



4ESSTM Switch

Product Release Document

4E24 Release 2 Generic

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Issue 1
April 1999

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Issue 1

Date: April 1999

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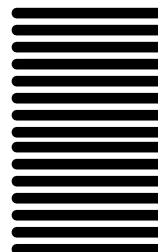
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About This Document

Purpose	The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the <i>4ESS</i> switch. A PRD written to cover the features introduced in full generic releases and quarterly generic releases. This particular PRD provides information pertaining to the new features included in the 4E24 Release 2 Generic.
Scope	The Product Release Document provides customers with information not covered in other <i>4ESS</i> switch documentation. It is not a replacement for other documentation such as Standard Lucent Technologies Practices, Task Oriented Practices (TOP), Maintenance Reference Handbooks, etc., that support the <i>4ESS</i> switch. The information in this document is intended only for the introduction of the new 4E24 Release 2 features, not the long-term maintenance. Since other documentation is used for the operation and maintenance of features after their introduction into the <i>4ESS</i> switch, this PRD will not be reissued.
Intended Audience	The document is intended for people involved in testing, provisioning, maintenance, administration, and technical support of the <i>4ESS</i> switch. Feature managers, Integrated Test Network (ITN) personnel, field support, Network Control Center (NCC), Product Engineering Control Center (PECC), and National Electronic Switching Assistance Center (NESAC) personnel are examples of some of the people who will use the PRD.

**How to Use
This Document**

The PRD for 4E24 Release 2 Generic contains 19 new features. Each chapter in this document provides information about these features. The chapters are in numerical order according to feature number. The chapter titles are also the feature names.

The following is a list of the chapters contained in this document with a brief description of each feature:

Chapter 1: *1B Processor Utility System/Remote Utility Access System (US/RUAS) Y2K Readiness (545).*

The 1B Processor Utility System/Remote Utility Access System (US/RUAS) Year 2000 (Y2K) Readiness feature provides the field with testing and debugging tools that are Y2K ready.

Chapter 2: *Domestic End-to-End Class of Service (DECOS) Modification (554).*

This feature, Domestic End-to-End Class of Service (DECOS) Modifications, provides the capability for a change action to occur via Recent Change (RC) Form 639 for ECOS Routing Pattern Identity (ERPI).

Chapter 3: *XTSI Release 3 (4789/5600).*

The XTSI Release 3 incorporates the support of In-Band Supervisory Signaling (IBSS) trunk termination, and incorporates the addition of: Multi-Frequency (MF) and Dual Tone Multi-Frequency (DTMF) transmitters and receivers, Voice Path Assurance (VPA) transceivers, and other trunk test circuits.

Chapter 4: *Segmentation Directory (SD) Phase 3 — Release 1 (5641).*

This feature migrates the Government Emergency Telecommunications Service (GETS) services to the SD architecture.

Chapter 5: *Integrated Digital Services Network Operational Enhancements (5843).*

This feature provides the 4ESS™ switch requirements to resolve the following issues:

- B-Channel status mismatch
- Network modification of the Connected Number Identification Element (IE)
- Insertion of Octet 5 to the Bearer Capability IE if omitted
- Acceptance of more than two Progress messages.

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Chapter 6: *Tones and Announcements on Unsuccessful Calls After Call Prompting (6273).*

This feature corrects the dead silence condition encountered when an international inbound call-prompter call fails after successful completion of call prompting.

Chapter 7: *Call Origination Treatment at the Originating AT&T Switch for Calls Arriving Over Intertoll Trunks (6413).*

This feature provides the network infrastructure that allows AT&T to offer network services and features for 1+ Long Distance (LD) switched traffic originating from areas served by a 5ESS® toll switch.

Chapter 8: *TCAP Parameter for Transmission Enhancement Control 2 (6492).*

The purpose of this feature is to remove the usage of the CFA4 bit, which is used to trigger AT&T TrueVoice® avoidance. All other existing methods of AT&T TrueVoice avoidance are still active.

Chapter 9: *4ESS™ Switch to Network Management Operations System (NEMOS) Link Upgrade (6643).*

This feature increases the capacity on the data links that are used to connect the 4ESS switch to the Network Management Operations System (NEMOS).

Chapter 10: *Digital Link Phase 3 Equal Access Capability (6685).*

This feature allows AT&T Digital Link Phase (ADL) 2 and ADL 4 customers to presubscribe to other Toll Carriers for their intra-LATA or inter-LATA toll service.

Chapter 11: *Dial 1 Service Integration (6750).*

This feature has been decommitted as of January 22, 1999. Leave the ON/OFF bit assigned to this feature in the OFF state. This will prevent undesirable conditions from occurring.

Chapter 12: *Additional Recording Capabilities for AT&T Digital Link Phase 2 (6762).*

This feature provides for recording of the Access ID for calls egressing the AT&T Switched Network on Local Service Provider trunks.

Chapter 13: *4ESS – 2000 Switch SCS Cache Change to 128 Milliseconds (6881).*

This feature improves the sound quality of short duration announcements by decreasing the cache increment from 512 milliseconds and 1.024 seconds to increments of 128 milliseconds.

Chapter 14: *700-PIC Verification for AT&T Network Connections (6896).*

This feature allows AT&T Network Customers (ANC) end users to dial their Presubscribed Inter-exchange Carrier (PIC) verification numbers to receive a carrier-specific announcement.

Chapter 15: *Voice Over Internet Protocol (VoIP) – Mexico (7028).*

This feature provides the appropriate Automatic Message Accounting (AMA) recording for the Voice Over Internet Protocol service using Adjunct Logical Address (ALA) routing over Commercial Primary Rate Interface (C-PRI) and Common Platform Adjunct (CPA) PRI interfaces.

Chapter 16: *Modified Request to AT&T Digital Link Phase IV (7063).*

This Modification Request (MR) identifies additional 4ESS switch functionality required to allow alternate routing features to engage Software Defined Network (SDN) and MEGACOM® 800 telecommunications services calls addressed to AT&T Digital Link Phase IV (ADL4) nodal locations. The intent is to have the following types of features engage under the same conditions (either individually or in combination) to alternate route calls that are addressed to either an ADL2 or an ADL4 nodal location:

- Switch-based Interim Split Access/Flexible Egress Routing (SAFER)/AMA Call Detail Recording Adjunct (ACDR)
- Network Control Point (NCP)-based Centralized Alternate Destination Call Redirection (CADCR)/Alternate Destination Redirection (ADR).

Chapter 17: *4ESS Switch Domain Value Output Enhancement (7222).*

This feature enables 4ESS switches to send the domain value to each Call Irregularity Message (CIM) and allows the Network Operations Center-International Network Management (NOC-INM) to perform root-cause analysis of problems.

Chapter 18: *Modified Feature Group D Support for AT&T Network Connect (7240).*

This feature provides support for AT&T Network Connect calls over a new trunk type, referred to as a *modified* Feature Group D trunk, and over a Feature Group C LCC Type of Trunk.

Chapter 19: *Recent Change Administration System to Off-Line Processor High-Speed Interface (7294).*

This feature provides Dual-serial Channel Interface (DCI) connectivity at the National Electronic Systems Assistance Center (NESAC) Off-Line Processor (OLP) switches.

Chapter 20: *Release Summary*

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1 **1B Processor Utility Systems/ Remote Utility Access System (US/RUAS) Y2K Readiness Feature (545)**

Overview This feature provides the field with testing and debugging tools that are Y2K ready.

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Feature Description

Background

The Utility System (US) is a tool set developed to identify *4ESS*TM switch software and hardware problems and to debug the 1B Processor software. The US is used on an Installation Test Equipment (ITE) workstation in the *4ESS* system labs and in two Integrated Test Network (ITN) locations. Prior to the current feature, the US operated locally on a *Sun** workstation running *SunOS** Version 4.1.4 Operating System.

The RUAS is a version of the US tool set. The RUAS was developed to assist the Lucent Technologies Field Support group and the AT&T work centers such as the Network Control Centers (NCCs), the ITNs, and the National Electronic Switching Assistance Center (NESAC). The RUAS is used for remote debugging of the *4ESS* switch, and 1B Processor hardware and software problems.

The RUAS is supported by a Bridge/Router (Brouter) network using the Dedicated Wide Area Network (DWAN) to connect Network Fault Management (NFM) (formerly TNM), the *4ESS* switch offices, and the remote work centers.

The current feature makes the US and the RUAS Y2K ready. It also moves the US from a *SunOS* operating environment to a *Solaris** environment. As a result of this feature, both the US and the RUAS operate on a *Sun* Ultra 5 workstation running the *Solaris* 2.6 Operating System with Y2K patches. Therefore, it is no longer necessary to support two different environments for US and RUAS.

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Benefits

This feature provides the field with testing and debugging tools that are Y2K ready. This feature also includes software changes to move both systems to a common *Solaris* environment that is also used by NFM.

Feature Description (cont'd)

Scope	This description covers Features 545, 545a, and 545b. Feature 545 covers US software for ITE workstations. Feature 545a covers RUAS software for stand-alone workstations. Feature 545b covers the change in routers as shown in Table 1-A.
Hardware and Software Impacts	As part of the current feature, several hardware and software changes have been made, either to move US and RUAS to a common operating environment or to make all the elements Y2K ready. Table 1-A summarizes the previous and current equipment, and software used in US and RUAS.

Table 1-A. US/RUAS Equipment and Software

Component	Previous Configuration	Current Configuration
US direct-connect workstation	<i>Sun</i> workstation running <i>SunOS</i> version 4.1.4	<i>Sun Ultra5</i> running <i>Solaris</i> 2.6
RUAS stand-alone workstation	<i>Sun ipx</i> or <i>Sparc 2</i> [*] workstations running <i>Solaris</i> 2.4	<i>Sun Ultra 5</i> running <i>Solaris</i> 2.6
RUAS server (only at NCCs)	<i>Sparc 10</i> or <i>Sun 670</i> server	<i>Sun Enterprise</i> 5500 server running <i>Solaris</i> 2.6
NFM workstation with RUAS application	<i>Sun</i> workstation running <i>Solaris</i> 2.4	<i>Sun Ultra 5</i> running <i>Solaris</i> 2.6
NFM (TIM/TSM) platform	Tandem <i>Star Server</i> ^{**} running NFM release 4.2	Tandem <i>PUMA</i> ^{**} (S4000) processor running NFM release 6.2. Note: This is only for end-to-end test configuration.
Routers	Welfleet AFN (Model 1515) CN (Model Q07B1AB) LN (Model 406598904)	Bay Networks ARN (Model CV1001004) BCN (Model 73000) NOTE: RUAS Workstations now connect to NSD-Net. NSD-Net has <i>Cisco</i> Y2K-ready routers. (This is a divergence from the original Feature 545 FSD.)
XTVision (Teleconferencing Software)	XTelescreen	XTVision – Version 2.0

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Feature Description (cont'd)

Documentation Impacts

The user documentation supporting US/RUAS is the **4ESS Switch Utility System User's Guide** (234-310-001AC). This document replaces and merges the contents of two earlier documents: the previous **4ESS Switch Utility System User's Guide** (234-310-001, Issue 1, April 1997) and the **4ESS Switch 1B Processor Utility System Workstation Configuration Instructions** (234-310-002, Issue 1, April 1995).

