to alert the craftsperson.

XSM alternative

For those IPE configurations equipped with XSMs, but do not have RS-232-C connections to the IOCs, the MSL-100 system provides an alarm system that consists of hardware devices and software modules for detecting and reporting (by both visual and audible alarms) equipment faults. The hardware comprises various circuit packs that provide signal scan points and signal distribution points. The alarm software serves as an interface between the alarm hardware and the external alarms human-machine interface.

Understanding IPE translations

This chapter provides translations information for the following IPE-related areas:

- Attendant consoles off the IPE
- Integrated voice and data
- 500/2500 analog sets off the IPE
- Remote switching center to IPE emergency stand alone

5 Introduction to MCRM-S

Understanding MCRM-S translations

A Remote Switching Center (RSC) is a switching system made up of a family of advanced remote peripherals.

The Meridian SL-100 Remote Access Family includes the Meridian Cabinet Remote Units (MCRU) that can be upgraded to a Meridian Cabinet Remote Module-SONET (MCRM-S).

Note: SONET is an acronym for Synchronous Optical Network. It refers to fiber optic capabilities.

An MCRM-S is designed specifically to serve medium-sized remote applications. Its application flexibility makes the MCRM-S an ideal vehicle for Private Branch Exchange (PBX) replacement, Central Office (CO) capping, and medium-sized single- or multiple-customer business applications, such as Integrated Services Digital Network (ISDN). The MCRM-S also supports direct digital trunking to PBXs and provides remote-off-remote configurations for the MCRM-S.

This NT product prepares a customer switch for SONET interconnection, network simplification, and broadband-based services. In the MCRM-S, major enhancements to the RSC prepare customer MCRM-S switches to take advantage of fiber optic benefits. SONET enhancements to the RSC are packaged in MCRM-S product.

MCRM-S is functionally much the same as RSC. For example, like RSC, MCRM-S is available with or without ISDN. MCRM-S requires the same basic call processing software used by an RSC. However, MCRM-S is different in that it is a single cabinet enhanced version of the RSC product.

MCRM-S introduces a fully integrated SONET interface in later Batch Change Supplement (BCS) releases. The SONET interface increases network reliability, reduces hardware and provisioning costs. It also provides the bandwidth to enable future advanced services.

Software functionality

Software features for the MCRM-S are obtained through a combination of standard RSC packages and the MCRM-S basic package. Individual features are provisioned through RSC packages, while the MCRM-S basic package is used to activate these features and to provide all specific MCRM-S capabilities.

MCRM-S has the standard features and capabilities of the RSC. In addition, MCRM-S provides the following improved capabilities:

- Intraswitching allows switching of calls originating and terminating on the same MCRM-S without using host links.
- Remote-off-remote allows subtending remotes off the MCRM-S.
- Dynamic trunking provides calls to and from subtending trunks supporting PBXs.
- Emergency Stand-Alone (ESA) allows the continuation of service within the MCRM-S if communication with the host is lost.

Revised system architecture

The MCRM-S is based on the Common Peripheral Module (CPM) architecture. The CPM is a family of peripheral modules used in the DMS-100 family. CPMs are intended to replace the current XMS-type Expanded Peripheral Modules (XPM).

The prime application of the CPM is as an enhancement of the RSC. The CPM serves as a single-switch remote product that handles all applications of MCRM-S and dual MCRM-S.

The CPM supports existing XPM interfaces where possible. The new Peripheral Module (PM) type, enhanced Remote Cluster Controller 2, (RCC2) is accessible from the Maintenance and Administration Position (MAP) terminal. In remote applications, RCC2 supports several types of trunks and lines. The same amount of visibility and control that exists for current XPMs applies for the RCC2.

The CPM is based on a two-shelf configuration, the RCC2 shelf and the Extension (EXT) shelf. The RCC2 shelf contains the central processing equipment, as well as the circuitry required for each application. The EXT shelf contains octal T1 circuit packs and D-Channel Handlers (DCH), and is used to increase the capacity of the RCC2 shelf.

The CPM does not necessitate any changes to line peripherals. The base CPM product is focused on the North American market. Dual operation is available in remote applications, and features are available to connect two CPMs together.

Component packaging

The primary components of the MCRM-S are the Remote Maintenance Module (RMM), the EXT shelf, and the RCC2.

The MCRM-S components are packaged differently from the RSC in the following ways:

- The MCRM-S components are provisioned on shelves rather than equipment frames.
- The MCRM-S is based on the RCC2 that acts as the master controller for all peripherals of the MCRM-S. The RCC2 is a single-shelf, module with increased processing capabilities.
- An MCRM-S extension shelf is available to house additional ISDN channel handlers or DS-1 interfaces.

The EXT shelf is made up of the DCH, the QUAD carrier, and DS60 extenders with power supply. The QUAD carrier is made up of 0-3 dual Digital Signal-1 (DS-1) provisionable packlets and 0-3 provisionable packlet filler face plates.

The Frame Supervisory Panel (FSP) is part of the MCRM-S cabinet. The Dual Remote Cluster Controller 2 (DRCC2) with Peripheral-side (P-side) interlinks is operational.

MCRM-S benefits

The MCRM-S provides the following benefits:

- National ISDN-1
- service equivalency and transparency
- network planning flexibility
- capacity
- savings with direct SONET interface
- network survivability
- tariff advantages
- Operation, Administration, and Maintenance (OA& M) cost reduction
- common hardware and software with the DMS-100 host

The benefits of the MCRM-S are described separately in the sections that follow.

National ISDN-1

Nortel Networks and other major central office switch manufacturers have made public commitments to support the Bellcore National ISDN-1 (NI-1) service offering. NI-1 establishes a uniform protocol to which terminal

manufacturers can build. This provides portability among different manufacturer's central office switches. This has been termed “terminal portability.” The purpose of NI-1 is to foster more widespread ISDN deployment.

With the delivery of host compliance for a remote by extending the NI-1 standard to the MCRM-S, NI-1 compliance is available for Nortel Networks host equipment.

Currently, Nortel Networks does not provide MCRMS-S NI-1 compliance for the following:

- Emergency Stand Alone (ESA) operation of MCRM-S
- OA& M requirements of MCRM-S

Table 1 lists and describes the NI-1 features.

Table 5-1 National ISDN-1 features (Sheet 1 of 2)

Feature	Description
AF3244	Flexible Call Chaining
AF3554	Miscellaneous Terminal Portability
AF3555	Automatic Call Back
AF3556	AMA Compliance Circuit
AF3603	Calling Number Identification (CGN)
AF3604	Basic Call Terminal Portability
AN0084	Electronic Key Telephone Service (EKTS)
AQ0733	Key Short Hunt
AQ0734	EKTS Ring Forward
AQ0735	Secondary EKTS Member Call Forward Programming
AQ0779	Notification Busy Limit and Additional Call Offering Unrestricted
AR0038	Call Appearance Call Handling
AR0040	Information Request Procedures
AR0041	Terminal Initialization/SPID Compliance
AR0042	Dial Access, Basic Business Group (BBG) Dial Access Compliance

Table 5-1 National ISDN-1 features (Sheet 2 of 2)

Feature	Description
AR0043	Call Forwarding, Flexible Calling, Automatic Dial Use, Speed Call Use, Call Park Retrieve, and Call Request Retrieve
AR0045	BRI Terminal Portability

Service equivalency and transparency

MCRM-S supports a full range of services provided by the DMS-100 switch, including ISDN. If these services are already in use, MCRM-S accommodates them. If they are installed later, MCRM-S integrates them.

When an end user's business is distributed throughout the network served by a host office and a number of MCRM-S or systems, the same services are available throughout the cluster. This provides the business network with wide service equivalency and transparency.

Network planning flexibility

MCRM-S allows network planning flexibility. For a digital service overlay network, business remote opportunity, MCRM-S digitally supports a subtending MCRU and digital loop carriers conforming to TR-008 specifications. Network coverage is maximized since the MCRM-S is located up to 100 miles from the DMS host using standard T-carrier facilities or SONET-based optical facilities.

This network planning flexibility applies to the growth of MCRM-S. Current sites with RSCs can evolve into MCRM-S configurations. The single MCRM-S startup configuration supports up to 480 lines. From this configuration, the MCRM-S is able to grow gracefully into a larger DMS RemoteNode or a full stand-alone DMS SuperNode host switch.

MCRU sites are upgraded to MCRM-S without any rearrangement of the current lines on the MCRU. MCRM-S provides MCRU sites with high-capacity line support, delivery of ISDN, and support readiness for SONET optical links to the host.

Network survivability

The ESA capability supports all critical functions, features, and services when communications to the host are disrupted. The line-to-trunk connections supported by MCRM-S can be routed to alternate offices when ESA is activated. This allows lines served by MCRM-S to remain in contact with the outside world.

OA&M cost reduction

MCRM-S is equipped with comprehensive software capabilities that reduce the costs of operating and maintaining a network of MCRM-S and a DMS host. This cost reduction is achieved by centralizing all OA&M functions at the host site. This simplifies the interfaces for the craftsperson maintaining the entire host/remote network.

Common hardware/software with DMS-100 host

MCRM-S is based on technology used in the DMS-100 host switch. Since its hardware and software technology is common to the DMS-100 switch, implementing the MCRM-S minimizes incremental expenses. This common technology permits coordinated and timely feature and service operation between MCRM-S sites and the DMS host.

MCRM-S services

MCRM-S supports a wide variety of services. The range of services MCRM-S supports depends on the configuration used.

Configurations related to services

NT offers the MCRM-S product with a single or DRCC2 configuration with the services provided by the ISDN.

For MCRM-S, the single RCC2 provides all the services of the existing RSC and RSC with ISDN. The RCC2 provides 16 Central-side (C-side) ports and 54 ports for each P-side to support those services with increased capacity. The DRCC2 configuration provides twice the same level of service as a single RCC2.

Range of supported services

The MCRM-S is based on the RSC that serves both business customers and residential subscribers. By including ISDN capabilities, the MCRM-S with ISDN provides a mix of Plain Old Telephone Service (POTS).

Examples of these services include the following:

- PBX interfaces
- Electronic Business Sets (EBS) such as P_Phones
- ISDN Basic Rate Interface (BRI)
- datapath
- attendant console

A CPM in the same module has the potential to support the following:

- ISDN Primary Rate Interface (PRI), that includes
  - — functional terminals
  - — Meridian feature transparency
- Signaling System #7 (SS#7)

Note: BRI may also be referred to as Basic Rate Access (BRA) and PRI also may be referred to as Primary Rate Access (PRA).

These choices equip the MCRM-S with a complement of capabilities to address business access remote, analog switch capping, and digital overlay networks.

Business access remote

Handling network-based business services is the strength of the MCRM-S.

The links between the host and MCRM-S are over T-carrier transmission facilities.

Digital overlay networks

Operating companies offer city-wide digital centrex services in existing analog or digital switch offices that serve many end users over a wide geographical area. This is achieved by extending digital remote access vehicles to these offices.

MCRM-S in the DMS network

MCRM-S connects to a host DMS SuperNode switch or DMS RemoteNode switch. When supporting lines only, the MCRM-S is connected to a DMS host office by the Line Group Controller (LGC) over standard DS-1 electrical interfaces. An LGC can be used as the host peripheral if P-side MCRM-S trunking originates *only* from an MCRU hosting off of the MCRM-S.

When supporting lines and trunks, the MCRM-S is connected to a Line Trunk Controller (LTC) over standard DS-1 electrical interfaces. With an MCRM-S to support trunks, an LTC must be provisioned.

All DS-1 links from one RCC2 must terminate on the same LTC at the host. It is recommended that each LTC interface with only one RCC2. It is required that the DRCC2 configuration have one LTC in the host switch for each RCC2. Transmission between the MCRM-S and the LTC is performed by a DS-1 T-carrier.

The capacity of links between the MCRM-S and the host is from 2 to 16 DS-1s (382 digital signal 0s [DS-0s]) for each RCC2. This assumes a single DS-0 time slot per service circuit.

The DS-1 interface is provided by quad Pulse Code Modulation (PCM) carrier packs provisioned in the RCC2 shelf and the EXT shelf. Each quad pack contains up to four DS-1 packlets. Each packlet provides two DS-1 interfaces, for a total of up to eight DS-1 interfaces for each quad PCM carrier. Up to three quad packs (24 DS-1 interfaces) can be provisioned in the RCC2. Up to three quad packs can also be provisioned in the EXT shelf for a total of 48 DS-1s with the single RCC2 configuration.

The MCRM-S is located up to 100 miles from the host office over DS-1 links. If the MCRM-S is supporting an MCRU, the distance limitation applies for the host to MCRM-S, as well as the host-to-remote off MCRM-S.

Figure 5-1, "Single RCC2 MCRM-S in the DMS network" on page 5-9 and Figure 5-2, "Multicabinet MCRM-S in the DMS network" on page 5-10 illustrate the single cabinet and multicabinet MCRM-S, respectively, in the DMS network.