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance and Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

Since Feature 545 is generic-release independent, it is not necessary for all 4ESS switches in the network to be running any particular release for this feature to be fully operational.

Feature Activation

This feature is activated by software and hardware deployment.

Input/Output Manual Pages (Not Affected)

2 Domestic End-to-End Class of Service (DECOS) Modifications Feature (554)

Overview

This feature provides the capability for a change action to occur via Recent Change (RC) Form 639 for End-to-End Class of Service (ECOS) Routing Pattern Identity (ERPI).

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Feature Description

Background Prior to this feature, Domestic End-to-End Class of Service (DECOS) updates in the network could not be made until the capability existed to perform a change action on RC Form 639 to alter an existing Service Identity Index (SII), Transport Capability (TPC), and an ERPI mapping to a new ERPI in the same direction. This change capability already existed for Routing Pattern Identities (RPIs) and with the implementation of this feature, the same capability exists for ERPIS.

Call Flow (Not Affected)

Provisioning

Provisioning **Recent Change Form 639**

Although the layout of RC Form 639 has not changed, internally it has been modified to allow ACTION=C when RPI=>33 in the following conditions:

- If ACTION=C and RPI=>33, then the RPI must already exist.
 - If ACTION=C and RPI=>33, then the direction assigned to the current RPI, and the direction assigned to the RPI entered on the form must be the same.
-

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

Feature Activation

This feature is turned on automatically by software deployment.

Input/Output Manual Pages (Not Affected)

3 XTSI Release 3 Feature (4789/5600)

Overview

The XTSI Release 3 incorporates the support of In-Band Supervisory Signaling (IBSS) trunk termination, and incorporates the addition of: Multi-Frequency (MF) and Dual Tone Multi-Frequency (DTMF) transmitters and receivers, Voice Path Assurance (VPA) transceivers, and other trunk test circuits.

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Feature Description

Background

The Expanded Time Slot Interchange (XTSI) is a peripheral unit that has been developed for the 4ESS™ switch. Release 1 of XTSI provided the functions of the most recent Time Slot Interchange (TSI-B) frame. Release 2 of XTSI incorporated enhanced Digital Signal 1 (DS1) Performance Monitoring and an integrated Signal Processing Unit (SPU) which provided echo cancellation and *AT&T True Voice** enhancement. The XTSI Release 3 incorporates the following new capabilities:

- The support of In-Band Supervisory Signaling (IBSS) trunk termination (Feature 4789).
- Addition of MF and DTMF transmitters and receivers, Voice Path Assurance (VPA) transceivers, and other trunk test circuits (Feature 5600).

* Registered service mark of AT&T.

Benefits

Feature 4789 meets the increasing demand for wink-start in-band supervisory signaling by providing MF and DTMF wink-start signaling services.

Feature 5600 provides MF and DTMF service circuits which are significantly more cost effective than those provided by the Digital Interface Frame/Time Slot Interchange (DIF/TSI), and provide a long-term alternative to the DIF/TSI.

Feature 4789

In-Band Supervisory Signaling is available on 100 percent of the trunks that terminate on the XTSI.

Feature 4789 requires the modification of four existing XTSI circuit packs: the D3U, the EXEC, the PUBI, and the CIA, along with the introduction of a new pack, the CSP. The D3U pack provides MF wink-start and DTMF wink-start (message trunk or voice circuit).

Feature Description (cont'd)

Feature 5600 Feature 5600 does not require the modified D3U but does require the other modified/new packs provided by Feature 4789 (CSP, EXEC, PUBI, and CIA).

A *service circuit pack* called the In-Band Unit (IBU) is added to the XTSI and is capable of providing 64 transmitters, 64 receivers, and 16 other circuits. A common service circuit pack is software configurable to support either MF or DTMF. Only one protocol is supported per frame; MF and DTMF transceivers may not be mixed in a single XTSI. The 64 transmitters and 64 receivers require 128 trunks. Since provisioning is done on a DS1 basis (multiple of 24), six DS1s are allocated to the IBU, which is 144 DS0s. The final 16 trunks are used for other purposes in one of two configurations. One configuration has the following:

- 16 Voice Path Assurance trunks.

The other configuration has the following [MISC takes away four Continuity Check Transceiver (CCT) circuits for use by other circuits]:

- 12 Voice Path Assurance trunks
- 1 Voice Path Assurance Test Circuit trunk
- 1 Common Systems Tone Detector trunk
- 1 Digital Milliwatt Source trunk
- 1 Digital Milliwatt – 10 Source trunk.

Feature Description (cont'd)

**Feature 5600
(cont'd)**

The four configurations for service circuits are as follows:

- MF/CCT – MF/CCT (Voice Path Assurance), consisting of:
 - 64 MF Receivers
 - 64 MF Transmitters
 - 16 XCVRs/CCTs/VPAs.
 - DTMF/CCT only, consisting of:
 - 64 DTMF Receivers
 - 64 DTMF Transmitters
 - 16 XCVRs/CCTs/VPAs.
 - MF/CCT-MISC, consisting of:
 - 64 MF Receivers
 - 64 MF Transmitters
 - 12 XCVRs/CCTs/VPAs
 - 1 XCVT/LATT/CCT-T
 - 1 Digital Milliwatt
 - 1 Digital Milliwatt –10dB
 - 1 Common Systems Tone Detector.
 - DTMF/CCT-MISC, consisting of:
 - 64 DTMF Receivers
 - 64 DTMF Transmitters
 - 12 XCVRs/CCTs/VPAs
 - 1 XCVT/LATT/CCT-T
 - 1 Digital Milliwatt
 - 1 Digital Milliwatt –10dB
 - 1 Common Systems Tone Detector.
-

Feature Description (cont'd)

Signaling Characteristics Table 3-A shows Incoming Signaling Characteristics (ISC) and Outgoing Signaling Characteristics (OSC) supported on the XTSI.

Table 3-A – ISC and OSC Supported on XTSI

Method	ISC	OSC	Signaling Characteristics	IBU Needed?	XTSI Release
IBSS	X	X	MF Wink		R3
IBSS	X	X	Domestic CCIS		R1+
IBSS	X	X	ISUP		R1+
IBSS	X	X	DTMF Wink		R3
IBSS/TONE		X	MF Receiver	Yes	R3
IBSS/TONE		X	MF Transmitter	Yes	R3
IBSS/TONE		X	DTMF Receiver	Yes	R3
IBSS/TONE		X	DTMF Transmitter	Yes	R3
PRI	X	X	Q.931 Signaling (ISDN)		R1+
MISC		X	Milliwatt Source	Yes	R3
MISC		X	CCIS VPA Transceiver Test Circuit	Yes	R3
MISC		X	Tone Detector	Yes	R3
MISC		X	CCIS Voice Path Assurance Transceiver	Yes	R3
MISC		X	-10db Milliwatt Source	Yes	R3

Hardware Table 3-B shows the circuit packs and pack codes affected (old and new).

Table 3-B – XTSI R3 Circuit Packs

Pack	Old #	New #
CIA	UN547	UN650
CSP	(None)	4WB9
D3U	4WB3	4WB11
EXEC	UN548	UN549
IBU	(None)	4WB10
PUBI	KBN16	KBN23

Call Flow (Not Affected)

Provisioning

Recent Change Forms

The following Recent Change (RC) forms as found in the *Translation Guide 4* (TG-4) are affected: 200, 704, 705, and 707. RC Form 708 is new. These forms are shown in Figures 3-1 through 3-5.

Note: Form numbers are from the TG-4 – Division 8, Section 7.

Provisioning (cont'd)

RC Form 200 The RC Form 200 has not changed for Release 4E24, but may now be used to add in-band supervisory signaling trunks and service circuits.

The RC 200 program has been modified to allow an abbreviated means of adding XTSI service circuit trunks. Four lines on RC Form 200 may be used to add 64 MF/DTMF RCVR TANs to the corresponding TSG, and four lines to add 64 MF/DTMF XMTR TANs. This saves having to list all 64 RCVRs and 64 XMTRs.

Figure 3-1 shows an example of RC Form 200 used to add XTSI service circuits.

Provisioning (cont'd)

Given:

- MF receiver TSG of 0000 SVC*MFR****2MD,
- XTSI 32 is configured for MF (see RC Form 708).
- SP K-code assigned to the XTSI is 26 (used for n^1n^2 of $n^1n^2n^3n^4$ of the FTFN in Form 200).

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ORNU 200---,										TSG 0000 SVC* MF R* *** 2MD,																																																																																															
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Fig. 3-1. Example of RC Form 200 - Used to Add IBSS Trunks and Service Circuits (Sheet 1 of 3)

Provisioning (cont'd)

Given:

- MF transmitter TSG of 0000 SVC*MFX****2MD,
- XTSI 32 is configured for MF (see RC Form 708).
- SP K-code assigned to the XTSI is 26 (used for n¹n² of n¹n²n³n⁴ of the FTFN in Form 200).

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Fig. 3-1. Example of RC Form 200 - Used to Add IBSS Trunks and Service Circuits (Sheet 2 of 3)

Provisioning (cont'd)

Given:

- XCVR TSG of 0000 SVC*XCVR***2MD,
- XTSI 32 is configured for MF MISC. (see RC Form 708).
- $n^1 n^2$ of $n^1 n^2 n^3 n^4$ of the FTFN in RC Form 200 is Odd XTSI Member number, 33, + 20 or 53.
- If configured as MF CCT only the second QTRK would be 8 instead of 4.

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Fig. 3-1. Example of RC Form 200 - Used to Add IBSS Trunks and Service Circuits (Sheet 3 of 3)

Provisioning (cont'd)

RC Form 704 Figure 3-2 shows RC Form 704 – DS3 Unit-Type Equipment Data. This form is modified to include one new item on a D3U-basis and two new items for each of the up to 28 DS1s associated with the D3U. Also, the field names for two existing per-DS1 fields are changed.

Population Rule Changes:

- **INBAND D3U** - In-band signaling state enabled for the D3U. Entries: blank, N (for In-band disabled), or Y (for In-band enabled).
 - **DS1 NUMBER** - DS1 number. Entries: Pre-printed with 1 through 14 and 15 through 28.
 - **EQUIPAGE** - Equipage for the 1st through 28th DS1 for this D3U. Entries: blank, F (for Future), P (for Present/provisioned).
 - **FRAME FORMAT** - Frame Format for the 1st through the 28th DS1 for this D3U. Entries: blank, E (for Extended Superframe), or S (for Superframe).
 - **STATIC A/B** - Static A/B enabled for this DS1. Entries: blank, Y (for Static A/B - 56R), or N (for 64K clear channel).
STATIC A/B and INBAND DS1 cannot both be “Y” for a specific DS1.
 - **INBAND DS1** - In-band signaling state enabled for this DS1. Entries: blank, N (for In-band disabled), or Y (for In-band enabled).
STATIC A/B and INBAND DS1 cannot both be “Y” for a specific DS1.
-

Provisioning (cont'd)

FORM 704 DS3 UNIT TYPE EQUIPMENT DATA
4E24>

RC: UTYPE; CHG; OPT (D3U) , ____:		XTSI MEMN __, D3UN __,	
ORNU _____,			
REM ALARM _____,		MAX LBO _____, DS3 APPL _____, INBAND D3U __,	
DS1 INFO			
DS1 NUMBER	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,		
EQUIPAGE	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
FRAME FORMAT	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
STATIC A/B	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
INBAND DS1	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
DS1 NUMBER	15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,		
EQUIPAGE	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
FRAME FORMAT	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
STATIC A/B	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
INBAND DS1	_, _, _, _, _, _, _, _, _, _, _, _, _, _, _,		
REMARKS _____!			

Fig. 3-2. RC Form 704 – DS3 Unit-Type Equipment Data

Provisioning (cont'd)

RC Form 705

Figure 3-3 shows RC Form 705 – Subunit XTSI-Type Data. This form is modified to include four new items on an XTSI-basis and six new items for each of the two controllers.

Population Rule Changes:

- **ORNU** - Order Number. Entries: 1 to 999999.
- **CSP** - Hardware version of the CSP pack for XTSI controller 0 or 1. Entries: blank, 0 (for no CSP pack present), or 1 (for initial 4WB9 CSP pack - needed for in-band).
- **PUBI** - Hardware version of the PUBI pack for XTSI controller 0 or 1. Entries: blank, 0 (for initial KBN16 PUBI pack), or 1 (for KBN23 PUBI pack - needed for in-band).
Note: The EXEC and PUBI fields must be populated with the same value for an XTC0 or an XTC1. For example, if PUBI for XTC0 is populated with 1, then EXEC for XTC0 must be populated with 1.
- **GRAM** - Hardware version of the GRAM pack for XTSI controller 0 or 1. Entries: blank, or 0 (for initial UN557 GRAM pack).
- **CIA** - Hardware version of the CIA pack for XTSI controller 0 or 1. Entries: blank, 0 (for initial UN547 CIA pack), or 1 (for UN650 CIA pack - needed for in-band).
- **ALF** - Hardware version of the ALF pack for XTSI controller 0 or 1. Entries: blank, or 0 (for initial 4WB6 ALF pack).
- **EXEC** - Hardware version of the EXEC pack for XTSI controller 0 or 1. Entries: blank, 0 (for initial UN548 EXEC pack), or 1 (for UN549 EXEC pack - needed for in-band). The EXEC and PUBI fields must be populated with the same value for an XTC0 or an XTC1. For example, if PUBI for XTC0 is populated with 1, then EXEC for XTC0 must be populated with 1.
- **XTSI FRAME INBAND ENABLED** - Hardware generation for the XTSI. Entries: blank, N (for XTSI without in-band signaling), or Y (for XTSI with in-band signaling enabled).
- **IBUEQ** - IBU Equipage. Entries: blank, U (Unequipped), G (Grow), S (Special Grow), or O (Operational).
- **IBUHV** - IBU hardware version. Entries: blank, or 0 (initial hardware version).
- **IBUSV** - IBU software version. Entries: blank, or 0 to 7.
- **D3UHV** - D3U Hardware Version. Entries: blank, 0 (for initial 4WB3 D3U pack), or 1 (for 4WB11 In-Band Capable D3U pack).
 If column 6 = 0, then columns 0, 1, and 2 must be 0. If column 7 = 0, then columns 3, 4, and 5 must be 0.

Provisioning (cont'd)

FORM 705 SUBUNIT XTSI TYPE DATA
4E24>

```

RC: UTYPE; CHG; OPT (SUXTSI), ____:      XTSI MEMN __,

ORNU _____,

XTCN    0, 1
XTCHV   __, __
XTCSV   __, __

                 CSP, PUBI, GRAM, CIA, ALF, EXEC,
XTC0 PACKS    __,    __,    __,    __,    __,    __,
XTC1 PACKS    __,    __,    __,    __,    __,    __,

XTSI FRAME INBAND ENABLED __,

IBUEQ __,
IBUHV __,
IBUSV __,

D3UN    0 1 2 3 4 5      6 7
D3UEQ   __, __, __, __, __, __,    __, __,
D3UHV   __, __, __, __, __, __,    __, __,
D3USV   __, __, __, __, __, __,    __, __,

SPUN    0 1 2 3 4 5 6 7 8 9      10 11
SPUEQ   __, __, __, __, __, __, __, __, __, __,    __, __,
SPUHV   __, __, __, __, __, __, __, __, __, __,    __, __,
SPUSV   __, __, __, __, __, __, __, __, __, __,    __, __,

REMARKS _____!
```

ASSOCIATED VERIFY MESSAGES - 16ba (Input) and 7h (Output)

Fig. 3-3. RC Form 705 – Subunit XTSI-Type Data

Provisioning (cont'd)

RC Form 707 Figure 3-4 shows RC Form 707 – XTSI DS1 Static A/B Configuration. This form was formerly used to update one characteristic (STATIC A/B) for a single DS1 associated with a D3U. The form is changed (including its name) to update all four characteristics associated with a DS1.

The DS1 characteristics on this form are identical to the DS1 characteristics on Form 704. The only difference is that this form only allows a single DS1 associated with a D3U to be updated while Form 704 allows multiple DS1s associated with a D3U to be updated.

Beginning with 4E24, the same Verify output message (i.e., 7g) is used for both Forms 704 and 707.

Population Rule Changes:

- **EQUIPAGE** - Equipage for the 1st through 28th DS1 for this D3U. Entries: blank, F (for Future), P (for Present/provisioned).
 - **FRAME FORMAT** - Frame Format for the entered DS1 for this D3U. Entries: blank, E (for Extended Superframe), or S (for Superframe).
 - **STATIC A/B** - Static A/B enabled for this DS1. Entries: blank, Y (for Static A/B - 56R), or N (for 64K clear channel).
STATIC A/B and INBAND DS1 cannot both be "Y."
 - **INBAND DS1** - In-band signaling state enabled for this DS1. Entries: blank, N (for In-band disabled), or Y (for In-band enabled).
STATIC A/B and INBAND DS1 cannot both be "Y."
-

Provisioning (cont'd)

FORM 707 XTSI DS1 STATIC A/B CONFIGURATION
4E24>

```
RC:UTYPE;CHG;OPT(XTSIAB),___:      XTSI MEMN ___, D3UN ___, DS1 ___,  
ORNU _____,  
EQUIPAGE            ___,  
FRAME FORMAT       ___,  
STATIC A/B          ___,  
INBAND DS1          ___,  
REMARKS _____!
```

ASSOCIATED VERIFY MESSAGES - 16ba (Input) and 7g (Output)

Fig. 3-4. RC Form 707 – XTSI DS1 Static A/B Configuration

Provisioning (cont'd)

RC Form 708 Figure 3-5 shows RC Form 708 – IBU Subunit XTSI-Type Data. This is a new form added with generic 4E24. It is used to specify the IBU subtype data associated with an XTSI.

Population Rules:

Fields that are left blank will leave the corresponding translations data unchanged.

- **RC:UTYPE;CHG;OPT(XTSIIBU),___**: Entries: blank, BUF, TST, ACT, FTA, FTB, FTT.
 - **XTSI MEMN** - TSI Member Number of an Expanded Time Slot Interchange (XTSI). Entries: 2 to 62 - even numbers only.
 - **ORNU** - Order Number Entries: 1 to 999999.
 - **TANS RESERVED** - Indicates whether the TANs associated with the IBU should be reserved. Entries: blank, N, or Y.
 - **MF OR DTMF** - Type of signaling (receivers/transmitters) supported by the IBU. Entries: blank, MF (64 MF receivers, and 64 MF transmitters), or DTMF (64 DTMF receivers, and 64 DTMF transmitters).
 - **XCVR CONFIG** - Type of miscellaneous service circuits the IBU supports. Entries: blank, CCT (for 16 CCTs), or MISC (for 12 CCTs and miscellaneous circuits). There are two possible types: 1) 16 Continuity Check Transceivers (CCT), or 2) 12 CCTs plus 4 miscellaneous service circuits (i.e., digital Milliwatt, digital Milliwatt-10, Common Systems Tone Detector, and CCT test).
-

Provisioning (cont'd)

FORM 708 IBU SUB-UNIT XTSI TYPE DATA
4E24>

RC: UTYPE; CHG; OPT (XTSI IBU), ____: XTSI MEMN __,
ORNU _____,
TANS RESERVED __,
MF OR DTMF _____,
XCVR CONFIG _____,
REMARKS _____!

ASSOCIATED VERIFY MESSAGES - 16ba (Input) and 7m (Output)

Fig. 3-5. RC Form 708 – IBU Subunit XTSI-Type Data

Provisioning (cont'd)

Verify Forms Verify forms affected are Input Form 16ba, and Output Forms 7g, 7h, 7j, and 7m. Form 7j was deleted, and Form 7m is new. Verify messages and corresponding forms are summarized in Table 3-C .

Note: Form numbers are from the *Translation Guide 4 (TG-4)* Manual. Message IDs are from the *Input and Output (I/O)* manuals.

Table 3-C. – Verify Messages

Message ID (From I/O Manuals)	Type	Form (From TG-4)	New, Existing, or Modified
VER:VFUNC-XTSII	Input	16ba (TG-4 Div. 8, Sec. 16ba)	New – 24R1
VER:SUBUTP-XTSII	Output	7m (TG-4 Div. 8, Sec. 7m)	New – 24R1
VER:VFUNC	Input	16ba (TG-4 Div. 8, Sec. 16ba)	Existing
VER:MISC-XTSID3U	Output	7g (TG-4 Div. 8, Sec. 7g)	Modified – 24R1
VER:MISC-SUXTSI	Output	7h (TG-4 Div. 8, Sec. 7h)	Modified – 24R1

Provisioning (cont'd)

Input Verify Form 16ba

Figure 3-6 shows parts of Input Verify Form 16ba (from the TG-4). This is the Verify input message to request verification of miscellaneous data, along with the corresponding output message. There are two changes to this message as follows:

1. Since the Verify 7j message is being deleted, the corresponding STATICAB output message option is removed in 4E24
2. One new VFUNC value is added for the purpose of requesting verification of the IBU configuration data on Form 7m. There is one identifier for this option, the XTSI member number to be verified. The new VFUNC identifier is XTSIIBU. There is only one data field associated with XTSIIBU; it is XTSIMEMN, and it is an even number in the range of 2-62. The rules and values for this data field are identical to those for XTSIMEMN in other VFUNC values.

```

INPUT:                                VERIFY 16ba
VER:VFUNC XTSID3U:FD1 XTSIMEMN DT1 a! <==== IBU configuration data (4E24>)
OUTPUT:

VER:MISC;OPT(XTSID3U): Verify 7g
-----
INPUT:                                VERIFY 16ba
VER:VFUNC SUXTSI:FD1 XTSIMEMN DT1 a! <==== IBU configuration data (4E24>)
OUTPUT:

VER:MISC;OPT(SUXTSI): Verify 7h
-----
INPUT:                                VERIFY 16ba
VER:VFUNC XTSIIBU:FD1 XTSIMEMN DT1 a! <==== IBU configuration data (4E24>)
OUTPUT:

VER:MISC;OPT(XTSIIBU): Verify 7m

```

Fig. 3-6. Input Verify Form 16ba

Provisioning (cont'd)

Output Verify Form 7g

Figure 3-7 shows Output Verify Form 7g. This form is modified to include one new item on a D3U-basis and two new items for each of the up to 28 DS1s associated with the D3U. Also, the field names for two existing per-DS1 fields are changed.