Figure 5-1 Single RCC2 MCRM-S in the DMS network

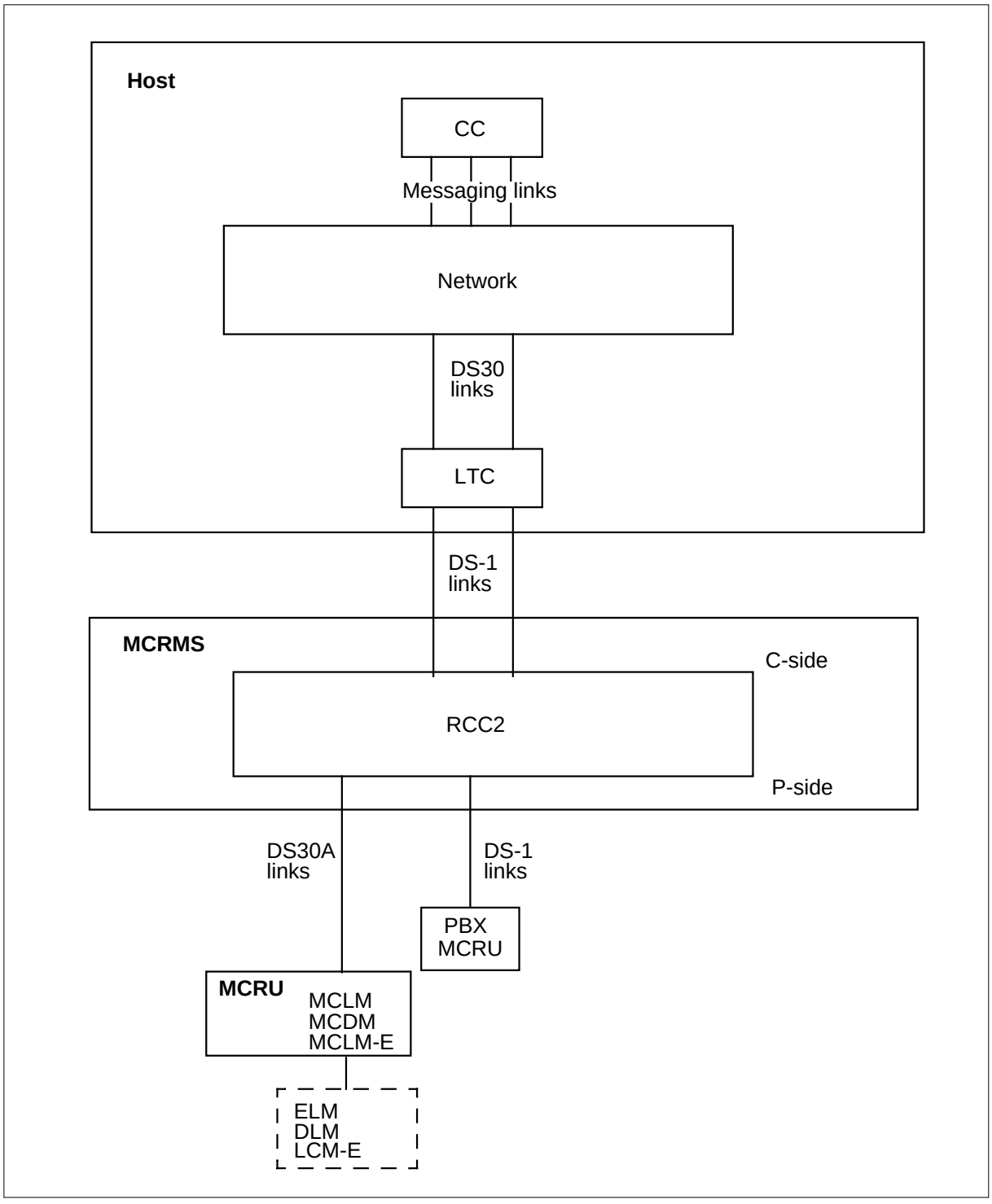
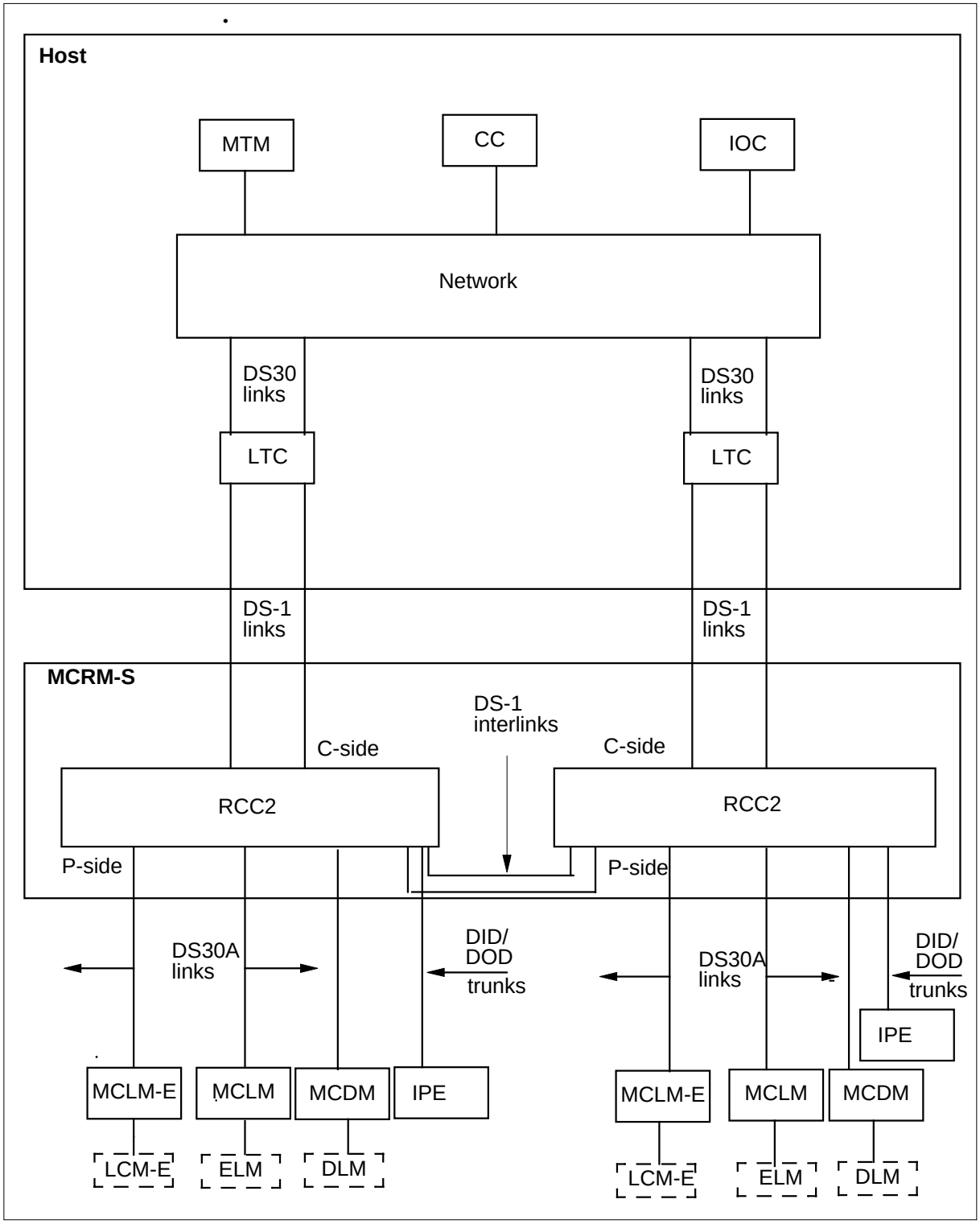


Figure 5-2 Multicabinet MCRM-S in the DMS network



MCRM-S development

The basic MCRM-S components (RCC2, PDP, EXT, FSP, and RMM) are packaged in one cabinet. Other hardware, housed in the MCRM-S cabinet, includes circuit packs.

The basic call processing software for MCRM-S is provided in the RSC basic feature package. This software is needed in addition to basic RSC call processing feature packages.

The hardware and software for existing RSC applications provide the base for the MCRM-S product.

RMM2

The RMM2 provides all of the functionality of the RMM with a reduced number of slots. The RMM2 is shelved in the MCRM-S.

MCRM-S features

The MCRM-S provides full network feature transparency for all subscriber line features available in the host office and offers custom calling features as well. These features are activated at the host, where the software packages are provisioned. (Custom calling features require that the host channels be maintained for the duration of the call.)

Basic call processing for the MCRM-S is obtained through a combination of software for DMS switch operation, standard RSC packages, and the RSC basic package. Individual features are provisioned through RSC packages, while the RSC basic package is used to activate these features and to provide all specific MCRM-S capabilities.

Provisionable Enhanced ISDN Signaling Pre-processor (EISP)

Feature AF4319 provides the ability to define the EISP pack on the RCC2 as an optional card. The Line Concentrating Module Enhanced (LCM-E) can be configured with non-ISDN lines in the Remote Cluster Controller 2 (RCC2/RCC2) without the optional EISP card.

ESA warm exit

ESA warm exit is supported for calls on RCC2 and DRCC2 During an ESA warm exit, additional messaging occurs between the RCC2 and the CC to allow the RCC2 to inform the CC of the currently active calls. The additional messaging allows the RCC2 to prevent the following conditions when a RCC2 exits ESA:

- service outage of up to 20 minutes
- dropping of all stable calls

The following calls are not preserved during an ESA warm exit:

- calls on terminals that are either manually busy or involve links and nodes or both that are manual busy
- calls that could not obtain links and nodes or both in the Central Control (CC)
- calls that revert to a cold exit due to error conditions
- ISDN calls

The MCRM-S implements the CC support and the XMS-based Peripheral Module (XPM) support for ESA warm exit by using the RCC warm exit code as a base and making any necessary adjustments to operate the RCC warm exit code for the RCC2.

The MCRM-S also implements CC and XPM support for the dual RCC2 ESA warm exit.

An ESA warm exit will occur for the same reasons and in the same manner as an ESA cold exit. However, additional messaging occurs between the RCC2 and the CC during the warm exit sequence to allow the RCC2 to inform the CC of the currently active calls.

Extended distancing capacity for MCRM-S

Using the DMSX protocol between a remote unit located far from a host (over 150 miles) has shown the following problems:

- longer transmission path propagation delay
- transmission errors
- DMSX timers expiring

A MCRM-S messaging card uses the Consultative Committee for International Telegraphy and Telephony (CCITT) level 2 SS#7, Q.703, to extend the distancing capacity from the remote to the host.

This protocol has the following features:

- full duplex
- windowing
- equal treatment and equal performance in both directions of messaging

The MCRM-S provides table control, user interface, and static data support with the HDLC protocol interface.

MCRM-S features also support message processing between the CPM/XPM PLUS UP and cards on the UP Random Access Memory (RAM) level,

enabling the UP software to transfer and receive messages to and from cards using HDLC protocol.

The MCRM-S replaces the messaging card in the CPM and eXtended Peripheral Module Peripheral Life Upgrade Strategy (XPM PLUS) shelves. The replacement messaging card is the interface between the UP and up to 32 data links.

For the XPM PLUS, the messaging card can function in DMSX only mode.

Firmware downloading

The MCRM-S provides the firmware for managing a signal link to a large number of serial data channels carrying frames or messages in the SS#7 format between the RCC and the LTC.

Firmware provides the support in the Unified Processor (UP). It also provides tests and diagnostics of elementary hardware functions.

The UP is equipped with flash memory chips that are upgraded by downloading an image in a similar way software is downloaded from a host switch. This process is implemented manually by an existing command from the MAP terminal when a new firmware load is issued.

The MCRM-S provides for the message interface between the UP located in the CPM shelf, or in the Line Trunk Controller Plus (LTC PLUS) shelf, and the 68020 Processor. This feature handles message transfer between the UP and Level 2 firmware residing on the card. It covers the Standard Application Executive (SAE) operating system.

MCRM-S provides a process for downloading firmware into the Electrically Erasable Programmable Read Only Memory (EEPROM) of the UP card. This card is located on the main shelf of the MCRM-S.

MCRM-S lines

The provisioning of lines in the MCRM-S configuration is offered. The MCRM-S supports increased line density.

MCRM-S enhanced Emergency Stand-Alone (ESA)

Warm ESA entry is provided on the single and dual MCRM-S. ESA enables the RCC2 to provide call control service with a minimal feature set during emergency situations. The RCC2 has the ability to perform a warm entry for ESA and Forced ESA [FESA] if in a dual configuration. RCC2 warm ESA entry is based on the RCC warm ESA entry.

Note 1: ISDN calls are not supported.

Note 2: The RCC2 ESA exit process is a cold exit (all calls are lost).

Enhanced MCRM-S call processing is accomplished in several ways. For example, if intraswitching is activated for lines and trunks, calls that originate and terminate within a single RCC2 configuration switch remotely and reduce the number of links required from the RCC2 to the host. Dynamic trunking is implemented to facilitate calls to and from subtending trunks supporting PBXs.

Enhancements are accomplished by installing the software to interswitch calls between RCC2s in the dual configuration. The standard processing capacity provided by a single RCC2 is doubled.

Remote-off-remote feature package software can be implemented to use an MCRU including the MCRM-S.

Enhanced basic call processing for MCRM-S

When the basic RSC feature packages are installed, the MCRM-S handles call traffic from MCRUs, intraswitching calls within the RCC2, and provides for trunks that are set up through the host.

The following additional features can be implemented to enhance MCRM-S basic call processing:

- intraswitched lines and trunks
- dynamic trunks
- DRCC2s
- interswitched calls
- remote-off-remote

Intraswitched lines and trunks

Intraswitching for lines and interswitching within the RCC2 are provided.

Lines

The intraswitching software feature allows remote switching of calls that originate and terminate within one RCC2 (without using DS-1 links to the host), except during initial call setup.

When the DMS host software determines that a subscriber is calling another subscriber off the same MCRM-S, the host channel is dropped, and the call is handled using an intraswitching channel in the RCC2. Therefore, intraswitching reduces the number of links required from the RCC2 to the host.

Call setup details are determined by the host; the MCRM-S establishes the intraswitching connection. Calls originating at the RCC2 are intraswitched if the call terminates on MCRUs. If an idle intrachannel is unavailable, a

connection through the host office occurs and is maintained for the duration of the call.