Population Rule Changes:

- **INBAND D3U** - In-band signaling state enabled for this D3U. Entries: N (for In-band disabled), or Y (for in-band enabled).
 - **DS1 NUMBER** - DS1 number. Entries: Preprinted with 1 through 14 and 15 through 28.
 - **EQUIPAGE** - Equipage for the 1st through the 28th DS1 for this D3U. Entries: F (for Future), or P (for present/provisioned).
 - **FRAME FORMAT** - Frame Format for the 1st through the 28th DS1 for this D3U. Entries: E (for Extended Superframe), or S (for Superframe).
 - **STATIC A/B** - Static A/B enabled for this DS1. Entries: Y (for Static A/B - 56R), or N (for 64K clear channel).
 - **INBAND DS1** - In-band signaling state enabled for this DS1. Entries: N (for In-band disabled), or Y (for in-band enabled).
-

Provisioning (cont'd)

INPUT: VERIFY 16ba

VER:VFUNC XTSID3U,FD1 a,DT1 b,FD2 c,DT2 d!EOT

OUTPUT: VERIFY 7g
4E24>

```

VER:MISC;OPT(XTSID3U):          TSI MEMN --, D3UN -,
REM ALARM ---, MAX LBO ---, DS3 APPL ---, INBAND D3U -,

                        DS1 INFO

DS1 NUMBER   1  2  3  4  5  6  7  8  9 10 11 12 13 14,
EQUIPAGE     -, -, -, -, -, -, -, -, -, -, -, -, -, -,
FRAME FORMAT -, -, -, -, -, -, -, -, -, -, -, -, -, -,
STATIC A/B   -, -, -, -, -, -, -, -, -, -, -, -, -, -,
INBAND DS1   -, -, -, -, -, -, -, -, -, -, -, -, -, -,

DS1 NUMBER   15 16 17 18 19 20 21 22 23 24 25 26 27 28,
EQUIPAGE     -, -, -, -, -, -, -, -, -, -, -, -, -, -,
FRAME FORMAT -, -, -, -, -, -, -, -, -, -, -, -, -, -,
STATIC A/B   -, -, -, -, -, -, -, -, -, -, -, -, -, -,
INBAND DS1   -, -, -, -, -, -, -, -, -, -, -, -, -, -,

```

RECENT CHANGE INPUT SOURCE - FORM # 704

Fig. 3-7. Output Verify Form 7g

Provisioning (cont'd)

Output Verify Form 7h

Figure 3-8 shows Output Verify Form 7h. This form is modified to include four new items on an XTSI-basis and six new items for each of the two controllers.

Population Rule Changes:

- **CSP** - Hardware version of the CSP pack for XTSI controller 0 or 1.
Entries: 0 (for no CSP pack present) or 1 (for initial 4WB9 CSP pack - needed for in-band).
 - **PUBI** - Hardware version of the PUBI pack for XTSI controller 0 or 1.
Entries: 0 (for initial KBN16 PUBI pack) or 1 (for KBN23 PUBI pack - needed for in-band).
 - **GRAM** - Hardware version of the GRAM pack for XTSI controller 0 or 1.
Entry: 0 (for initial UN557 GRAM pack).
 - **CIA** - Hardware version of the CIA pack for XTSI controller 0 or 1.
Entries: 0 (for initial UN547 CIA pack) or 1 (for UN650 CIA pack - needed for in-band).
 - **ALF** - Hardware version of the ALF pack for XTSI controller 0 or 1. Entry: 0 (for initial 4WB6 ALF pack).
 - **EXEC** - Hardware version of the EXEC pack for XTSI controller 0 or 1.
Entry: 0 (for initial UN548 EXEC pack) or 1 (for UN549 EXEC pack - needed for in-band).
 - **XTSI FRAME INBAND ENABLED** - Hardware generation for the XTSI.
Entries: N (for XTSI without in-band signaling) or Y (for XTSI with in-band signaling enabled).
 - **IBUEQ** - **IBU** Equipage. Entries: U (Unequipped), G (Grow), S (Special Grow), or O (Operational).
 - **IBUHV** - **IBU** hardware version. Entry: 0 (initial hardware version).
 - **IBUSV** - **IBU** software version. Entries: 0 to 7.
 - **D3UHV** - D3U Hardware Version. Entries: blank, 0 (for initial 4WB3 D3U pack), or 1 (for 4WB11 In-Band Capable D3U pack).
-

Provisioning (cont'd)

INPUT: VERIFY 16ba

VER:VFUNC SUXTSI, FD1 a, DT1 b!EOT

OUTPUT: VERIFY 7h
4E24>

```

VER:MISC;OPT(SUXTSI):           XTSI MEMN --,

XTCN    0,1
XTCHV   _,-
XTCSV   _,-

                CSP,PUBI,GRAM,CIA,ALF,EXEC,
XTC0 PACKS  -,  -,  -,  -,  -,  --,
XTC1 PACKS  -,  -,  -,  -,  -,  --,

XTSI FRAME INBAND ENABLED -,

IBUEQ -,
IBUHV -,
IBUSV -,

D3UN    0 1 2 3 4 5    6 7
D3UEQ   _,-,-,-,-,-, _,-,
D3UHV   _,-,-,-,-,-, _,-,
D3USV   _,-,-,-,-,-, _,-,

SPUN    0 1 2 3 4 5 6 7 8 9    10 11
SPSEQ   _,-,-,-,-,-,-,-,-,-, _,-,
SPUHV   _,-,-,-,-,-,-,-,-,-, _,-,
SPUSV   _,-,-,-,-,-,-,-,-,-, _,-,

```

RECENT CHANGE INPUT SOURCE - FORM #705

Fig. 3-8. Output Verify Form 7h

Provisioning (cont'd)

Output Verify Form 7m

Figure 3-9 shows Output Verify Form 7m. This is a new form with generic 4E24. It is used to output the IBU subtype data associated with an XTSI and is requested via the 16ba input message.

Population Rules:

- **VER:SUBUTP;OPT(XTSIIBU)**
 - **XTSI MEMN** - TSI Member Number of an XTSI. Entries: 2 to 62 - even numbers only.
 - **TANS RESERVED** - Indicates whether the Trunk Appearance Numbers (TANs) associated with the IBU are reserved. Entries: N, or Y.
 - **MF OR DTMF** - Type of signaling (receivers/transmitters) supported by the IBU. Entries: MF (64 MF receivers, and 64 MF transmitters), or DTMF (64 DTMF receivers, and 64 DTMF transmitters).
 - **XCVR CONFIG** - Type of miscellaneous service circuits the IBU supports. There are two possible types: 1) 16 CCTs, or 2) 12 CCTs plus four miscellaneous service circuits (i.e., digital Milliwatt, digital Milliwatt-10, Common Systems Tone Detector, and CCT test). Entries: CCT (for 16 CCTs), or MISC (for 12 CCTs and miscellaneous circuits).
-

Provisioning (cont'd)

INPUT: VERIFY 16ba

VER:VFUNC XTSIIBU, FD1 a, DT1 b!EOT

OUTPUT: VERIFY 7m

```
VER:SUBUTP;OPT (XTSIIBU) :            XTSI MEMN -- ,  
TANS RESERVED - ,  
MF OR DTMF ---- ,  
XCVR CONFIG ----- ,
```

RECENT CHANGE INPUT SOURCE - FORM # 708

Fig. 3-9. Output Verify Form 7m

TAN Assignments

Table 3-D shows Trunk Appearance Number (TAN) to Service Circuit Assignment. This table should be used with Recent Change Form 200.

Note: The TANs for Milliwatt and Milliwatt –10db are not provisionable via recent change. They should be provisioned through ODA growth/retrofit or overwrites.

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
0	7	41	RCVR	00	12
0	7	42	XMTR	00	12
0	7	43	RCVR	01	12
0	7	44	XMTR	01	12
0	7	45	RCVR	02	12
0	7	46	XMTR	02	12
0	7	47	RCVR	03	12
0	7	48	XMTR	03	12
0	7	49	RCVR	04	12
0	7	50	XMTR	04	12
0	7	51	RCVR	05	12
0	7	52	XMTR	05	12
0	7	53	RCVR	06	12
0	7	54	XMTR	06	12
0	7	55	RCVR	07	12
0	7	56	XMTR	07	12
0	7	57	RCVR	08	12
0	7	58	XMTR	08	12
0	7	59	RCVR	09	12
0	7	60	XMTR	09	12
0	7	61	RCVR	10	12
0	7	62	XMTR	10	12
0	7	63	RCVR	11	12
0	7	64	XMTR	11	12
0	7	65	RCVR	12	13
0	7	66	XMTR	12	13
0	7	67	RCVR	13	13
0	7	68	XMTR	13	13
0	7	69	RCVR	14	13
0	7	70	XMTR	14	13
0	7	71	RCVR	15	13
0	7	72	XMTR	15	13

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments (cont'd)

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
0	7	73	RCVR	16	13
0	7	74	XMTR	16	13
0	7	75	RCVR	17	13
0	7	76	XMTR	17	13
0	7	77	RCVR	18	13
0	7	78	XMTR	18	13
0	7	79	RCVR	19	13
0	7	80	XMTR	19	13
0	7	81	RCVR	20	13
0	7	82	XMTR	20	13
0	7	83	RCVR	21	13
0	7	84	XMTR	21	13
0	7	85	RCVR	22	13
0	7	86	XMTR	22	13
0	7	87	RCVR	23	13
0	7	88	XMTR	23	13
0	7	89	RCVR	24	14
0	7	90	XMTR	24	14
0	7	91	RCVR	25	14
0	7	92	XMTR	25	14
0	7	93	RCVR	26	14
0	7	94	XMTR	26	14
0	7	95	RCVR	27	14
0	7	96	XMTR	27	14
0	7	97	RCVR	28	14
0	7	98	XMTR	28	14
0	7	99	RCVR	29	14
0	7	100	XMTR	29	14
0	7	101	RCVR	30	14
0	7	102	XMTR	30	14
0	7	103	RCVR	31	14
0	7	104	XMTR	31	14

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments (cont'd)

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
0	7	105	VPA-CCT		14
0	7	106	VPA-CCT		14
0	7	107	VPA-CCT		14
0	7	108	VPA-CCT		14
0	7	109	VPA-CCT		14
0	7	110	VPA-CCT		14
0	7	111	VPA-CCT		14
0	7	112	VPA-CCT		14

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments (cont'd)

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
1	7	41	RCVR	32	26
1	7	42	XMTR	32	26
1	7	43	RCVR	33	26
1	7	44	XMTR	33	26
1	7	45	RCVR	34	26
1	7	46	XMTR	34	26
1	7	47	RCVR	35	26
1	7	48	XMTR	35	26
1	7	49	RCVR	36	26
1	7	50	XMTR	36	26
1	7	51	RCVR	37	26
1	7	52	XMTR	37	26
1	7	53	RCVR	38	26
1	7	54	XMTR	38	26
1	7	55	RCVR	39	26
1	7	56	XMTR	39	26
1	7	57	RCVR	40	26
1	7	58	XMTR	40	26
1	7	59	RCVR	41	26
1	7	60	XMTR	41	26
1	7	61	RCVR	42	26
1	7	62	XMTR	42	26
1	7	63	RCVR	43	26
1	7	64	XMTR	43	26
1	7	65	RCVR	44	27
1	7	66	XMTR	44	27
1	7	67	RCVR	45	27
1	7	68	XMTR	45	27
1	7	69	RCVR	46	27
1	7	70	XMTR	46	27
1	7	71	RCVR	47	27
1	7	72	XMTR	47	27

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments (cont'd)

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
1	7	73	RCVR	48	27
1	7	74	XMTR	48	27
1	7	75	RCVR	49	27
1	7	76	XMTR	49	27
1	7	77	RCVR	50	27
1	7	78	XMTR	50	27
1	7	79	RCVR	51	27
1	7	80	XMTR	51	27
1	7	81	RCVR	52	27
1	7	82	XMTR	52	27
1	7	83	RCVR	53	27
1	7	84	XMTR	53	27
1	7	85	RCVR	54	27
1	7	86	XMTR	54	27
1	7	87	RCVR	55	27
1	7	88	XMTR	55	27
1	7	89	RCVR	56	28
1	7	90	XMTR	56	28
1	7	91	RCVR	57	28
1	7	92	XMTR	57	28
1	7	93	RCVR	58	28
1	7	94	XMTR	58	28
1	7	95	RCVR	59	28
1	7	96	XMTR	59	28
1	7	97	RCVR	60	28
1	7	98	XMTR	60	28
1	7	99	RCVR	61	28
1	7	100	XMTR	61	28
1	7	101	RCVR	62	28
1	7	102	XMTR	62	28
1	7	103	RCVR	63	28
1	7	104	XMTR	63	28

Provisioning (cont'd)

Table 3-D. – TAN to Service Circuit Assignments (cont'd)

TAN of ODD XTSI			SVCT #		D3U 5 Decimal DS1 #
SPC	LVL	TS			
1	7	105	VPA-CCT		28
1	7	106	VPA-CCT		28
1	7	107	VPA-CCT		28
1	7	108	VPA-CCT		28
VERSION A - VPA-CCT Transceivers only					
1	7	109	VPA-CCT		28
1	7	110	VPA-CCT		28
1	7	111	VPA-CCT		28
1	7	112	VPA-CCT		28
VERSION B - Miscellaneous Service Circuits					
1	7	109	CCT-T		28
1	7	110	CSTD		28
1	7	111	MWAT		28
1	7	112	MWM10		28

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting

Maintenance and Troubleshooting

The XTSI Release 3 affects Trunk Maintenance, and Traffic and Plant Maintenance.

The MF or DTMF service circuits in an XTSI cabinet should be treated the same as DIF-based MF or DTMF service circuits. This applies to trunk measurements, traffic measurements, dial-tone measurements, and so on. No new tools are added for XTSI Release 3.

Trunk Maintenance

Trunk Maintenance is responsible for the following basic functions related to the placement of service circuits on the XTSI:

- Removal and restoral of service circuits on the IBU during hardware outage and hardware restoral situations.
 - An interface with Recent Change during the growth/degrowth of an IBU to properly mark the state of the affected circuits.
 - During D3U outages, the IBU digroups on the affected unit are not marked as out of service for the D3U outage.
 - During a D3U Facility Alarm (red, yellow or blue), the IBU digroups on the affected unit are not marked as out of service for the D3U Facility Alarm.
 - The TM audit 48 D3U Facility Alarm checking function does not audit IBU digroups.
 - The **VER:TRKNAME TTY** output includes an indication that a given trunk is resident on an IBU as well as the XTSI/D3U.
 - The printing of a **REPT:SDU** message involving an IBU outage is major-alarmed.
 - The **INIT:DGSTAT** and **INIT:PMSTAT** messages do not request updated digroup information from Fault Recovery and do not indicate to FR that performance monitoring initialization should occur on IBU digroups.
 - TM does not request DS1(digroup) compelled reports from Fault Recovery on any IBU digroup.
-

Maintenance/Troubleshooting (cont'd)

Traffic And Plant Measurements New measurements for XTSI Release 3 and their definitions are given in Table 3-E.

Table 3-E.- Definitions of New Traffic and Plant Measurements

Count	Definition
TCL IBU	This count is incremented by one each time a call is lost during software initialization, a recovery phase, or because of a failure of an IBU; and the call had progressed to or beyond the "waiting-for-answer" state.
IBU AMO	For administration purposes, each of the units specified is assigned, via CMS 1A, to a Terminal Equipment Center (TEC 1 to 5). All maintenance usage for units assigned to TEC 1 to 5 are combined and accumulated in a register assigned to the Maintenance Operations Center (MOC). The occupancy counter for this unit is scanned every 180 seconds. After each scan, the accumulating register for the unit type is incremented by the number of units found maintenance busy. This data is converted to hundred-call seconds (CCS) units before output. Thus, the printout of the register for the IBU reflects in CCS the amount of time the units were maintenance busy. No maintenance usage is charged in a frame that is duplex failed.
IBU OUT	This is the accumulated outage for the IBU. This counter contains the time in CCS that the specified terminal units are not available for service. The Service Degrading Conditions Table is scanned every 10 seconds and the number of units found failed in each category is added to the plant counters. Outage is defined as follows: SP, VIF, DT, DIF and EST – Duplex controller failure VIU, DTU, DIU, ESU, D3U, IBU - out-of-service unit is not protection switched. No outage is counted against units resident in a duplex failed frame.
IBU UE	This counter counts malfunctions, the symptoms of which cannot be reproduced under program control. An interrupt associated with the IBU causes this counter to be incremented by one. The unit Fault Recognition program increments this counter.
IBU LF	This item is defined as a fault occurrence that can be resolved through analysis to a replaceable equipment unit. This counter is incremented by one when an interrupt causes execution of the FR program, which requests that the unit be diagnosed; and the diagnostic finds the trouble source.

Maintenance/Troubleshooting (cont'd)

Table 3-E.- Definitions of New Traffic and Plant Measurements (cont'd)

Count	Definition
IBU NLF	This register is incremented by one when a fault occurs that cannot be resolved through analysis to a replaceable equipment unit. It is incremented only when a fault recognition program has requested the diagnostic. [The unit diagnostic would complete with an All Tests Pass (ATP) result.]
IBU PDGN	This counter is incremented by one each time the unit diagnostic program is executed, unless its execution has been manually requested.
IBU MDGN	Each time the unit diagnostic program is executed by a manual request, this counter is incremented by one.
IBU PATP	This counter is incremented by one each time the unit diagnostic program is executed with an ATP result. This does not include diagnostics requested manually.
IBU MATP	This counter is incremented by one each time the unit diagnostic program is executed by a manual request with an ATP result.

Transition Considerations

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 1 or Release 2 Generic for this feature to be fully operational.
Feature Activation	This feature is activated by all of the following: • Software deployment • Recent Change/Verify (RC/V) – Office Data Assembler (ODA) • Hardware deployment.

Input/Output Manual Pages

Input/Output Manual Pages

Table 3-F lists Input and Output (I/O) messages that are new, modified, or deleted for XTSI Release 3. New and modified messages in 4E24 and 4E24R2 are provided in Appendix 1 of this document.

Table 3-F. – Input and Output Messages

Message ID	Type	New/Mod/Del	Release
ALW:XTSI	Input	Modified	4E24R2
ANALY:XTSI	Input	Deleted	4E24R2
CLR:TSIBP	Input	Modified	4E24R2
COPY:XTSI	Input	Modified	4E24R2
DGN:XTSI	Input	Modified	4E24R2
DUMP:TSIMEM	Input	Modified	4E24R2
DUMP:XTSI-IBU	Input	New	4E24R2
DUMP:XTSI-SPU	Input	Modified	4E24R2
EX:XTSI	Input	Modified	4E24R2
INH:XTSI	Input	Modified	4E24R2
INIT:PMOS-UTIL	Input	Modified	4E24R2
LOAD:TSIMEM	Input	Modified	4E24R2
LOAD:XTSI-IBU	Input	New	4E24R2
LOAD:XTSI-IREG	Input	Modified	4E24R2
OP:TSIBP	Input	Modified	4E24R2
RMV:XTSI	Input	Modified	4E24R2
RST:XTSI	Input	Modified	4E24R2
RST:XTSI-ALL	Input	Modified	4E24R2
SET:TSIBP	Input	Modified	4E24R2
STOP:ANALY-XTSI	Input	Deleted	4E24R2
UPD:XTSI	Input	Modified	4E24R2
VER:VFUNC	Input	Modified	4E24R2
VER:VFUNC-STAT	Input	Deleted	4E24
VER:VFUNC-XTSIIB	Input	Modified	4E24R2
ANALY:XTSI	Output	Deleted	4E24R2
CLR:TSIBP	Output	Modified	4E24R2
COPY:XTSI	Output	Modified	4E24R2
DGN:XTSI-ILL	Output	Modified	4E24R2
DGN:XTSI-NOT	Output	Modified	4E24R2
DGN:XTSI-PUB	Output	Modified	4E24R2

Input/Output Manual Pages (cont'd)

Table 3-F. – Input and Output Messages (cont'd)

Message ID	Type	New/Modified	Release
DGN:XTSI-TERM	Output	Modified	4E24R2
DGN:XTSI-TEST	Output	Modified	4E24R2
DUMP:TSI-CREG-X	Output	Deleted	4E24R2
DUMP:TSIMEM	Output	Modified	4E24R2
DUMP:XTSI-CREG	Output	Modified	4E24R2
DUMP:XTSI-D3U	Output	Modified	4E24
DUMP:XTSI-IBU	Output	New	4E24R2
DUMP:XTSI-IREG	Output	Modified	4E24R2
DUMP:XTSI-SPU	Output	Modified	4E24
EX:XTSI-ADDR	Output	Modified	4E24R2
EX:XTSI-ILL	Output	Modified	4E24R2
EX:XTSI-LOOP	Output	Modified	4E24R2
EX:XTSI-NOT	Output	Modified	4E24R2
EX:XTSI-PUB	Output	Modified	4E24R2
EX:XTSI-SUSP	Output	Modified	4E24R2
EX:XTSI-TERM	Output	Modified	4E24R2
EX:XTSI-TEST	Output	Modified	4E24R2
LOAD:TSIMEM	Output	Modified	4E24R2
LOAD:XTSI-IBU	Output	New	4E24R2
LOAD:XTSI-IREG	Output	Modified	4E24
OP:PMOS	Output	Modified	4E24R2
OP:SDC	Output	Modified	4E24R2
OP:TSIBP	Output	Modified	4E24R2
REPT:0	Output	Modified	4E24R2
REPT:PMOS-TSKID	Output	Modified	4E24R2
RMV:XTSI	Output	Modified	4E24R2
RST:XTSI	Output	Modified	4E24R2
RST:XTSI-SCHEDUL	Output	Modified	4E24R2
SET:TSIBP	Output	Modified	4E24R2
STOP:ANALY-XTSI	Output	Deleted	4E24R2
UPD:XTSI	Output	Modified	4E24R2
VER:MISC-SUXTSI	Output	Modified	4E24R2
VER:MISC-XTSID3U	Output	Modified	4E24
VER:STAT-XTSIAB	Output	Deleted	4E24
VER:SUBUTP-XTSII	Output	New	4E24

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4 Segmentation Directory Phase 3 — Release 1 Feature (5641)

Overview

Segmentation Directory (SD) Phase 3 — Release 1 migrates the Government Emergency Telecommunications Service (GETS) services to the SD architecture.