The following calls are supported through intraswitching:

- calls between subscriber lines served by the same RCC2 (line-to-line)
- calls between subscriber lines in the RCC2 and digital trunks off the same RCC2 (line-to-trunk)
- calls between subscriber lines or trunks in the RCC2 and lines served by an MCRU, TR-008 Data Line Card (DLC) off the same RCC2 in the remote-off-remote configuration
- calls between extended area service trunks and PBX Direct Inward Dialing/Direct Outward Dialing (DID/DOD) trunks

The following subscriber line calls are eligible for intraswitching:

- Meridian Business Set (MBS) line calls, Meridian Data Units (DU), and ISDN functional sets
- originating Multiple Appearance Directory Number (MADN) calls
- terminating MADN line calls on the prime member of the MADN group

Note: Intraswitching applies to originating MADN calls.

Calls that require host resources are not intraswitched. In-progress intraswitched calls that subsequently require host resources are reswitched through a host network connection and maintained by the host for the remainder of the call.

Intraswitching is allowed under specific circumstances. Sometimes, an intraswitched call must be reswitched through the network. For example, attendant consoles cannot be intraswitched. A host channel must be used for calls to or from an attendant console.

Trunks

The intraswitching capability allows two agents (lines or trunks) on the P-side of the same RCC2 to use a speech channel that does not appear at the host. Trunks with intraswitching capability are called dynamic trunks.

After digit collection ends, the CC checks the location of the originator and the terminator. If they are located on the same RCC2 node, the CC attempts to establish an intraswitched call. The number of intraswitched calls increases after call setup since the RCC2 is not limited by the number of free intraswitched channels.

Trunk intraswitching is enabled between agents located on the same RCC2 if the two agents have intraswitching capability and if the RCC2 has intraswitching capability.

Note: If the agent is a trunk, it must be a dynamic trunk.

RCC2 intraswitching trunks support the following call types:

- limited trunk-to-trunk (when a call originated by a trunk on an RCC2 is terminated on another trunk on the same RCC2)
- line-to-trunk (when a call originated by a line hosted by an RCC2 is terminated on a trunk on the same RCC2)
- trunk-to-line (when a call originated by a trunk on an RCC2 is terminated on a line hosted by the same RCC2)

Note: No intrablocking occurs since a P-side to P-side connection is performed.

Dynamic trunks

MCRM-S dynamic trunking allows the operating company to use the P-side of the RCC2 to terminate trunks from PBXs and to extend ESA services to these facilities. In addition, line-to-trunk, trunk-to-line, and trunk-to-trunk intraswitched calls are supported.

A dynamic trunk is a trunk that is connected to the host or another agent on the same peripheral and switches between the two connections. Dynamic trunks are optionally provided on a trunk group basis and require that all trunk members of a group are switched through the same RCC2.

For the MCRM-S product, an intraswitched C-side channel is allocated for each dynamic trunk in the RCC. For the MCRM-S product, C-side channels are not allocated in the RCC2 since intraswitched trunks are based on P-side to P-side connections. This increases the number of C-side ports available for host-bound traffic.

DRCC2

The DRCC2 feature provides the software required to interconnect two RCC2s. A DRCC2 configuration provides double the same level of service to subscribers than the single RCC2.

The DRCC2 contains the same basic equipment as the RCC2 with the following exceptions:

- two centralized MCRM-S cabinets, each containing:
  - — one RCC2 shelf (always provisioned)
  - — one RMM served by dedicated DS30A links
- one EXT shelf
  - — one RMM served by dedicated DS30A links (optional)

Each MCRM-S cabinet contains a single-shelf RCC2 (containing units 0 and 1). To ensure reliability, RCC2 units 0 and 1 run in active/standby operation. The same provisioning options that are available for RCC2s are also available for DRCC2s.

The DRCC2 is provisioned to conserve host resources by allowing subscribers served by one RCC2 to communicate with subscribers served by the other RCC2 without using DS-1 links to the host. The two RCC2s are interlinked through the P-side rather than the C-side, thus freeing the C-side ports for host-bound traffic.

To execute call processing and maintenance for the DRCC2s, the DMS host and DRCC2s must have the same static data. If the CC and DRCC2s have different static data, such as which C-side and P-side links exist, calls may be lost.

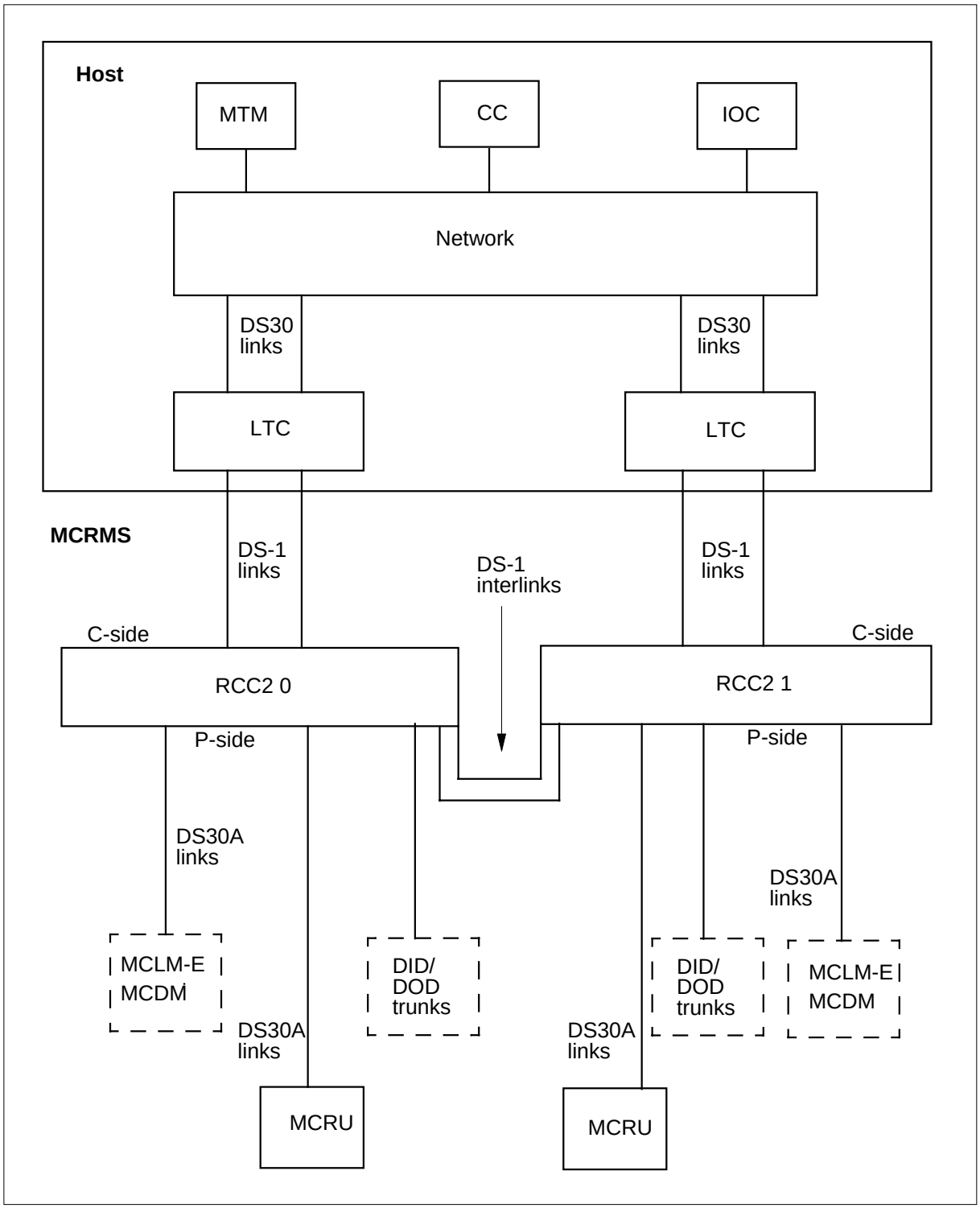
The DRCC2, like the single RCC2, supports the following:

- Meridian Cabinet Line Module (MCLM)
- ESA
- Enhanced Meridian Cabinet Line Concentrating Module (MCLM-E)—POTS, ISDN
- MCRU off an RCC2
- Meridian Cabinet Digital Module (MCDM)—Digital Line Modules (DLM)
- Intelligent Peripheral Equipment Cabinet (IPEC)

The RCC2s are interconnected on their P-sides by 2 to 14 DS-1 links. An LTC is connected on the C-side of each RCC2. The P-side of a DRCC2 connects to the same types of peripherals that are connected to the P-side of a single RCC2. One RMM services the DRCC2. Figure 5-3, "Dual MCRM-S" on page 5-18 is an illustration of a multicabinet MCRM-S with DRCC2.

Note: Two RMMs are represented in this illustration; only one is required.

Figure 5-3 Dual MCRM-S



Interswitched calls

A call that originates and terminates on the same RCC2 is called an intraswitched call. A call that originates on one RCC2 and terminates on the interconnected RCC2 is called an interswitched call. A link configured to carry interswitched calls is called an interlink.

Interswitching software is implemented in the DRCC2. The interswitching software permits configuration of the MCRM-S with DRCC2. In this way, the system conserves host resources by allowing subscribers served by one RCC2 to communicate with subscribers served by the other RCC2 without using DS-1 links to the host.

This concept is extended with the DRCC2 so that calls originating on one RCC2 are routed to the interconnected RCC2 once the call is set up. By freeing up the C-side ports for host-bound traffic, this configuration increases both the number of available channels to the host and Hundred Call Seconds (CCS) capacity at the remote site.

A prerequisite for interswitched calls is to define them and logically connect them in translations. After the digit collection process has ended, the CC checks the location of the originator and the terminator. If they are located off two RCC2s connected in a dual configuration on the same site, the CC attempts to establish an interswitched call.

In a dual configuration, the MCRM-S establishes interlinks through the P-side rather than the C-side links as in the RSC. For interswitched calls, the RCC2 must have a minimum of two messaging interlinks that are not located on the same card. The message interlinks that must be defined are P-side links 0 and 8.

Interswitched call restrictions

There are several restrictions on interswitched calls that include the following:

- Interswitched calls are restricted to a maximum of 511 calls of any kind at the same time.
- The interswitched calls are limited to the number of interswitched links existing between the DRCC2s. In a domestic configuration, each link enables a maximum of 24 calls.
- Up to 16 interlinks are supported. Two links are for messaging and a maximum of 14 interlinks are between the two RCC2s.
- A minimum of two message links are required. They are P-side interlinks 0 and 8.
- In DRCC2 configurations, an RCC2 must link to another RCC2. An RCC2 cannot link to other Remote Cluster Controller (RCC) types.

- If all interlinks between two RCC2s are occupied, a blocking message is sent to the CC and the call reverts to the network. Rerouting is not available through the interlinks on the RCC2 once blocking has occurred.
- The maximum distant limit of the RCC2 interlink is the same as for the RCC.

Line-to-line, line-to-trunk, trunk-to-line, and trunk-to-trunk calls are supported by MCRM-S interswitching. When a feature requiring host resources is invoked during a call, the call is reswitched without interruption through a host link for the duration of the call.

Trunk interswitching is enabled between agents on two different RCC2s under the following conditions:

- The two RCC2s are connected to the same host office.
- The RCC2s have intraswitching capability.
- The agents reside off spouse RCC2s.
- Interlinks between the two RCC2s are configured in translations and are in-service.

Remote-off-remote

The MCRM-S supports other MCRUs. Cost savings are provided through centralized OA& M, conservation of host resources and host DS-1 links, expansion of intraswitching and ESA capabilities, and increased flexibility in network configuration.

Remote-off-remote configurations are developed to extend the traditional advantages of using remotes one layer deeper into the network hierarchy. The MCRM-S supports the MCRU through the P-side DS-1 links. In a remote-off-remote configuration, an MCRU is located up to 50 miles from the MCRM-S and up to 100 miles from the host office.

In the remote-off-remote configuration, intraswitching can occur at the MCRM-S and another MCRU. Intraswitching is used for calls between the MCRM-S and remote subscribers or is used for calls between two subscribers receiving service from the same remote if all intraswitching channels at the remote are occupied. If a call involving an MCRU subscriber requires host resources, host MCRM-S links are used.

ESA on the MCRM-S invokes the ESA mode on the subtending remote. During ESA, all subscribers on both remotes communicate over intraswitching channels, either at the MCRU or at the MCRM-S. Calls from the MCRU to the MCRM-S are supported during the ESA mode.

ESA for MCRM-S

ESA is a capability that allows call processing to continue within the MCRM-S if communication with the host is lost. Line-to-trunk calls are supported for PBXs as well as calls to MCRUs that are served by the same MCRM-S.

During ESA, the routing and translation data normally stored at the host are required by the MCRM-S to continue to process calls. This data is updated and downloaded to the MCRM-S during less busy hours every day, either manually or automatically.

If MCRM-S is provisioned with the ESA Lines and Trunks feature package and RSC Trunking feature package, the Dual Remote Cluster Controller feature package is activated with the ESA capability for calls between the DRCC2s.

ESA on the MCRM-S invokes the ESA mode on the subtending remote. During ESA, all subscribers on both remotes communicate over intraswitching channels, either at the MCRU or at the MCRM-S. Calls from the MCRU to the MCRM-S are supported during the ESA mode.

Lines

ESA continues to process calls within an MCRM-S if communication with the host is lost. When the DS-1 messaging links to the host are out-of-service, the MCRM-S continues to provide limited POTS services for intraswitched calls. ESA uses the intraswitching that is supported already in the RCC2 while in the non-ESA mode. When a call originates, a check is made to see whether both calls reside on the same RCC2. If they do, an intraswitched call is attempted through the RCC2.

Line-to-trunk calls are supported for PBXs, MCRUs, and DLCs served by the same MCRM-S. ESA intercalling between RCC2s in the dual configuration is supported only if both RCC2s are in the ESA mode.