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Feature Description

Background

The primary objective of SD Phase 1 was to deploy architecture capabilities in the network and test them with a service, Positive Call Processing (PCP). The SD network element, which was deployed in Phase 1, consists of the Directory Function Application (1DFA) supported by the Distributed Computing Platform (1DCP).

The primary objective of SD Phase 2 was to transition all Automatic Number Identification (ANI)-based services to the SD architecture and remove the dependency on the 4ESS™ switch ANI Trigger Table. This resulted in most ANI-based services being migrated to the SD architecture as part of SD Phase 2, including the following list of services:

- Software Defined Network (SDN)
- Universal Subscriber Data Structure (USDS)
- POTS/BLDS
- Positive Call Processing (PCP) Cellular
- Switched Data Structure (SDS).

In addition, the following ANI Trigger Table Indicators were also migrated as part of SD Phase 2:

- *AT&T TrueVoice** ANI iPCP for switched direct connect customers
- 1+DL Blocking indicator for Directory Assistance calls
- *Quiet Hear** services indicator for 800-Call ATT calls
- Calling Party Pays Airtime (CPPA) indicator for *Easy Reach 500** calls
- Customer Specific Routing Option (CSRO) for switched access/direct connect customers.

* Registered service marks of AT&T.

Phase 3 — Release 1 Feature Functionality

The primary objective of this feature, SD Phase 3 — Release 1, is to migrate the GETS services to the SD architecture. In addition, SD Phase 3 — Release 1 supports 10-Digit Rate Based Control (RBC) and HICOST.

Feature Description (cont'd)

Background (cont'd)

These capabilities are transitioned in the same fashion used for SD Phase 2. An SD Transition Type is defined for GETS and the associated SD Transition Status is set to Present Mode of Operation (PMO) in each 4ESS switch. In the SD, the SD Transition Status associated with the Precedence Index (PI) is also set to PMO. The transition to SD Mode of Operation (SMO) on a switch-by-switch basis is accomplished by setting both the SD Transition Status in the switch and the SD Transition Status associated with that switch in all SDs to SMO at approximately the same time.

Segmentation Directory Features

Table 4-A lists the Segmentation Directory features to date, along with their respective releases.

Table 4-A. Segmentation Directory Features

Feature	Feature #	Release
SD Phase 1	4564	22R2
SD Black Hole Detection	5241	22R4
SD Phase 2 – Release 1	4880	23R1
SD Phase 2 – Release 2	4880a	23R2
SD Phase 2 – Release 3	4880b	23R3
SD Performance Enhanced	6272	23R3
SD CIC Based	6426	23R3
SD Phase 2 – Release 4	4880c	23R4
SD Phase 3 – Release 1	5641	24R2
SD Phase 3 – Release 2	5641a	24R3
SD Phase 3 – Release 3	5641b	24R3

Feature Description (cont'd)

4ESS Switch Requirements

4ESS Switch Direct Link Node (DLN)

For SD Phase 3 — Release 1, two new kinds of screening are performed which affect whether or not the 4ESS switch DLN generates an SDQuery message. These screening types are as follows:

- Screening of HICAP traffic
- 10d DN RBC.

Screening of HICAP Traffic

HICAP is designed for customers who must support very peaked traffic, completing large volumes of traffic for relatively short intervals, with minimal impact to network performance. This peaked traffic occurs at anticipated points in time, so the network can be provisioned appropriately. Most HICAP traffic is for 900 numbers, but some is for 8YY numbers. Although no 8YY traffic is provisioned in Phase 3, the HICOST table supports customers with network management needs within the Phase 3 time-frame.

The 4ESS switch must support a new HICAP Operations Screening Table (HICOST) in the DLN. If the IAM contains an NANP Called Party Number with a value that matches an entry in the HICOST, the DLN does not generate an SDQuery message and shall pass the IAM to the 1B per current SD procedures.

10-Digit DN RBC

The following is a list of the 10d DN RBC screening:

- the CPN parameter of the incoming IAM contains an NANP number which is under a 10-digit DN RBC, and there are tokens in the token bank associated with the DN, the 4ESS switch DLN removes one token from the token bank associated with the DLN and continues with generating and sending the SDQuery message per existing requirements.

Feature Description (cont'd)

Feature Interactions

Feature Interactions

GETS as the Routing Number on an SDN-NRA Call

If a GETS number is received on an SDN NRA call, the call follows the PMO SDN NRA call flow with the 4ESS switch launching a PMO GETS NCP query, even if the GETS TT is set to SMO in the switch.

PCP Access to GETS

As PCP transition type excludes GETS calls, PCP access to GETS has GETS transition type and receives GETS SPSI in the SPResponse message.

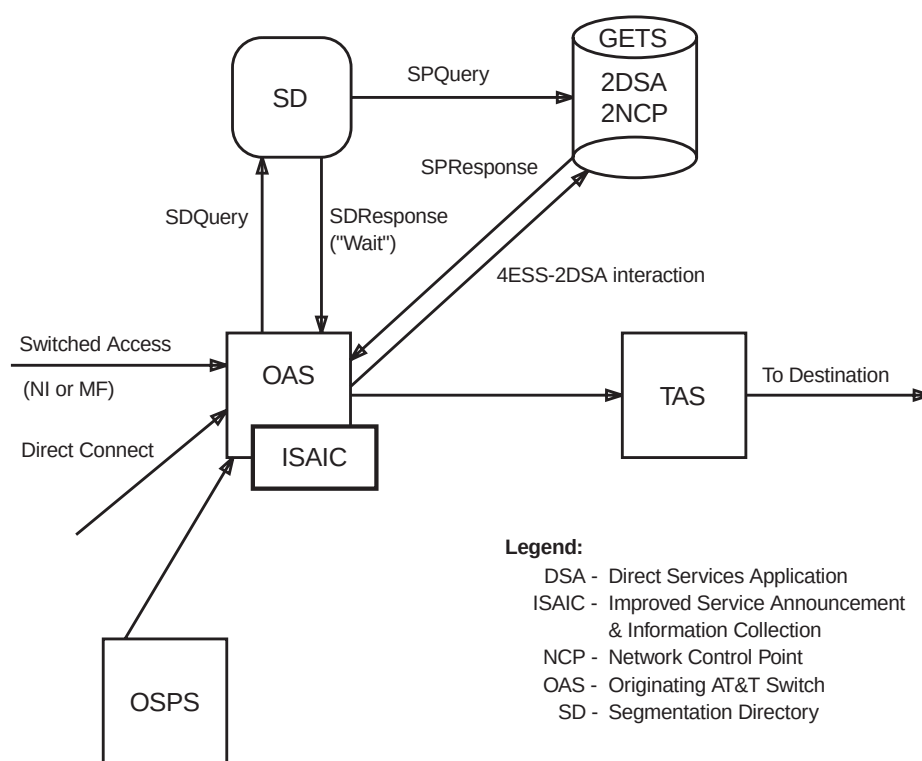
SDN Access to GETS

Table 4-B represents the valid combinations to support SDN Access to GETS. The SDN Transition Status is assumed to be SMO in all of these scenarios, since SDN service was completely transitioned to the SD architecture before any SD Phase 3 services began their transition.

TABLE 4-B. SDN Access to GETS

GETS TS	Call TT	Higher Precedence	Call Flow
PMO	SDN	SDN ANI	SDN SMO flow with PMO GETS NCP query
PMO	GETS	SDN ANI	GETS PMO flow
SMO	SDN	SDN ANI	SDN SMO flow with PMO GETS NCP query
SMO	GETS	SDN ANI	SDN SMO flow with PMO GETS NCP query
SMO	SDN	GETS DN	GETS SMO flow
SMO	GETS	GETS DN	GETS SMO flow

Call Flow



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Figure 4-1. GETS Call Flow Without Service Assist

Call Flow (cont'd)

Call Flows

GETS Call Flows

There are several call flow scenarios associated with this phase. Figure 4-1 illustrates the GETS Call Flow without Service Assist. The call flow scenarios associated with the GETS service are as follows:

- GETS Dialed Number (DN) Match Only
- GETS DN Match and SDN ANI Match
- GETS DN Match and PCP, PCP Cellular, Switched Digital Service (SDS), Universal Subscriber Data Structure (USDS), EOLN MEGACOM*, or Business Long Distance Service (BLDS) Non-featured ANI Match
- GETS DN Match and a Carrier Solutions ANI Match
- GETS DN Match and a Carrier Solutions Carrier Identification Code (CIC) Match
- Fail Open Condition

* Registered service mark of AT&T.

GETS DN Match Only Call Flow

1. The SD receives the SDQuery message Transaction Capabilities Application Part (TCAP) Begin from the 4ESS switch and searches the Directory Function Server (DFS) directory tables using Service Type Key, Carrier Selection Key, ANI Key, and DN Key. SD finds a (10-digit) DN match only. SD checks the SD Transition Status of the PI associated with the DN record and the 4ESS switch Point Code (PC)/Subsystem Number (SSN). The SD Transition Status is set to "SMO" in this case.
2. The SD sends an SPQuery (TCAP Begin with prearranged END message) to the GETS No. 2 Directory Service ANI (2DSA)/No. 2 Network Control Point (2NCP).
3. The SD sends an SDResponse message to the 4ESS switch with operation "Wait".
4. The 4ESS switch receives the SDResponse message. Based on receipt of the "Wait" operation, the 4ESS switch waits for instructions from 2DSA/2NCP.
5. The 2DSA/2NCP receives the SPQuery. Based on the Customer ID, 2DSA/2NCP retrieves the GETS Call Processing Record (CPR).

Call Flow (cont'd)

**Call Flow
(cont'd)**

6. The Customer Application Logic (CAL) in the CPR indicates that an authorization code and destination number need to be collected from the caller. The 2DSA/2NCP sends a TCAP Begin message (SPResponse) to the 4ESS switch. An SPSI of GETS is included in the SD Correlate operation. The instructions to the 4ESS switch in the SPResponse depend upon the Node Capabilities information in the SPQuery, as follows:

- If Improved Service Announcement and Information Collection (ISAIC) is available at the Originating ASN Switch (OAS), the 2DSA/2NCP instructs the OAS to play appropriate tones/announcements and collect the authorization code and the destination number.
- If ISAIC is not available at the OAS, the 2DSA/2NCP instructs the OAS to perform a normal service assist, and subsequently the 2DSA/2NCP instructs the OAS the service-assisted 4ESS switch to play appropriate tones/announcements and collect the authorization code and destination number. Correlation ID is sent to the first TCAP message sent to the switch to initiate the Service Assist. Service Assist is attempted a maximum of two times for GETS. If neither attempt is successful, the 2DSA/2NCP instructs the OAS to use its Dial Tone Multifrequency (DTMF) receivers to play tones prompting the caller and to collect digits. If the caller does not enter the proper number of digits at this point, the 4ESS switch final-handles the call, playing a Vacant Code Announcement (VCA).

If the call arrived on an international trunk, then before playing the tones/announcements, the OAS (or assisting switch, if any) sends an early Address Complete Message (ACM) (for INUP and TUP signaling) followed by an early Answer Message (ANM) back to the foreign administration.