Note: An option to force the second RCC2 into ESA if the spouse RCC2 enters ESA is datafilled in the translations tables.

When the MCRM-S is under host control, translations are performed by the DMS CC. When the MCRM-S is in ESA mode, the RCC2 uses a subset of the DMS CC translations that was downloaded to the MCRM-S.

Line-accessed recorded announcement machines are connected to provide recorded messages during ESA. Universal Tone Receivers (UTR) are provided for use during both ESA and normal operation.

Note: No additional hardware is required for the ESA feature.

The ESA is entered when the RCC2:

- cannot communicate with the host
- does not receive an acknowledgement message from the CC
- tells the mate RCC2 to enter ESA

The RCC2 loses communication with the host when the RCC2's message links (links 0 and 2) are out-of-service. The period of time that this condition exists before ESA is entered is controlled by translations.

The RCC2 sends a periodic message (one for each minute) to the CC and expects an ACKnowledgement (ACK).

During ESA, specified POTS services are supported. These include revertive calling (coded ringing only), one Home Numbering Plan Area (HNPA) code for each RCC2, three-to-seven-digit local dialing, and up to 16 access codes for each RCC2 for special termination.

During ESA, many POTS line services are supported. These include basic dialing, 255 AUtomatic Lines (AUL) for each RCC2 (plus one entry for the POTS operator required for manual lines), 255 routes, one to 15 directory numbers for POTS services, as well as line-to-line, line-to-trunk, and trunk-to-line calling (including business sets and DUs). In addition, invalid termination and OMs are supported during ESA.

Hunt groups are supported during ESA. These include multiline, distributed line, and Directory Number (DN) - when the DN is located on the mate RCC2. Directory number hunt groups are treated as multiline groups and do not support circular hunting. Hunting on hunt groups that are divided between two RCC2s in a dual configuration is initially attempted on lines supported by the RCC2 on which the call originates. In the single configuration, hunting begins with the primary number in the hunt group.

Pulsing, ringing, and tones are supported during ESA. The following other services and features are not supported during ESA:

- POTS limitations
  - — more than one HNPA code for each MCRM-S
  - — billing information for Local Call Detail Rate (LCDR) or Multi-Unit Message Rate (MUMR)
  - — dial tone speed measurement
  - — equal access features
  - — foreign exchange calls
  - — Automatic Number Identification (ANI) for party lines
  - — data calls
- POTS limitations
  - — Audible Tone Detector (ATD) functions
  - — scan group/signal distributor functionality
  - — trunk groups split between two RCC2s of a dual configuration

Trunks

RSC feature packages provide the ability to continue to process limited POTS calls (if they are intraswitched), as well as trunk call processing, when the DS-1 messaging links to the host are out-of-service. In addition to line-to-line calls, the MCRM-S makes line-to-trunk, trunk-to-line, and trunk-to-trunk calls.

During ESA, the RCC2 uses its intraswitching ability to process ESA calls. Dynamic channel assignment for MCRM-S trunks must be available for trunks to be accessible in ESA.

The software used by the RCC2 to process trunk calls during ESA is included in the CC ESA software.

Note 1: ESA trunks outpulse 1 + 7 digit/10 digit dialing (without billing).

Note 2: There is a maximum of 64 trunk groups.

Features provide for ESA warm exit for non-ISDN calls on a single RCC2 and for ESA warm exit for non-ISDN calls on a DRCC2.

Features implement the CC support, and implement the XMS-based Peripheral Module (XPM) support for ESA warm exit, by using the RCC warm exit code as a base and making any necessary adjustments to operate it for the RCC2.

Features also implement the CC and the XPM support for the dual RCC2 ESA warm exit.

ISDN for MCRM-S

ISDN allows a subscriber to access enhanced voice and data services. These services require increased capacity requirements. MCRM-S supports the increased capacity requirements of ISDN.

The RCC2 supports trunking peripherals, RMMs, and DS-1 trunks. The trunking peripheral used with an MCRM-S ISDN configuration is the MCLM-E.

ESA is implemented with ISDN for both single RCC2s and DRCC2s.

An MCRM-S with ISDN contains the following components:

- host XPM
- RCC2
  - — DCH card
  - — ISDN Signaling Preprocessor (ISP) card
- OA& M processor

Host PM

One of the main functions of the host XPM is to terminate the DS-1 links from the RCC2 and then pass the circuit-switched traffic to the network. This traffic is nailed-up through the RCC and is, therefore, nonconcentrating.

RCC2

The RCC2 remains basically the same with ISDN software although two cards, the ISP and the DCH, need provisioning to provide more processing capacity. In addition, special connections and paths to those connections are required for the RCC2 with ISDN.

The ISP card functions are summarized in the following list:

- provides a communication channel between the UP and the DCH cards
- processes Service Access Point Identifier (SAPI) 0, that handles call control messages received from the DCH card

The ISP card provides ISDN layer 3, Q.931 processing. There is one ISP card for each RCC2. Activity of the ISP card is tied to and part of the RCC2 unit activity. Only the active ISP communicates with the DCHs.

The RCC2 with ISDN is distinguished from the RCC2 without ISDN by the ISP optional card (ISP16) that is datafilled in translations.

The DCH card functions are summarized in the following list:

- provides SAPI discrimination function at layer 2 (Q.921 Link Access Protocol on the D channel [LAPD])
- terminates SAPI (signaling) frames and routes them to the ISP card
- reflects SAPI 17 (user-to-user loop around) frames back toward the user

The MCRM-S supports up to 10 DCHs in a single configuration. If less than ten are provisioned, the DCHs are a combination of DCHs and Enhanced DCHs (EDCHs).

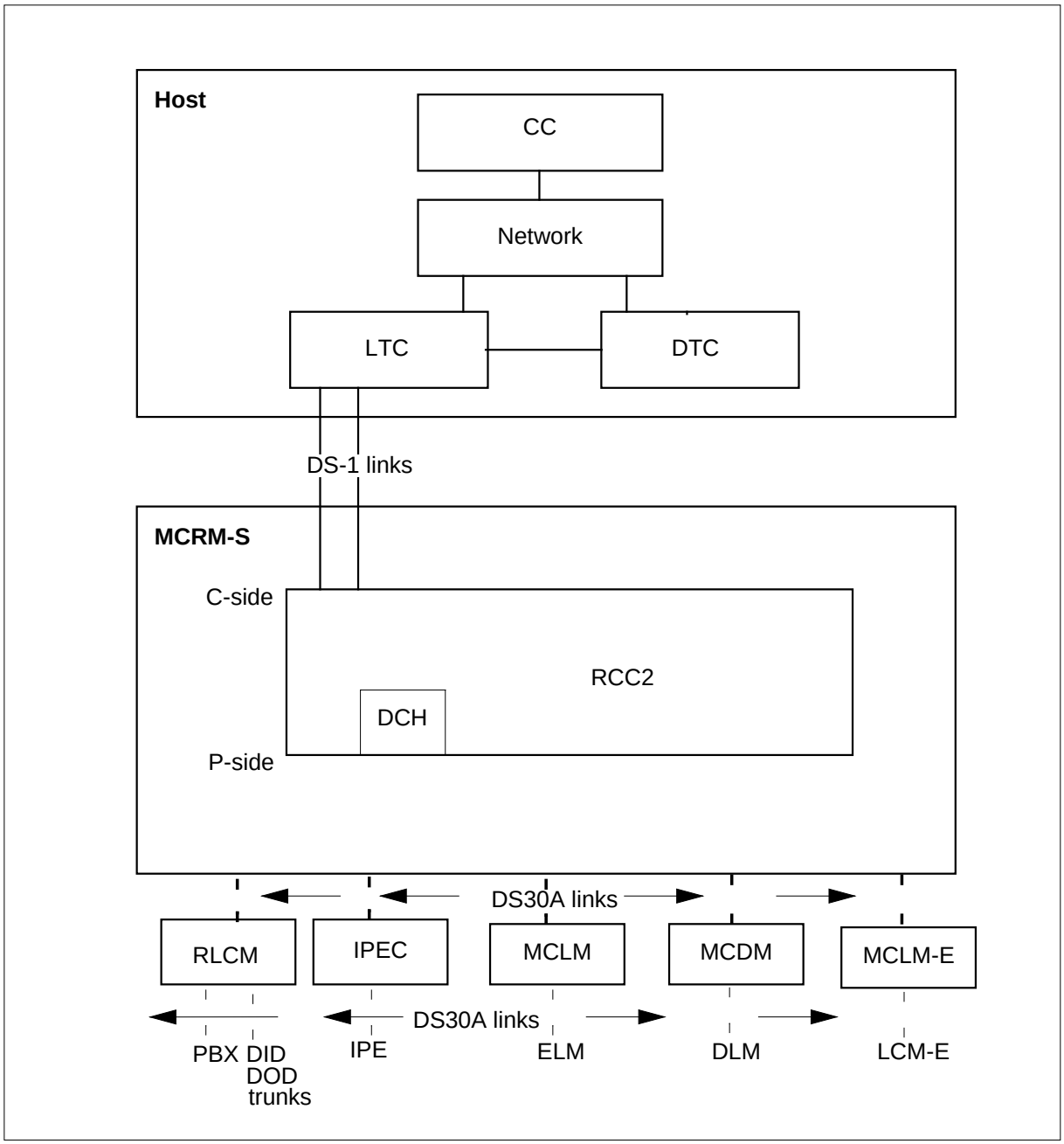
The DCH card provides the layer 2 Q.921 and the physical layer for the D channel from the ISDN loops. When the maximum number of DCH cards are provisioned (13 for each RCC2), three DCH cards reside in the RCC2 shelf (DS-1 P-side slots) and the remaining ten DCH cards reside in the EXT shelf. Each DCH terminates a single port consisting of thirty-two 64Kbit/s time slots in which one time slot is reserved for messaging to the ISP. The remaining time slots support either time division multiplex (4 x 16 Kbits/s) or BRI D channels to ISDN terminals.

OA&M processor

Centralized OA& M is achieved with the ISDN OA& M processor. All direct communication between the MCRM-S with ISDN and the host is lost during ESA. There is no communication available between the RCC2 and the MAP terminal.

Figure 5-4, "Single-cabinet ISDN-capable MCRM-S configuration" on page 5-26 illustrates the MCRM-S ISDN-capable configuration.

Figure 5-4 Single-cabinet ISDN-capable MCRM-S configuration



ISDN BRI Customer Premises Equipment (CPE)

A subscriber set that is configured off of the RCC2 has the same BRI services available as an ISDN terminal that is configured at the host office. The BRI interface provides the subscriber with circuit-switched services. MBS, DUs, and POTS lines are agents that can work with BRI.

For BRI, the CPE consists of the following components:

- ISDN Signaling Terminal (S/T) bus
- ISDN terminals and universal terminal adapter
- network termination
- U-loop

The S/T bus is the portion of the ISDN BRI interface to which ISDN terminals are connected.

The ISDN terminals provide a variety of voice and data features.

NT offers the following types of terminals that are configured on an ISDN line:

- Meridian M5317T digital telephone
- Meridian M5209T digital telephone
- Universal Terminal Adapter (UTA)

Network termination converts the proprietary loop protocol on the network side to the CCITT standardized protocols on the user side.

The U-loop is the portion of the BRI interface that converts the NT1 to an ISDN U-line card in the Exchange Termination (ET) ISDN switch.

The U-loop consists of the following channels:

- B channel
- D channel
- C channel
- M channel

There are two 64 Kbit/s B channels for each loop. Each B channel carries B-voice or circuit-switched data. B-voice or circuit-switched data consists of PCM voice or circuit-switched data. This data is exchanged between an ISDN terminal and either some point in the circuit-switched network or another terminal of similar capability (that can be on another ISDN line or on the same loop).

To make a B-voice or circuit-switched data call on a B channel, a terminal first communicates with the DMS switch through the D channel. The D channel is used for call control.

With BRI, there is a 16 Kbit/s D channel. Bits on the D channel are multiplexed into frames, each of which carries D-call control messages. D-call control messages are sent between the ISDN switching equipment and ISDN terminals

on the S/T loop. These messages are used to either tell the ISDN terminal to set up or take down a B channel circuit-switched call, or to signal the ET or ISDN terminal to perform a task, such as the activation of a feature key during the call.

The C channel transfers maintenance information on the U-loop between the NT1 and the ET. The M channel has additional maintenance capabilities.

Bearer capability for MCRM-S with ISDN

Bearer capability is a feature that provides additional call screening. Only devices of similar bearer capability terminate to each other. Five default bearer capabilities are provided in the initial datafill. These include the following:

- speech
- 56 Kbit/s circuit-switched data
- 64 Kbit/s circuit-switched data
- DU
- 64K data

Tables are used to define the bearer capabilities, which bearer capabilities are compatible with which bearer capabilities, and the treatments (tones, announcements, and states to be returned to the originator). These tables also associate a DN with a specific bearer capability.

Functional terminals

Functional terminals are allowed to have a set of bearer services. Bearer services are datafilled for the entire logical terminal and are not limited to a particular CAPability (CAP); any authorized bearer service can be used with any valid CAP. However, only the five default bearer services are used in functional terminals.

ESA circuit-switched services for MCRM-S

The ESA feature provides circuit-switched services.

Circuit-switched services

A subset of CC data provides the RCC2 with the ability to continue to process calls during ESA. This subset includes the data necessary to allow ISDN terminals to continue to process calls.

When the RCC2 enters ESA, the network channels that were used for calls that were routed through the network are available for intraswitching calls through the RCC2.

Since the RCC2 is no longer communicating with the CC during ESA, the RCC2 must run its own audits and maintenance actions. If necessary, a Switch

of Activity (SwAct) is performed on the RCC2 *once,* with the inactive unit becoming the active unit and the active unit becoming the inactive unit. Once the SwAct is complete, the call capabilities of the MCRM-S with ISDN in ESA continues.