7. The collected digits are sent back to the GETS 2DSA/2NCP.

Call Flow (cont'd)

Call Flow (cont'd)

8. The CAL validates the caller-entered authorization code and the destination number. The destination number can be one of the following:
 - 710-NXX-XXXX (SRAS)
 - NPA-NXX-XXXX (POTS)
 - 011-CC-NN (International)
 - N11-XXX-XXXX (Pseudo-Destination Number (PDN))
 - XXX-XXXX (PDN).
 9. Call processing continues as per existing requirements:
 - If the authorization code is invalid, and the caller has been prompted three times, 2DSA/2NCP directs the 4ESS switch to re-prompt the caller to enter the authorization code.
 - The CPR determines whether the destination number is a PDN.
 - If the destination number is invalid, or not allowed for the entered authorization code, 2DSA/2NCP directs the 4ESS switch to play an appropriate VCA.
 10. 2DSA/2NCP instructs the 4ESS switch to record and route the call.
End of Call Flow.
-

Call Flow (cont'd)

Call Flow (cont'd)

GETS DN Match and SDN ANI Match Call Flow

1. The SD receives the SDQuery message (TCAP BEGIN) from the 4ESS switch and searches the DFS directory tables using Service Type Key, Carrier Selection Key, ANI Key, and DN Key. The SD finds matches on ANI and DN; then and one of the following happens:
 - The SD determines that the DN matched record has a higher precedence than the ANI matched record. *Proceed to Step 2.*
 - The SD determines that the ANI matched record has a higher precedence than the DN matched record. *Proceed to Step 12.*
2. The SD checks the SD Transition Status of the PI associated with the DN record and the 4ESS switch PC/SSN. The SD Transition Status is set to "SMO" in this case. (The DN record does not have a higher precedence than the ANI record until GETS has transitioned to SMO at all 4ESS switches).
3. The SD sends an SPQuery (TCAP BEGIN with prearranged END message) to the GETS 2DSA/2NCP (The SPQuery message includes the ANI FI parameter, if any ANI FIs in the ANI matched record have non-default values).
4. The SD sends an SDResponse message to the 4ESS switch with operation "Wait".
5. The 4ESS switch receives the SDResponse message. Based on receipt of the Wait operation, the 4ESS switch waits for instructions from 2DSA/2NCP.
6. The 2DSA/2NCP receives the SPQuery.
7. The CAL in the CPR indicates that an authorization code and destination number need to be collected from the caller. The 2DSA/2NCP sends a TCAP Begin message (SPResponse) to the 4ESS switch. An SPSI of GETS is included in the SD Correlate operation. The instructions to the 4ESS switch in the SPSResponse depend upon the Node Capabilities information in the SPQuery, as follows:
 - If ISAIC is available at the OAS, the 2DSA/2NCP instructs the OAS to play appropriate tones/announcements and collect the authorization code and the destination number.

Call Flow (cont'd)

Call Flow (cont'd)

- If ISAIC is not available at the OAS, the 2DSA/2NCP instructs the OAS to perform a normal service assist, and subsequently the 2DSA/2NCP instructs the OAS the service-assisted 4ESS switch to play appropriate tones/announcements and collect the authorization code and destination number. Correlation ID is sent to the first TCAP message sent to the switch to initiate the Service Assist. Service Assist is attempted a maximum of two times for GETS. If neither attempt is successful, the 2DSA/2NCP instructs the OAS to use its DTMF (Tone) receivers to play tones prompting the caller and to collect digits. If the caller does not enter the proper number of digits at this point, the 4ESS switch final-handles the call, playing a Vacant Code Announcement (VCA).

If *AT&T TrueVoice* is not applied to the call, the TV CSRO (ANI) instruction is included in the Invoke Switch Capacity operation. If the 1+DL feature is to be blocked on a Directory Assistance call, the “1+DIRECToryLINK Blocking – Apply” instruction is included in the Invoke Switch Capability operation. (However, according to current service preferences, the CAL in the GETS CPR should ignore any 1+DL Blocking ANI FI it receives, and allow 1+Directory Link on all GETS Directory Assistance calls. In the case in which the 2DSA/2NCP instructs the 4ESS switch to perform a service assist, the Invoke Switch Capacity operation is sent in the SPResponse message. In the case in which the 2DSA/2NCP instructs the OAS itself to play announcements and collect digits, the Invoke Switch Capability operation is sent in the first message from the 2DSA/2NCP that contains a Connection Control–Connect or Connection Control–Temporary Connect operation.

If the call arrived on an international trunk, then before playing the tones/announcements, the OAS (or the assisting switch, if any) sends an early ACM (for INUP and TUP signaling) followed by an early answer message back to the foreign administration.

8. The collected digits are sent back to the GETS 2DSA/2NCP.

Call Flow (cont'd)

**Call Flow
(cont'd)**

9. The CAL validates the caller-entered authorization code and the destination number. The destination number can be one of the following:
 - 710-NXX-XXXX (SRAS)
 - NPA-NXX-XXXX (POTS)
 - 011-CC-NN (International)
 - N11-XXX-XXXX (PDN)
 - XXX-XXXX (PDN).
10. Call processing continues as per existing requirements:
 - If the authorization code is valid, and the caller has been prompted three times, 2DSA/2NCP directs the 4ESS switch to re-prompt the caller to enter the authorization code.
 - The CPR determines whether the destination number is a PDN
 - If the destination number is invalid, or not allowed for the entered authorization code, 2DSA/2NCP directs the 4ESS switch to play an appropriate VCA.
11. 2DSA/2NCP instructs the 4ESS switch to record and route the call.
12. **End of Call Flow.**
12. The SD checks the SD Transition Status of the PI associated with the ANI record and the 4ESS switch PC/SSN. The SD Transition Status is set to "SMO" in this case.
13. The SD sends an SPQuery (TCAP BEGIN) with a prearranged END message) to the 2DSA/2NCP.
14. The SD sends an SDResponse message to the 4ESS switch with operation "Wait".
15. The 4ESS switch receives the SDResponse message. Based on receipt of the Wait operation, the 4ESS switch waits for instructions from 2DSA/2NCP. Also, 2DSA/2NCP receives the SPQuery. The 2DSA/2NCP must be able to accept all TCAP parameters that may appear in an SD Phase 3 2DSA/2NCP query, even though it may ignore many of them (such as, Match Information and Access Type, when processing the SPQuery). Based on the Customer ID, 2DSA/2NCP retrieves the customer record.

Call Flow (cont'd)

Call Flow (cont'd)	16. Call Processing is done as prescribed in the SDN NCP customer record. Then, if: • Interaction with the caller is required to play an announcement and collect digits, the 2DSA/2NCP sends a TCAP BEGIN message (SPResponse) to the switch. An SPSI of SDN is included in the SD Correlate operation. This indicates to the 4ESS switch that further processing should be per existing procedures for SDN service. <i>Proceed to Step 17.</i> • Interaction with the caller is required to play an announcement and terminate the call (includes handoffs), the 2DSA/2NCP sends a TCAP BEGIN or BEGIN with prearranged END message (SPResponse) to the 4ESS switch. An SPSI of SDN is included in the SD Correlate operation. This indicates to the 4ESS switch that further processing should be per existing procedures for the SDN service. <i>Proceed to Step 18.</i> • If a Service Assist is required, the 2DSA/2NCP sends a TCAP BEGIN message (SPResponse) to the 4ESS switch based on the Node Capabilities information. The switch interacts with the 2DSA/2NCP per existing requirements. The 2DSA/2NCP includes the following instructions in the TCAP message if the associated ANI FIs were received in the SPQuery: TV CSRO (Invoke Switch Capability – TV CSRO (ANI)) and 1+DL Blocking (Invoke Switch Capability – 1+DIRECToryLINK Blocking – Apply). An SPSI of SDN is included in the SD Correlate operation. This indicated to the 4ESS switch that further processing should be per existing procedures for the SDN service. <i>Proceed to Step 17.</i> • No interaction is required. The 2DSA/2NCP sends a TCAP BEGIN with prearranged END message (SPResponse) to the switch. The message specifies whether to route or terminate the call. An SPSI of SDN is included in the SD Correlate operation. This indicates to the 4ESS switch that further processing should be per existing procedures for the SDN service. Also, 2DSA/2NCP includes the following instructions in the TCAP message if the associated ANI FIs were received in the SPQuery: TV CSRO [(Invoke Switch Capability – TV CSRO (ANI))] and 1+DL Blocking (Invoke Switch Capability – 1+DIRECToryLINK Blocking – Apply). <i>Proceed to Step 18.</i>

Call Flow (cont'd)

Call Flow (cont'd)

17. The 4ESS switch receives the SPResponse from 2DSA/2NCP. The switch plays an announcement, collects digits, and sends the digits back to 2DSA/2NCP in a TCAP CONTINUE message. If the digits are invalid or if additional digits need to be collected, the 2DSA/2NCP requests additional digit collection through TCAP CONTINUE messages. Once digit is complete, the customer record on the 2DSA/2NCP determines whether the call is allowed or blocked and sends a TCAP END message to the switch with instructions. If the call is to be allowed, 2DSA/2NCP includes the following instructions in the TCAP message if the associated ANI FIs were received in the SPQuery (and if they were not already sent in an SPResponse requesting a service assist): TV CSRO (Invoke Switch Capability – TV CSRO (ANI)) and 1+DL Blocking (Invoke Switch Capability – 1+DIRECToryLINK Blocking – Apply).
18. Based on instructions from 2DSA/2NCP, one of the following happens:
 - If the call is allowed (that is, 2DSA/2NCP instructs the switch to route the call), the routing number returned from 2DSA/2NCP is the GETS number (710-627-4387). The 4ESS switch generates an Automatic Message Accounting (AMA) record (based on the information received from 2DSA/2NCP) and checks the routing number, determines that it is the GETS number, and queries the GETS 2DSA/2NCP for call handling instructions. This is a PMO GETS query. *Proceed to Step 19.*
 - If the call is denied (that is, the 2DSA/2NCP instructs the switch to play a terminating announcement and terminate the call), the switch plays the announcement and terminates the call. **End of Call Flow.**
19. The GETS 2DSA/2NCP receives the PMO query from the 4ESS switch. Based on the Customer ID, 2DSA/2NCP retrieves the GETS CPR.

Call Flow (cont'd)

Call Flow (cont'd)

20. The CAL in the CPR determines that a GETS Authorization Code and Destination Number have not been collected by the 4ESS switch. The 2DSA/2NCP sends a TCAP Begin message to the 4ESS switch. (Since this is not an SPResponse message, it does not include an SPSI). The instructions to the 4ESS switch depend upon the Node Capabilities information in the SPQuery. If:

- ISAIC is available at the OAS, the 2DSA/2NCP instructs the OAS to play appropriate tones/announcements and collect the authorization code and the destination number.
- ISAIC is not available at the OAS, the 2DSA/2NCP instructs the OAS to perform normal service assist, and subsequently the 2DSA/2NCP instructs the service-assisted 4ESS switch to play appropriate tones/announcements and collects the authorization code and destination number. Service Assist is attempted a maximum of two times for GETS. If neither attempt is successful, the 2DSA/2NCP instructs the OAS to use its DTMF (Tone) receivers to play tones prompting the caller and to collect digits. If the caller does not enter the proper number of digits at this point, the 4ESS switch final-handles the call, playing a VCA.