Note: The ESA SwAct is cold; all calls (ISDN and non-ISDN) are dropped. Once communication is restored the RCC2 can exit ESA.

ESA for the dual RCC2 in the MCRM-S

The possible scenarios that cause ESA entry and exit are unchanged for the DRCC2 with ISDN. However, circuit-switching services are affected.

When only one of the two RCC2s has ISDN and the RCC2 without ISDN enters ESA, interswitched calls are not allowed.

Line interswitching

All of the line interswitching capabilities of the DRCC2 are available for the DRCC2 with ISDN. Additionally, all combinations of calls between ISDN and non-ISDN terminals are interswitched. ISDN terminals cannot be attached to the RCC2 without ISDN, so only calls between ISDN and non-ISDN terminals occur; ISDN-to-ISDN calls are intraswitched.

Trunk interswitching

As with line interswitching, all of the single RCC2 capabilities are included in the DRCC2 with ISDN except that PRI is not supported currently. All calls that are routed to the RCC2 from the PBXs must be from non-ISDN terminals.

ESA for the single RCC2 in the MCRM-S

The possible scenarios that cause ESA entry and exit are unchanged for the single RCC2 with ISDN. However, there are different ISDN special connections and different paths that each connection may use when making the connections within the RCC2.

These connections are either P-side to C-side or P-side to P-side. The P-side to P-side connection does not consume any C-side channel. Only the RCC2 timeswitch pack (MX75) is involved in making the connection when the two endpoints are in the same RCC2.

The ISDN special connections are

- D channel to DCHs
- B channel to B channel

D channel to DCH

There is only one path allowed to connect a D channel to a DCH. No C-side channels are used by this type of connection. Only the timeswitch pack, MX75, is involved in making the P-side to P-side connection.

B channel to B channel (provisioned B)

There are two possible connections when an ISDN user requests that one of their B channels connect to another ISDN user's B channel. The connection is determined by the location of the other user. When the other user is located off the RCC2, a P-side to P-side, Nailed-Up Connection (NUC) is made. No C-side channel is used.

MCRM-S hardware

The Meridian Cabinet Remote Module-SONET (MCRM-S) is made up of a variety of hardware and software deliverables. The hardware component deliverables are listed in Table 5-2, "Hardware component deliverables" on page 5-30 and are addressed in this chapter.

Table 5-2 Hardware component deliverables (Sheet 1 of 3)

Hardware	PEC
Remote Maintenance Module (RMM) shelf assembly	NT6X1306, NTNX17AC
RMM controller	NT6X74AB
one group Coder-Decoder (CODEC) card	NT2X59AA
two power converters	NT3X09BA
service circuit cards, including:	
Signal Distribution (SD)	NT2X57AA
Metallic Test Access (MTA)	NT3X09BA
SC scanner	NT0X10AA
Metallic Test Unit (MTU) analog card	NT2X10BA
MTU digital card	NT2X11BA
Line Test Unit (LTU) analog card	NT2X10AB, NT2X11AD
LTU digital card	NT3X04AA
incoming test trunk	
Remote Cluster Controller 2 (RCC2) shelf assembly	NTMX8501
Power Converter	NTMX72AA
Enhanced processor	NTMX77AA
D-Channel Handler (DCH) card	NTBX02AA
Integrated Services Digital Network (ISDN) Signal Processor 16 (ISP16) card	NTBX01AB
Message protocol and tone	NT6X69AC

Table 5-2 Hardware component deliverables (Sheet 2 of 3)

Hardware	PEC
Enhanced matrix	NTMX75AA
PCM signal processor	NTMX73AA
Digital Signal (DS)30A interface	NTMX74AA
Class Modem Resource (CMR)	NT6X78AA
Universal tone receiver	NT6X92BB
Frame Supervisory Panel (FSP)	NTNX26GA
EXTension (EXT) shelf assembly	NTMX8601
Quad frame carrier	NTMX87AA
Dual DS-1 Packet	NTMX81AA
Frame Supervisory Panel (FSP) for MCRM-S	NTNX26HA
Cooling unit	NTNX27CA
Power Distribution Panel (PDP)	NTNX24DA
Common Peripheral Module (CPM) shelf	NTZZ12XA
Power converter	NT2X06AB
SC scanner	NT0X10AA
Input/Output (I/O) test trunk	NT2X90AD
Signal Distribution (SD)	NT2X57AA
Metallic Test Access (MTA)	NT3X09BA
Muliti O/P power converter	NT2X09AA
MTU analog card	NT2X10BA
MTU digital card	NT2X11BA
Line Test Unit (LTU) analog card	NT2X10AB
LTU digital card	NT2X11AD
SC scanner	NT0X10AA
Balanced network	NT2X77AA
PCM signaling	NTMX73AA

Table 5-2 Hardware component deliverables (Sheet 3 of 3)

Hardware	PEC
Signal Distribution (SD)	NT2X57AA
Incoming test trunk	NT3X04AA
Integrated Services Digital Network (ISDN) Signal Processor (ISP)	NTBX01AB
DS30A interface	NTMX74AA
Enhanced matrix	NTMX75AA
CPM shelf	NTMX8501
EXT shelf	NTMX8601
DS60 extension	NTMX79AA
EXT shelf	NTMX88AA
Remote Cluster Controller (RCC2) shelf assembly	NTMX8501
MCRM-S cabinet	NTMX89AA

The hardware components housed in the MCRM-S cabinet include the Remote Maintenance Module (RMM) controller, and the Remote Cluster Controller 2 (RCC2), the EXTension (EXT) shelf, the cooling unit and the Frame Supervisory Panel (FSP).

MCRM-S packaging

MCRM-S hardware component packaging differs from traditional RSC packaging. The MCRM-S is provisioned in a cabinet rather than equipment frames. This cabinet houses a variety of hardware units. The way this cabinet and its individual components are configured determines the services that the MCRM-S offers.

Single-cabinet MCRM-S configuration

The MCRM-S is a single-cabinet RSC that supports service and maintenance circuits and DS-1 links to the host at a maximum distance of 100 miles.

A single-cabinet MCRM-S has one RSC cabinet with the following:

- one master controller RCC2 shelf (always provisioned)
- one RMM served by dedicated DS30A links
- maintenance and service circuits provided by the RMM
- one EXT shelf

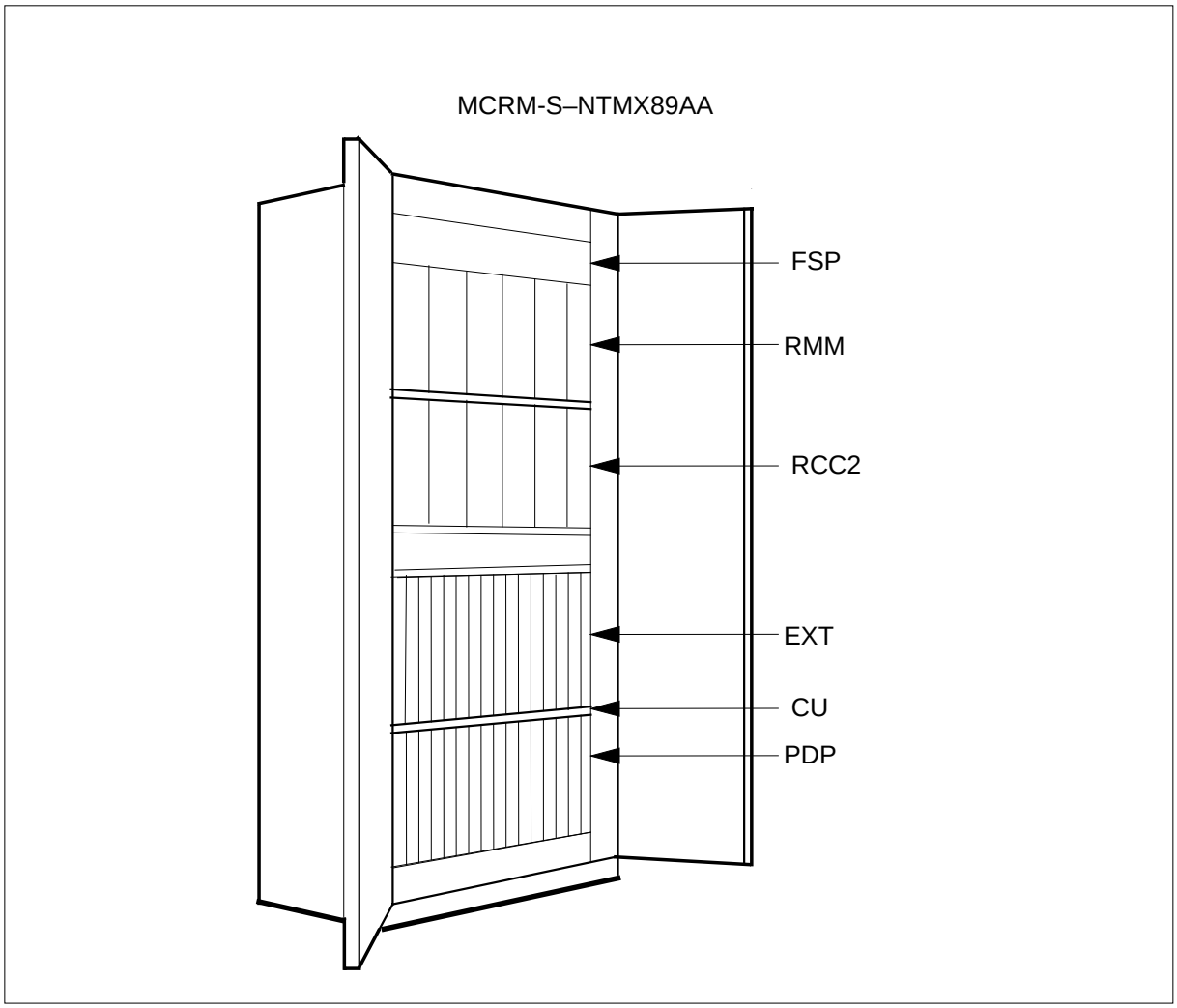
- one FSP
- one cooling unit
- one PDP shelf

The single MCRM-S Central-side (C-side) interfaces are DS-1 links to a Line Trunk Controller (LTC) host peripheral.

Provisioning options for the single-cabinet configuration include the Peripheral-side (P-side) DS-1 links for trunking and the C-side links for communication with the host.

Figure 5-5, "MCRM-S cabinet" on page 5-34 illustrates the components of the MCRM-S. Each MCRM-S component is described separately following the illustration.

Figure 5-5 MCRM-S cabinet



Remote Maintenance Module (RMM)

The RMM is based on the DMS-100 Family Maintenance Trunk Module (MTM). The RMM performs diagnostic and line tests and monitors for alarm conditions. One DS30A P-side port is dedicated to each RMM.

The RMM may contain the following:

- one RMM control card
- one group Coder-Decoder (CODEC) card
- two power converters
- up to 14 service circuit cards, including scan, Signal Distribution (SD), Metallic Test Access (MTA), test trunk, and line test unit

Enhanced Remote Cluster Controller 2 (RCC2)

The MCRM-S is based on the RCC2, which acts as the master controller for all peripherals of a MCRM-S configuration. The RCC2 controls associated Meridian Cabinet Line Modules (MCLM), RMMs, remotes, and Meridian Cabinet Digital Modules (MCDM) as directed by the host.

The RCC2 is the remote office unit of the Common Peripheral Module (CPM). The RCC2 is single-shelf, 68020-based module. This single shelf contains units 0 and 1. To ensure reliability, RCC2 units 0 and 1 run in an active/standby mode of operation.

The RCC2 shelf contains the following:

- duplicated RCC2 processor cards containing a 68020-based processor
- duplicated expanded time switch, a high capacity switch matrix
- duplicated messaging interface circuit packs, which contain the interface to both C-side and P-side message channels
- duplicated power converters to power the above circuit packs
- a Pulse Code Modulation (PCM) signaling card supporting all low level PCM signaling tasks
- DS-1 interface cards (eight DS-1 links per card) for host-directed DS-1 links for P-side link requirements
- a DS30A interface card that provides 32 DS30A links for interfacing to the ELMs in a MCLM and RMMs located on another shelf of the MCRM-S
- a choice of Universal Tone Receiver (UTR), Class Modem Resource (CMR), DCH, or ISDN Signaling Preprocessor (ISP) service circuit packs

The RCC2 houses MCRM-S processor/memory cards for both normal and Emergency Stand-Alone (ESA) modes. In addition it contains time switches, tone generators, and power converters. The RCC2 also supports UTRs for lines and trunks in normal and ESA modes.

In addition, the RCC2 provides local switching for the following:

- host-directed calls [connects MCLM, MCDM, DS-1 trunking, Meridian Cabinet Remote Unit (MCRU), and Data Line Card (DLC) channels to host-directed DS-1 channels]
- line and trunk calls internal to the MCRM-S and its subtending remotes (supported under the intraswitching feature)
- intraswitched calls during ESA (supported if the ESA feature is implemented)

This is accomplished through a total of 16 C-side ports and 54 P-side ports that support all the features of the existing RSC and RSC with ISDN and with increased capacity.

The RCC2 peripheral allows for C-side to P-side, P-side to C-side, P-side to P-side, and C-side to C-side connections. The C-side ports support host-to-remote capabilities.

The RCC2 performs the following termination functions:

- C-side links from the host Line Group Controller (LGC) (for DS-1 electrical links), with a maximum of 16 DS-1 links, providing a maximum of 384 channels
- DS-1 links from the mate RCC2 in a dual configuration
- P-side DS30A links from RMMs
- P-side DS-1 links used for digital connectivity to MCRUs in the remote-off-remote configuration
- P-side DS-1 links

Frame Supervisory Panel (FSP)

The FSP is used for power, control, and alarm circuits.

Extension shelf

The EXT increases the capacity of the RCC2. The hardware requirement to support 54 ports is greater than the physical capacity of the RCC2; therefore, the EXT shelf was developed. This shelf houses additional ISDN D-channel handlers or DS-1 interfaces.

The EXT provides room for additional DS-1 interfaces, as well as DCH packs. The EXT requires the DS60 pack, which provides twelve DS60 links to the RCC2 shelf.

The EXT shelf provides additional DS-1 links or supports additional DCHs to accommodate ISDN line requirements. This shelf works in conjunction with the RCC2 shelf. It is connected to the RCC2 shelf by a DS60 Plus power pack.

Mounted on the MCRM-S, the EXT shelf houses the following:

- 0 to 3 octal DS-1 interface cards (up to 24 DS-1 links)
- 0 to 10 DCH cards
- DS60 extension cards

Multicabinet MCRM-S configuration

This may include a the following cabinets:

- MCLM
- MCDM
- Meridian Cabinet Trunk Module-ISDN (MCTM)
- Meridian Cabinet Auxiliary Module (MCAM)
- Meridian Cabinet Spares Storage (MCSS)

The following provisioning options are also available for the multicabinet configuration:

- P-side DS-1 links for trunking
- C-side links for communication with the host

The cabinets and their components are described separately below. These cabinets are not part of the MCRM-S. However, they each support MCRM-S operations.

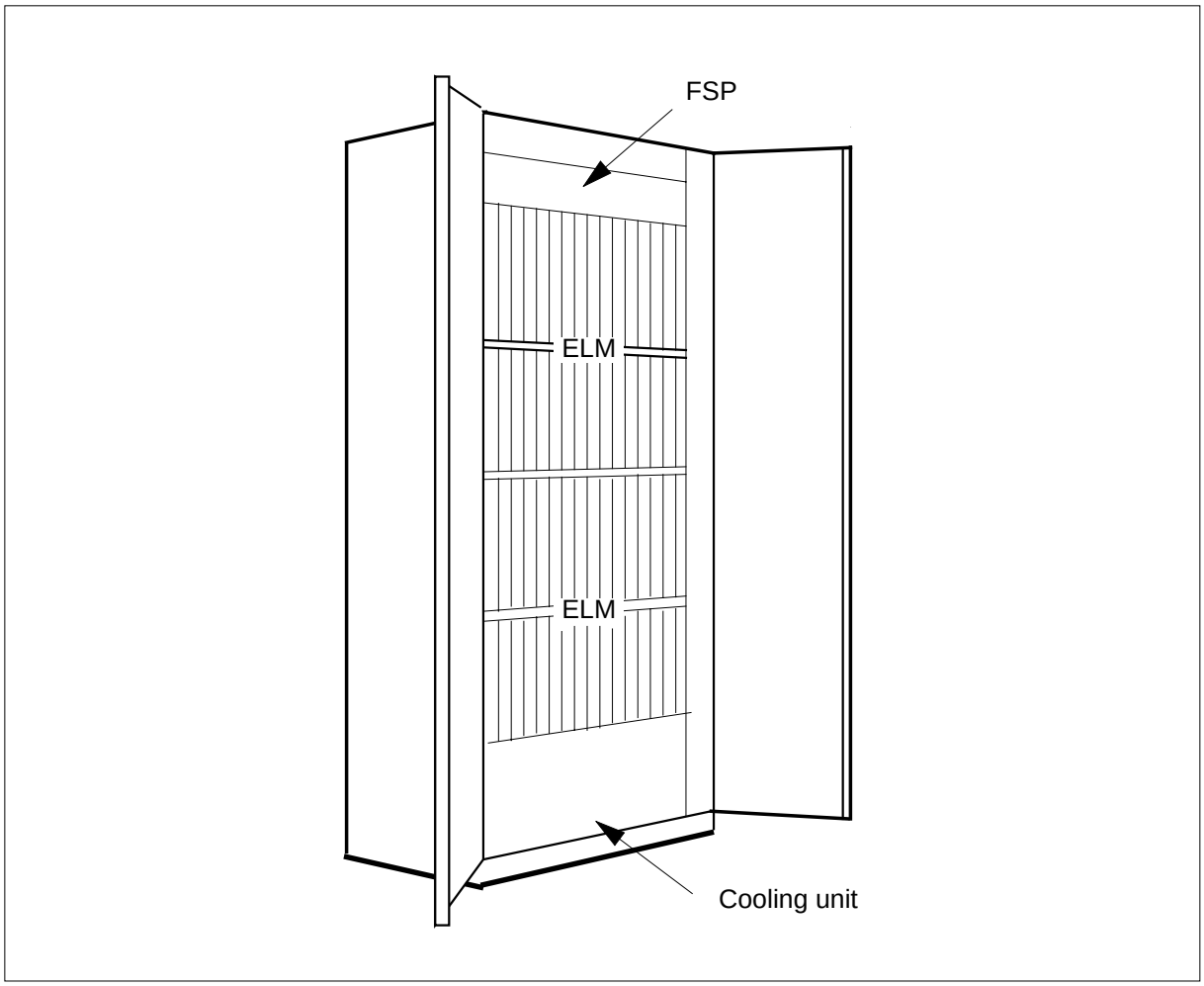
MCLM

The MCLM serves as the subscriber interface of the MCRM-S for lines. The MCLM contains two Enhanced Line Modules (ELMs). The MCLM is used for POTS applications and is connected to the RCC2 by DS30A links.

Additional MCLMs are connected to the P-side of the RCC2 through DS30A links. The actual number of DS30A links for each ELM is engineered in accordance with the traffic requirements of the operating company.

Figure 5-6, "MCLM cabinet" on page 5-38 illustrates the components of the MCLM.

Figure 5-6 MCLM cabinet



MCDM

The MCDM serves as the subscriber interface for MCRM-S digital lines. It is a remotely located Digital Line Module (DLM) connected to a host LTC. The cabinet housing the MCDR contains two DLM equipment modules. All DS-1 links from an MCDR must be connected to the same LTC or LGC at the host.

Meridian Cabinet Remote Module (MCRM)

The MCRM can interface up to 3000 remote subscriber line to a Meridian SL-100 host. The MCRM interfaces to the host through DS-1 links. The MCRM provides an intracalling capability, allowing calls between subscribers served by the same MCRM to be switched within that MCRM.

MCAM

A single-configuration MCRM-S may contain a MCAM cabinet to house customer-specified equipment.

MCSS

A single-configuration MCRM-S may contain an MCSS cabinet for spare card storage.

Additional components

The MCRM-S with ISDN configuration is similar to the MCRM-S without ISDN configuration. However, additional components are needed for ISDN Basic Rate Interface (BRI) services.

RCC2

To enable the MCRM-S configuration to support ISDN services, the following actions are required:

- Use P-side DS-1 slots so that DCH circuit cards are provisioned.
- The FSP supports DCH cards.

ISDN Signaling Processor (ISP) card

The ISP card provides ISDN layer 3, Q.931 processing. There is one ISP card for each RCC2. Activity of the ISP card is tied to and part of the RCC2 unit activity. Only the active ISP communicates with the DCHs.

The ISP card functions in the same manner as the ISP for a host ISDN office, as it provides a communication channel between the Signaling Processor (SP), Master Processor (MP), and the DCH cards.

OA& M processor

Centralized OA& M is achieved with the ISDN OA& M processor. The OA& M processor allows the transfer of information to and from the Packet Handler (PH) from the Maintenance and Administration Position (MAP) workstation at the exchange termination.

Customer Premises Equipment (CPE)

For BRI, the CPE consists of the following components:

- Signaling/Terminal (S/T) bus
- ISDN terminals
- ISDN Universal Terminal Adapter (UTA)
- Network Termination One (NT1)
- U-loop

The S/T bus is the portion of the ISDN BRI interface to which ISDN terminals are connected. ISDN terminals include telephone sets that provide a variety of voice and data features.

The ISDN UTA provides a connection to the S/T bus for a personal computer.

The NT1 converts the proprietary loop protocol on the network side to the CCITT standardized protocols on the user side. The NT1 is required equipment for BRI when an ISDN U-line card is used to terminate a line. The NT2 is used when ISDN lines are terminated by the S/T line card. When an ISDN S/T-line card is used, the ISDN switch acts as an NT2.

The U-loop is the portion of the BRI interface that converts the NT1 to an ISDN U-line card in the Exchange Termination (ET) ISDN switch.

Signaling for MCRM-S

The Common Peripheral Module (CPM) supports nearly the same signaling and supervision functions as an XMS-type Peripheral Module (XPM). However, when the Meridian Cabinet Remote Module-SONET (MCRM-S) is migrated to a CPM-based configuration, there are some differences.

Incoming Derived Data Link (DDL)

A string of six consecutive Derived Data Link (DDL) bits received from the DS-1s are placed by the DS-1 InterFace (I/F) pack on the six most significant bits of TS7 on the DS30 line. TS7 is updated every 12 frames. Table 5-3, "Derived data link bits" on page 5-40 shows the DDL bits and the associated field name of each.

Table 5-3 Derived data link bits

DDL bits	Field name
Derived data link bits	
1 through 11	Concentrator field (C-field)
12 through 14	Spoiler bits (fixed pattern of 010)
15 through 17	Maintenance field (M-field)
18 through 19	Alarm data link field (A-field)
20 through 23	Protection line switch field (S-field)
24	Spoiler bit field (fixed pattern of 1)

Outgoing DDL

In transmission, the CPM places every 12 frames a 6-bit byte on TS7 coming out of the matrix pack. It is done four times in 72 frames for a total of 24 DDL bits.

DDL for Extended SuperFrame (ESF)

DDL is mutually exclusive to ESF format.

DDL processing

The matrix switches all the TS7s coming and going to or from the DS-1 I/F into one DS60 digroup connected to the Signaling Pack (SIGP). The Signaling Processor (SP) takes control from that point.

Extended frame format

The DS-1 extended frame format is composed of 24 frames. The 24 sync-bits are used as follows:

- six bits for Framing Pattern Sequence (FPS)
- twelve bits for Facility Data Link (FDL)
- six bits for Cyclic Redundancy Check (CRC)

Between the matrix and the dual DS-1 I/F pack, a 48-frame “superframe” is used and the FDL information is arranged as follows:

- Twenty-four received FDL bits are available in three bytes.
- The transmission of the 24 FDL bits occurs by writing three bytes in frames 1, 17, and 33.
- Reading and writing operations between the MTX and DS-1 I/F packs are done through TS2s.

The MTX concentrates all TS2s to a DS60 link for the SIGP.

Preparing to datafill MCRM-S

Collecting end-user data

When the MCRM-S includes ISDN, the profiles of the subscriber sets must be gathered so that they can be entered for both the host office and the packet handler (PH).

Configurations

An MCRM-S *with* ISDN offers all of the services of the MCRM-S and can include all of the peripherals of the MCRM-S; moreover, this configuration includes ISDN-type peripherals and offers ISDN services.

The type of configuration directly affects the datafill requirements because the configuration determines the services available with the MCRM-S.

Overview of datafill requirements

Many aspects of datafill are unique to the functions of the MCRM-S. The following sections highlight these functions, the tables that are used, and where to find procedural information.

Activating the MCRM-S

The field Operator Verification Common Language Location Identifier (OPVRCLLI) in table CLLI must be datafilled first for MCRM-S. This tuple in table CLLI forms a field in table SITE. Other tables are datafilled in the order specified in the *Customer Data Schema Reference Manual*.

Datafilling dynamic trunks

Dynamic trunks are assigned on a trunk group basis. Table ISTRKGRP is used; it contains the Common Language Location Identifier (CLLI) of the trunk groups whose members are dynamic trunks. The normal datafill sequence is followed for static trunks (those that are always assigned channels through the host).

To execute call processing and maintenance for the RCC2 and the subtending nodes, the RCC2 must know what system options it contains, as well as its P-side and central side (C-side) link configurations. This information is loaded from the Central Control (CC) and is called static data because the RCC2 does not change this data autonomously. This is in contrast to dynamic data, such as specific call-processing channels that change as calls are set up and broken down.

The DMS host and RCC2 must have the same static data; otherwise, the CC and RCC2 may have different configurations, such as which C-side and P-side links exist, and calls may be lost. The following sections highlight the conditions under which static data needs to be updated and how to most efficiently update this data (in other words, how to update static data so that the time interval when the RCC2 cannot process calls is kept to a minimum).

When to update the RCC2 static data

Static data needs to be updated in the RCC2 under the following conditions:

- if links on the RCC2 P-side or C-side in tables RCCINV, RCCPSINV, or LTCPSINV are added, changed, or deleted
- if the nodes off of the RCC2 or the links associated with those nodes are added, changed, or deleted in tables LCMINV, RMMINV, or RCCPSINV
- if the cards in the card list of the RCC2 or nodes off of the RCC2 are added, changed, or deleted in tables LCMINV, RMMINV, or RCCPSINV
- if the exec data for the RCC2 is added, changed, or deleted in table RCCINV
- if any global office parameters are changed that affect the MCRM-S configuration
- if ESA is turned on or off in table RCCINV
- if interlinks or ESAFORCE field is changed in table IRLNKINV

How to update the RCC2 static data

When updating static data, a crucial consideration for the operating company is keeping the disruption of call processing to a minimum. The following strategies may be used to update static data:

- Make busy (BSY) and return to service (RTS) the entire RCC2.
- BSY and RTS the inactive unit of the RCC2 and perform a cold switch of activity (SwAct).
- Perform two cold SwActs.
- BSY the inactive unit of the RCC2 and return it to service using the NODATASYNC option and then perform a cold SwAct.

Note: Using the NODATASYNC option is the method of choice.

When the static data for the CC has been updated at the CC and the static data at the RCC2 has not been updated, a PM128 log is produced with the following message:

```
STATIC DATA MISMATCH WITH CC
```

Also, at the RCC2 level of the MAP (maintenance and administration position) display, the response to the QUERYPM FLT command is the same message as that of the PM128 log. The steps to take are similar to the steps used to update static data.

TUPC logs for static data updates

With the DMS, the Journal File (JF) can be used to track changes made to DMS data tables, which includes Data Modification Orders (DMO) and service orders. Whenever there is a reload of the office, these JFs must be applied before starting a new JF. If this is not done, the data changes that were made are not recorded.

The following data tables are included in this log:

- LCMINV
- LTCINV
- LTCPSINV
- RMMINV
- RCCINV
- RCCPSINV

The log is generated on a tuple-by-tuple basis. The main types of information included are the table name, the original tuple, and the tuple resulting from the change.

Types of TUPC logs

Following are the numbers for the Tuple Change (TUPC) logs:

- TUPC100 (A tuple has been added.)
- TUPC101 (A tuple has been deleted.)
- TUPC102 (A tuple has been changed.)

  Note: This log contains the old tuple.

- TUPC103 (A tuple has been changed.)

  Note: This log contains the new tuple.

TUPC log format

The TUPC log contains a header that shows the TUPC log number, the date, the time, the table name, and the action taken on the table (added, changed, or deleted). The relevant tuple or tuples are then displayed.

TUPC log examples

The following examples show the headers for each type of TUPC log:

- Header for added tuple log

```
TUPC100  01:12:00   1000  INFO   TUPLE ADDED
        TABLE NAME: LTCINV
```

- Header for deleted tuple log

```
TUPC101  01:12:00   1000  INFO   TUPLE DELETED
        TABLE NAME: LTCINV
```

- Header for old tuple log

```
TUPC102  01:12:00   1000  INFO   TUPLE CHANGED FROM
        TABLE NAME: LTCPSINV
```

- Header for new tuple log

```
TUPC103  01:12:00   1000  INFO   TUPLE CHANGED TO
        TABLE NAME: LTCPSINV
```

Note: TUPC logs, although useful for tracking inventory changes, are to be used by Nortel Networks personnel for solving field problems. This log should not be used in place of the JF utility.

6 Introduction to Meridian SCAI

Understanding Meridian SCAI

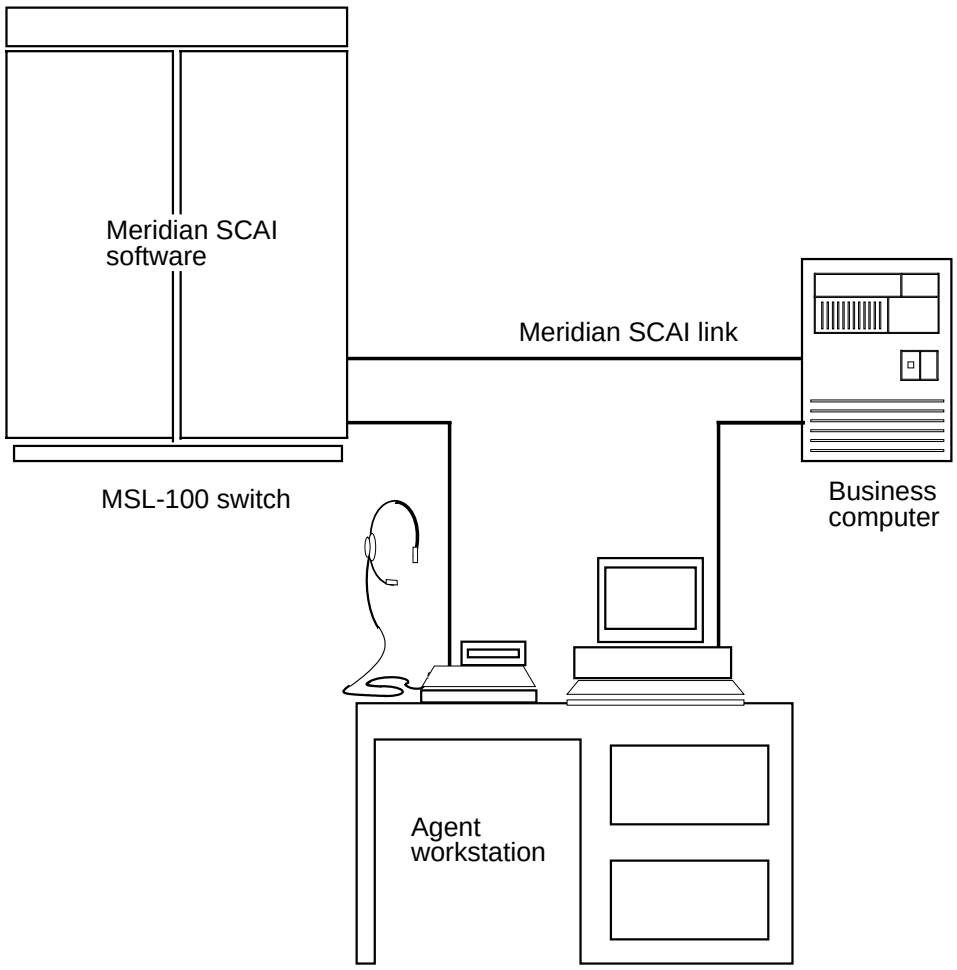
Meridian SCAI is the Meridian SL-100 application of the American National Standards Institute's (ANSI) switch computer application interface (SCAI) open architecture standard.

Meridian SCAI consists of both the software in a Meridian SL-100 and the intelligent link to a subscriber's business computer. Meridian SCAI technology is available to subscribers of Meridian Automatic Call Distribution (ACD) and is marketed under the name Meridian ACD Meridian SCAI Options.

Meridian ACD Meridian SCAI Options give call centers the following capabilities:

- Coordinated voice and data (CVD) links the switch's presentation of a voice call with the business computer's presentation of data so the agent is able to speak on the telephone while examining call-related information on his or her desktop terminal. (Figure 6-1, "Meridian SCAI coordinated voice and data configuration" on page 6-2 shows how Meridian SCAI makes CVD possible.)
- Third-party call control gives the call center agent the ability to use the desktop terminal keyboard to perform such telephone functions as placing an outgoing call (known as *make call*) and for incoming calls, transferring, dropping, adding parties, and making conference calls. (Third-party call control can be combined with CVD, if so desired.)
- Call redirection allows the call center to program the business computer to redirect calls. As a result, for example, callers who have a large unpaid balance are automatically routed to an accounting agent rather than to a sales agent who might unknowingly accept additional orders.

Figure 6-1 Meridian SCAI coordinated voice and data configuration



Note: Agent receives coordinated presentation of telephone call with related computer information.

Meridian SCAI in the network

Meridian ACD Meridian SCAI Options require a coordinated effort at both the MSL-100 switch and at the subscriber's Meridian ACD call center.

The Meridian SL-100 requires

- an X.25 link to the call center’s business computer
- a multi-protocol controller (MPC) circuit card to provide an interface between the switch’s Meridian SCAI software and the X.25 link
- Meridian ACD Meridian SCAI software residing on the Meridian ACD base

The call center requires

- a business computer capable of handling the necessary software
- application programming interface (API) software which converts Meridian SCAI messages into information the call center’s business computer can use for communication with its business application software
- business application software that formats the business computer’s data so that it can be readily retrievable and linked to voice telephone calls

Meridian SCAI hardware

This section describes the hardware components needed to provide Meridian SCAI service from the MSL-100 switch to the subscriber’s business computer.

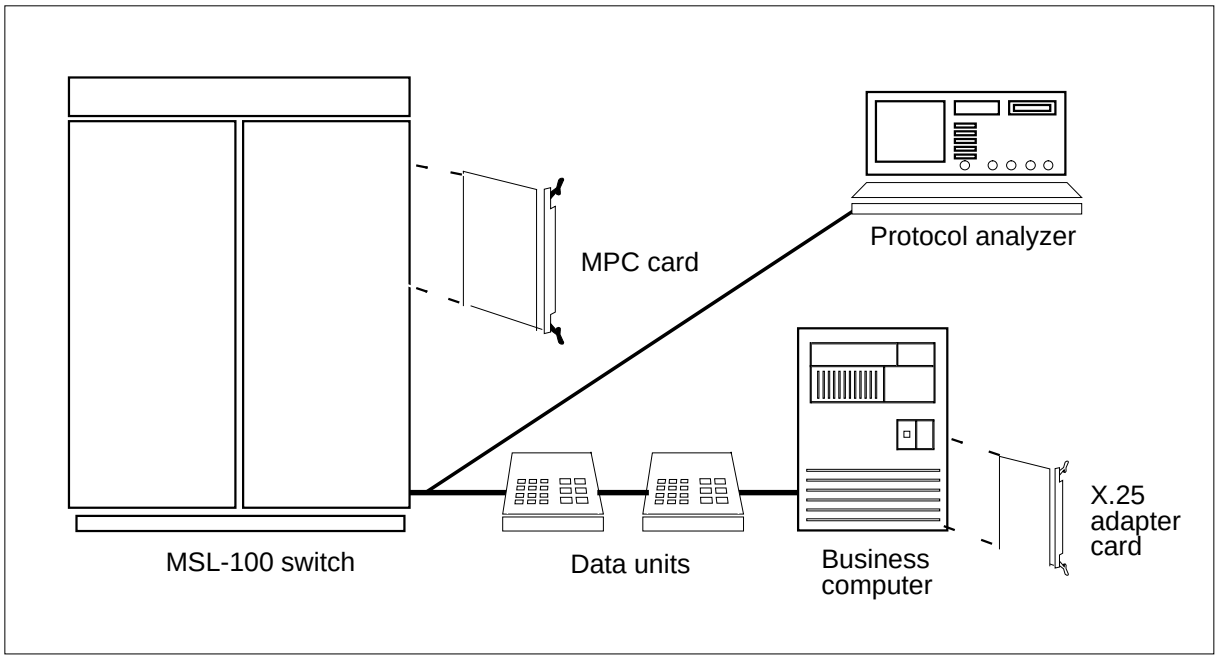
Hardware and additional components

The following hardware components are needed:

- multi-protocol controller (MPC) card
- data units or synchronous modems
- X.25 transport, using R232-C or V.35 connections on each end of the link

This section also describes the need for an X.25 adapter card or other appropriate software for the subscriber's business computer and the assistance provided by the protocol analyzer, a troubleshooting tool that can be used either at the central office or the subscriber's location. See Figure 6-2, "Meridian SCAI hardware components" on page 6-4 for a diagram of Meridian SCAI hardware components.

Figure 6-2 Meridian SCAI hardware components



Multi-protocol controller (MPC) card

The MPC (NT1X89AA) or Enhanced MPC (NT1X89BA) card supports the Meridian SCAI X.25 communication link from the MSL-100 switch to the business computer. The MPC or enhanced MPC card converts outgoing messages from the switch's central control into packet switched form and ingoing messages into digital non-packet-switched form.

The MPC card uses switched virtual circuit (SVC) functionality. An SVC is a data call established only through an explicit initiation by one party through an X.25 call request and an explicit acceptance by another party through an X.25 call acceptance. The X.25 call request and logon request must originate at the business computer. A login request from the business computer is required to establish a Meridian SCAI session.

Business computers connect to the MPC card through data units or modem-connected telephone links. The MPC card is a dual-channel, microprocessor-based device controller that resides in the input/output controller (IOC) shelf. The MSL-100 switch can be equipped with up to nine MPC cards on one IOC shelf. No more than 256 MPC cards can be installed, and the MPC subsystem limits the number of simultaneous conversations to 256. (See the *Multi-Protocol Controller Product Guide*, 297-1001-015, for more information on the MPC card.)

Data units or modems

Employing speeds of up to 56 kbit/s for access, data units (NT4X25 or equivalent) or modems link the MSL-100 switch and the business computer.

A data unit or modem is necessary to transmit data between the MPC and the business computer over voice or packet networks. Synchronous modems can also be used with the public packet switching network (PPSN). Access speeds and packet throughput depend upon the specific PPSN. A data unit can be configured as a desktop unit or as a rack-mounted component of the switch.

Data units also allow data terminal equipment to access the MSL-100 switch network.

Link characteristics

The Meridian SCAI link provides transport for the X.25 signal between the MSL-100 switch and the business computer. At each end of the link, RS232-C or V.35 connections are used. The RS232-C connection transports data up to 19.2 kbit/s. V.35 connection is used for transporting data up to 56 kbit/s.

Business computer with X.25 adapter card

The MSL-100 switch requires a business computer for Meridian SCAI to function. This computer must have an X.25 adapter card or the appropriate software to interpret the X.25 signaling protocol as well as the ability to handle Meridian SCAI application protocol contained in the X.25 data packet.

Protocol analyzer

A protocol analyzer, specifically a Chameleon 20+ or 32+, provides the ability to monitor messages across the Meridian SCAI link for troubleshooting purposes. These machines are generally used for troubleshooting at either the SL-100 switch or the business computer.

The Chameleon 20+ and 32+ are manufactured by Tekelec and include analysis and emulation software based on Nortel Networks' update for each Batch Change Supplement (BCS). The analyzer screen displays easy-to-read versions of Meridian SCAI messages already converted from hexadecimal format.

Nortel Networks recommends that each telephone operating company have convenient access to a Tekelec protocol analyzer for each switch that supports Meridian SCAI.

Signaling for Meridian SCAI

This chapter describes the X.25 signaling protocol required for the Meridian SCAI data link, the relationship between X.25 and the open systems interconnection (OSI) model for data communications, and how Meridian SCAI relates to the signaling layers of the OSI model.

Signaling protocol

X.25 is the signaling protocol used to provide data-based two-way communications for Meridian SCAI between an MSL-100 switch and a call center computer. The data is in packet form. Within the Meridian SCAI link, X.25 conforms to the Open Systems Interface (OSI) model developed by the International Standards Organization (ISO).

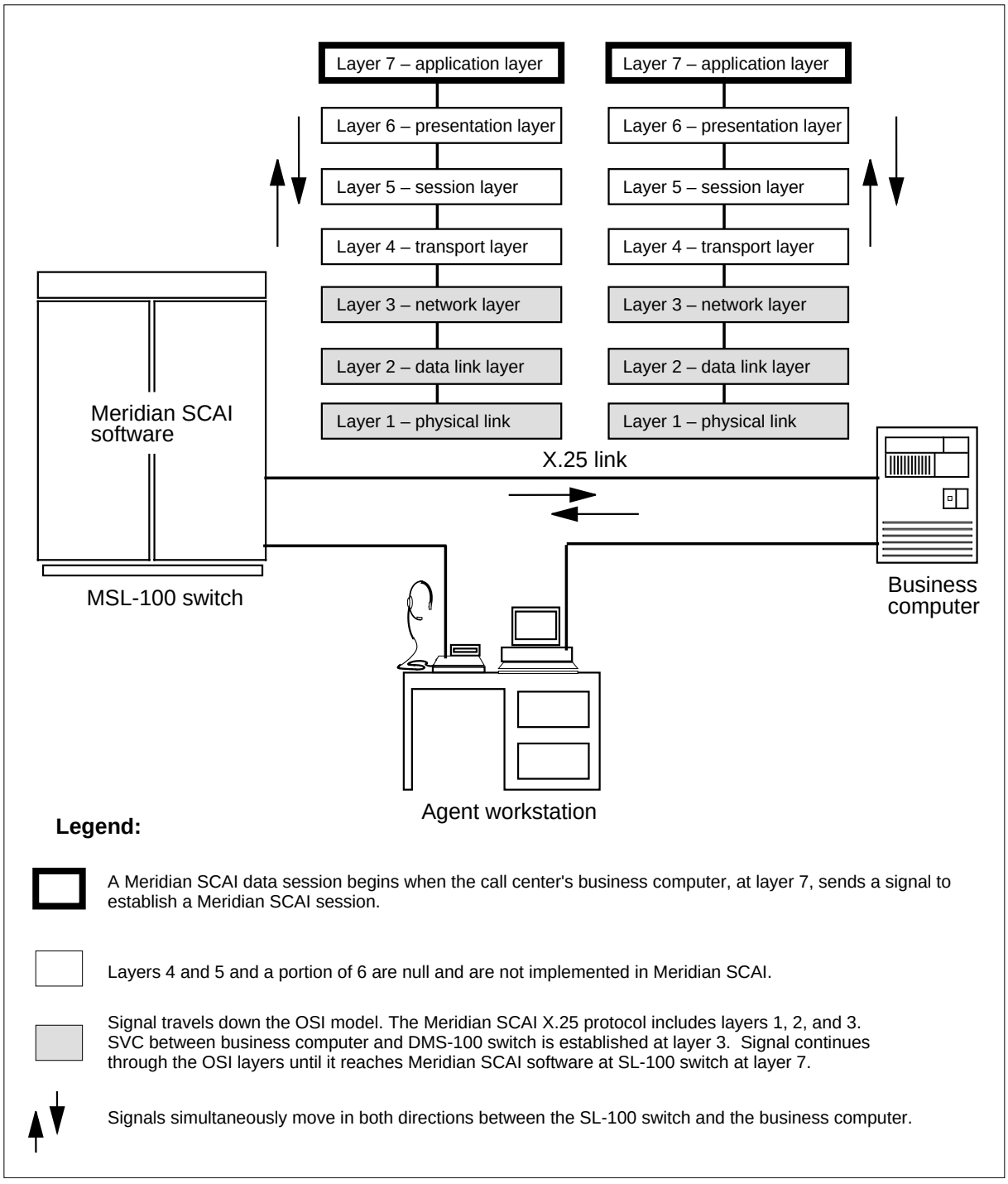
X.25 and the OSI model

As a result of establishing the seven-layer OSI model, a commonly accepted international design framework exists today allowing different kinds of computers or computers from different vendors to communicate with each other over any network.

As it relates to Meridian SCAI, Nortel Networks' commitment to the OSI standard represents a readily identified method of communicating between the MSL-100 switch and the subscriber's business computer (which may come from one of a variety of vendors) using the public packet switching network. OSI conformity also reflects Nortel Networks' commitment to open network architecture, thus encouraging the marketplace to develop Meridian SCAI-related software and associated products for business computers.

Meridian SCAI's X.25 protocol includes the first three layers of the OSI model. CCITT (Comite Consultatif Internationale Telegraphique et Telephonique - International Telegraph and Telephone Consultative Committee), part of the International Telecommunications Union, has established standards for X.25 and the first three layers of the OSI model. NT conforms to those standards. Figure 6-3, "Meridian SCAI signaling and the OSI model" on page 6-7 shows how Meridian SCAI relates to the signaling layers of the OSI model.

Figure 6-3 Meridian SCAI signaling and the OSI model



Following is a description of the characteristics of each of the seven layers of the OSI model. The description, which includes Meridian SCAI's activity at

each of the layers, starts at layer 7, where the business computer begins the process of establishing a Meridian SCAI data session.

Layer 7—application layer

Meridian SCAI complies to the ISO standards for layer 7. This layer gives users access to the OSI environment and provides distributed information services. Consequently, a peer-to-peer relationship between switch and business computer is formed.

As is true of the other OSI layers of Meridian SCAI, there are two application layers. One is on the switch side, and the other is on the business computer side.

On the switch side, layer 7 consists of the Meridian SCAI software in the MSL-100 switch. Specifically, the switch-side of layer 7 consists of Meridian SCAI software packages NTXJ59AC, NTXJ60AB, and NTXJ62AA. These packages—CompuCALL Base Utilities, ISI Coordinated Voice and Data, and Third-Party Call Control—provide Meridian SCAI with X.25 signaling, utility software, and capabilities.

Within OSI terminology, Meridian ACD Meridian SCAI Options (the overall Meridian SCAI service the central office switch provides) is referred to as an application process (AP). An AP is an element of an open system that takes part in the processing of information sent to or received from an AP in another open system.

On the business computer side, the AP at layer 7 consists of the business application software. It also consists of the application program interface (API) software that makes it possible for the business computer to transmit and receive telecommunications signals. The software package that is the AP for the business computer performs a comprehensive set of functions, such as telemarketing.

For successful communication to take place, the AP on the switch side and the AP on the business computer side must communicate with each other as peers. For that to happen, an SVC must be established between the business computer and the MSL-100 switch.

Using an SVC to establish a Meridian SCAI session

An SVC is established when the business computer initiates an X.25 call request and the MSL-100 switch accepts the request using an X.25 call acceptance message. Although the process begins with a request at layer 7, actually establishing an SVC takes place at layer 3. Any connection, success or failure, is reported to layer 7.

When setting up a Meridian SCAI session on an already established SVC, the Meridian SCAI message sent is DV_APPL_LOGON. The MSL-100 switch

acceptance reply is RETURN_RESULT. If the switch does not accept the logon, the reply is REJECT. The switch can also send a RETURN_ERROR reply providing a reason that the switch is rejected. REJECT replies are mostly used when protocol or message structure errors occur.

Following are the additional Meridian SCAI messages relating to the dynamics of the data session:

- DV_DN_ASSOCIATE—The business computer application uses this message to identify which call center directory numbers (DN) are authorized to receive data about incoming calls.
- DV_APPL_LOGOFF—The business computer uses this message to end an established application session.
- DV_APPL_CONTINUITY_TEST—Initiated either by the business computer or the switch, this message is used for testing the logical connection between applications.

Note: With all Meridian SCAI messages the DV stands for data and voice.

A BCS35 feature improves link reliability between the switch and the business computer by providing alternate communication paths in the event of equipment failure on either side. This new functionality allows multiple physical links to be established for the same Meridian SCAI session. In the event of link failure, service continues to be provided on the remaining Meridian SCAI links.

Remote operation service element

Remote operation service element (ROSE) is a language for specifying how to handle a data call and what information the data call contains. The Meridian SCAI messages themselves—such as the DV_APPL_Logon message—are contained in ROSE protocol.

ROSE supports an interactive communication between the AP software set on the MSL-100 switch and the AP software set on the call center computer.

Individual software packages or features that make up the AP are referred to as application entities (AE). On the business computer side, individual application software and API software are regarded as AEs. When an AE wants to receive or send information—at the business computer or at the switch—then it uses ROSE protocol.

ROSE language expresses itself in the form of one of the following five request or reply messages:

- RO_INVOKE—This message requests that an operation be performed.
- RO_RESULT—This message reports that an operation was performed successfully.
- RO_ERROR—This message reports that an operation was not successful.
- RO_REJECT_U—This message rejects a request (or reply) if there is a problem with it.
- RO_REJECT_P—This message provides information on a problem in the underlying layers of the OSI model.

Note: The RO in each ROSE message stands for remote operation.

Meridian SCAI messages

In addition, the following messages provide Meridian SCAI services:

- DV_Add_Party—This message gives the business computer the ability to initiate a consult call for a specific agent position.
- DV_Call_Answered_U—Call-related information regarding incoming ACD calls is provided to the business computer when the agent answers the ACD call.
- DV_Call_Offered_U—Call-related information regarding incoming ACD calls is provided to the business computer when an agent has been selected to handle the call, allowing the business computer to provide coordinated voice and data delivery to the agent.
- DV_Call_Queued_U—Call-related information regarding incoming ACD calls can be provided to the business computer as soon as the call has been placed in the incoming call queue. For example, this gives the business computer more time to generate the screen display.
- DV_Call_Received_C—Call-related information is provided to the business computer as soon as the ACD call has been received by the switch, which will then wait for the business computer reply to indicate whether redirection is required.
- DV_Call_Redirect—This message provides the business computer with the ability to redirect an ACD call to another primary or supplementary ACD DN or non-ACD DN.
- DV_Call_Released_U—This tells the business computer when the agent disconnects from an inbound or outbound ACD call or when an ACD call is redirected, overflows, or is abandoned by the caller.
- DV_Conference_Party—This message gives the business computer the ability to initiate a conference call with the held and consult calls on behalf of a specific agent position.

- DV_Drop_Party—This message gives the business computer the ability to request the release of a consult call and reconnection to the second party for a specific agent position.
- DV_Make_Call—This message provides the ability for a business computer to initiate an outbound call on behalf of a specific agent position. The switch alerts the agent with a distinctive ringing tone when originating an outbound call on behalf of that agent and optionally sets up an outbound call for the agent only after verifying the authorization code, account code, or both, sent by the business computer.
- DV_Transfer_Party—This message gives the business computer the ability to transfer a call for a specific agent position.

Note that the existence of a two-way Meridian SCAI session between APs at layer 7 requires support from the underlying layers of the OSI model described below.

Layer 6—presentation layer

The presentation layer masks the differences that come from different systems with different data formats. For example, data formats can have varying character codes.

As a consequence of layer 6 activity, communication on the application layer is transparent and can use an independent syntax for transferring data.

A portion of layer 6 is implemented as part of the ROSE procedure. The remaining portion of layer 6 is not necessary for Meridian SCAI to function, and Meridian SCAI does not implement it.

Layer 5—session layer

The session layer provides the control structure or dialog management for communication. It establishes, manages, and terminates data transfer sessions taking place at layer 4.

Layers 5 and 4 are not needed for Meridian SCAI functioning and are not supported. In these unsupported layers (as well as the unsupported sublayers of level 6) messages simply pass through to the next supported level.

Layer 4—transport layer

The transport layer transfers data within and between networks in a transparent fashion. It uses error recovery and flow control to achieve reliability.

Layer 3—network layer

As a result of the network layer determining how data is transferred, the upper layers gain independence from data transmission and switching technologies used to connect systems. Layer 3, also known as the packet layer, establishes,

maintains, and terminates connections and provides the ability to encode and route transmission messages. This is the layer where the SVC is established. The multi-protocol controller (MPC) implements layers 3 and 2. Layers 3, 2, and 1 conform to CCITT recommendations for X.25.

Layer 2—data link layer

The data link layer, also known as the frame layer, reliably transfers information across the physical link. It sends data frames with the necessary synchronization, error control, and flow control.

At layer 2, Meridian SCAI uses three kinds of frames for its X.25 signaling:

- information frames (I-frames)
- supervisory control sequences (S-frames)
- unnumbered command/response frames (U-frames)

Note: The business computer acts as data terminal equipment (DTE) either in a DTE/DTE or DTE/data circuit-terminating equipment (DCE) mode with the MSL-100 switch.

Layer 1—physical link layer

The physical link is concerned with the mechanical, electrical, functional, and procedural characteristics involved in sending data over a physical line. For Meridian SCAI, the physical link exists between the MSL-100 switch and the business computer.

Note: The business computer must act as the DTE at the physical level. The DTE makes use of the transmission system through DCE, such as a data unit or a synchronous modem. Protocols for layer 1 specifying the exact nature of the interface between the DTE and DCE ensure the ability of each DTE-DCE pair to interact effectively. For more information on DTE-DCE relationships as well as the OSI interface as it applies to Meridian SCAI, see *CompuCALL Interface Specification*, Nortel Networks NIS-Q218-1.

Meridian SuperNode

Commercial Systems

Translations Guide

Publication number: 555-4031-350
Product release: MSL15
Document release: Standard 12.01
Date: May 2001
Printed in the United States of America

NORTEL NETWORKS™