If the call arrived on an international trunk, then before playing the tones/announcements, the OAS (or the assisting switch, if any) sends an early ACM (for INUP and TUP signaling) followed by an early answer message back to the foreign administrator.

21. The collected digits are sent back to the GETS 2DSA/2NCP.

22. The GETS CAL validates the caller-entered authorization code and destination number. The destination number can be one of the following:

- 710-NXX-XXXX (SRAS)
- NPA-NXX-XXXX (POTS)
- 011-CC-NN (International)
- N11-XXX-XXXX (Pseudo-Destination Number, or PDN)
- XXX-XXXX (PDN).

Call Flow (cont'd)

**Call Flow
(cont'd)**

-
23. Call Processing continues as per existing requirements:
- The authorization code is invalid, and the caller has been prompted three times, 2DSA/2NCP directs the 4ESS switch to play an announcement and terminate the call. Otherwise, 2DSA/2NCP instructs the 4ESS switch to re-prompt the caller to enter the authorization code.
 - The customer's PDN tables (in the CPR) are searched to see if the destination number is a PDN.
 - If the destination number is invalid, or not allowed for the entered authorization code, 2DSA.2NCP directs the 4ESS switch to play an appropriate VCA.
24. The GETS 2DSA/2NCP instructs the 4ESS switch to record and route the call. The 4ESS switch overrides the current AMA record (created in Step 18) with the one requested by the GETS NCP. **End of Call Flow.**
-

Call Flow (cont'd)

Call Flow (cont'd)

GETS DN Match and PCP, PCPCellular, SDS, USDS, EOLN MEGACOM, or BLDS Nonfeatured ANI Match Call Flow

This section covers the scenario where SD finds matches on (non-SDN) ANI and on GETS DN. The ANI match may be on a PCP, PCPCellular, SDS, USDS, EOLN *MEGACOM*, or BLDS Non-featured ANI. The GETS DN match has higher precedence than the ANI match, and its Transition Status is set to “SMO”.

1. The SD receives the SDQuery message (TCAP BEGIN) from the 4ESS switch and searches the DFS directory tables using Service Type Key, Carrier Selection Key, ANI Key, and DN Key. SD finds matches on ANI and DN. The SD determines that the DN matched record has a higher precedence than the ANI matched record. SD checks the SD Transition Status of the PI associated with the DN record and the 4ESS switch PC/SSN. The SD Transition Status is set to “SMO” in this case.
2. The SD sends an SPQuery (TCAP BEGIN with prearranged END message) to the GETS 2DSA/2NCP. (The SPQuery includes the ANI FI parameter, if any ANI FIs in the ANI matched record have non-default values).
3. The SD sends an SDResponse message to the 4ESS switch with operation “Wait”.
4. The 4ESS switch receives the SDResponse message. Based on receipt of the “Wait” operation, the 4ESS switch waits for instructions from 2DSA/2NCP.
5. The 2DSA/2NCP receives the SPQuery. Based on the Customer ID, 2DSA/2NCP retrieves the GETS Call Processing Record (CPR).
6. The CAL in the CPR indicates that an authorization code and destination number need to be collected from the caller. The 2DSA/2NCP sends a TCAP Begin message (SPResponse) to the 4ESS switch. An SPSI of GETS is included in the SD Correlate operation. The instructions to the 4ESS switch in the SPSResponse depend upon the Node Capabilities information in the SDQuery, as follows:
 - If ISAIC is available at the OAS, the 2DSA/2NCP instructs the OAS to play appropriate tones/announcements and collect the authorization code and the destination number.

Call Flow (cont'd)

**Call Flow
(cont'd)**

- If ISAIC is not available at the OAS, the 2DSA/2NCP instructs the OAS to perform a normal service assist, and subsequently the 2DSA/2NCP instructs the OAS the service-assisted 4ESS switch to play appropriate tones/announcements and collect the authorization code and destination number. Correlation ID is sent to the first TCAP message sent to the switch to initiate the Service Assist. Service Assist is attempted a maximum of two times for GETS. If neither attempt is successful, the 2DSA/2NCP instructs the OAS to use its DTMF (Tone) receivers to play tones prompting the caller and to collect digits. If the caller does not enter the proper number of digits at this point, the 4ESS switch final-handles the call, playing a Vacant Code Announcement (VCA).

If the call arrived on an international trunk, then before playing the tones/announcements, the OAS (or assisting switch, if any) sends an early ACM (for INUP and TUP signaling) followed by an early Answer Message (ANM) back to the foreign administration.

7. The collected digits are sent back to the GETS 2DSA/2NCP.
 8. The CAL validates the caller-entered authorization code and the destination number. The destination number can be one of the following:
 - 710-NXX-XXXX (SRAS)
 - NPA-NXX-XXXX (POTS)
 - 011-CC-NN (International)
 - N11-XXX-XXXX (PDN)
 - XXX-XXXX (PDN).
 9. Call processing continues as per existing requirements:
 - If the authorization code is valid, and the caller has been prompted three times, 2DSA/2NCP directs the 4ESS switch to re-prompt the caller to enter the authorization code.
 - The CPR determines whether the destination number is a PDN
 - If the destination number is invalid, or not allowed for the entered authorization code, 2DSA/2NCP directs the 4ESS switch to play an appropriate VCA.
 10. 2DSA/2NCP instructs the 4ESS switch to record and route the call.
- End of Call Flow.**
-

Call Flow (cont'd)

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**Call Flow
(cont'd)****GETS DN Match and a Carrier Solutions ANI Match**

This section covers the scenario where SD finds a match on the GETS DN (710-NCS-GETS) and a Carrier Solutions ANI. This call flow is only possible for IAM intercept cases. Based upon current PMO provisioning, the 4ESS switch kills Carrier Solutions calls that arrive at the 4ESS switch with an 710-NCS-GETS DN. The SMO provides the same result per the following processing:

1. In SMO, SD receives the SDQuery message from the 4ESS switch and searches the DFS using Service Type Key, Carrier Selection Key, ANI Key, and DN Key. SD finds matches on the Carrier Solutions ANI and GETS DN. SD determines that the Carrier Solutions ANI match has a higher precedence than the GETS DN match. SD checks the SD Transition Status of the PI associated with the ANI record and the 4ESS switch PC/SSN. The SD transition is set to "SMO".
 2. The SD sends an SDQuery message to the Carrier Solutions 2DSA/2NCP, including the PI parameter. Dialed number based screening is performed at the 2DSA/2NCP and the call is identified as having a GETS DN.
 3. An SPResponse is sent to the 4ESS switch. The 4ESS switch ignores the SPResponse because the 1B will have already killed the call due to provisioned data that final-handles Carrier Solutions calls that arrive at the 4ESS switch with the GETS DN (710-NCS-GETS). **End of Call Flow.**
-

Call Flow (cont'd)

**Call Flow
(cont'd)****GETS DN Match and a Carrier Solutions CIC Match Call Flow**

This section covers the scenario where SD finds a match on the GETS DN (710-NCS-GETS) and a Carrier Solutions CIC. This call flow is only possible for IAM intercept cases. Based upon current PMO provisioning, the 4ESS switch kills Carrier Solutions calls that arrive at the 4ESS switch with an 710-NCS-GETS DN. SMO provides the same result per the following processing:

1. The SD receives the SDQuery message from the 4ESS switch and searches DFS directory tables using ANI Key, DN Key, Service Type Key, and Carrier Selection Key.
2. The SD does not find a match on a 10-Digit ANI.
3. The SD searches the CIC value in the CIC Directory Table. SD finds a CIC match. The SP Index associated with this CIC record is "0", causing SD to send an SDResponse message back to the 4ESS switch with operation "Proceed-Normal".
4. The 4ESS switch ignores the SDResponse because the 1B will have already killed the call due to provisioned data that final-handles Carrier Solutions calls that arrive at the 4ESS switch with the GETS DN (710-NCS-GETS). **End of Call Flow.**

Call Flow (cont'd)

**Call Flow
(cont'd)****Fail Open Condition Call Flow**

In PMO, a “Fail Open” condition exists if any of the following happens:

- The 4ESS receives an invalid message from the 2NCP.
- The 4ESS switch times out waiting for a response from the 2NCP.
- The 4ESS switch receives a Return Error message, a Reject message, an Abort message, or an Unit Data Service (UDTS) message from the 2NCP.
- The status of both 2NCPs that contain the GETS customer record is prohibited.
- The 4ESS switch installs or has applied ACG controls from the 2NCP.
- The 4ESS switch receives an NCP transfer request from the 2NCP.

In SMO, the last three items do not apply, but the definition “Fail Open” also needs to be expanded to include cases in which the 4ESS switch has difficulty communicating with SD.

The following scenario describes the SMO call flow when a “Fail Open” condition exists:

1. While processing a call with 710-627-4387 as the dialed number or Called Party Number, or if the 4ESS switch has received an SPSI of GETS on this call, the 4ESS switch determines that a “fail open” condition exists because of one of the following:
 - The 4ESS switch must apply default-handling to the call.
 - The 4ESS switch times out waiting for a subsequent response from the 2NCP.
 - The 4ESS switch receives an invalid message from the 2NCP.
 - The 4ESS switch receives a Return Error message, a Reject message, a P-Abort message, a U-Abort message, or an UDTS message from the 2NCP.
2. The 4ESS switch checks the GETS Fail Open indicator. If the indicator is set to:
 - OFF, the 4ESS switch terminates the call to a No Circuits Available announcement.
 - ON, the 4ESS switch *Proceeds to Step 3*.

Call Flow (cont'd)

**Call Flow
(cont'd)**

3. If the call arrived on an international trunk, then the *4ESS* switch sends an early ACM (for INUP and TUP signaling) followed by an early answer message back to the foreign administration, if it has not already done so for this call.
 4. The *4ESS* switch has not already collected both an authorization code and a destination number, it tries to set up a path to a Service Circuit System (SCS) with an ISAIC under the following conditions:
 - If an ISAIC is available, the ISAIC prompts the caller to enter an authorization code and destination number and collects the digits
 - If no ISAIC is available, the authorization code and authorization number are collected via the DTMF receivers in the *4ESS* switch.
 5. The *4ESS* switch does not validate the authorization code, but nevertheless attempts to route the call to the destination number it collected in either Step 4 or before fail open processing was invoked. If the destination is a PDN, the *4ESS* switch cannot translate it, so it terminates the call to a VCA. **End of Call Flow.**
-

Provisioning

Provisioning

SD Transition Type Indicator

A new SD Transition Type Indicator (07) in structure **OD4SDTRSTAT** is assigned for the GETS feature.

Status Indicators

Table 4-C lists the new and existing status indicators.

Table 4-C. Transition Type Status Indicators

Status Indicator	Description	Release
00	PCP Transition Type	4E22
01	POTS Transition	4E23 R1
02	SDN Transition Type	4E23 R2
03	SDS Transition Type	4E23 R2
04	USDS Transition Type	4E23 R3
05	PCP Cellular Transition Type	4E23 R4
06	<i>QuietHear</i> Transition Type	4E23 R4
07	GETS Transition Type	4E24 R2
08	SDI-I Transition Type	4E24 R3
09	GSDN Transition Type	4E24 R3
10	Carrier Solutions Transition Type	4E24 R3
11-63	Unassigned	

Provisioning (cont'd)

Recent Change Forms Affected **RC:MISC Input Message – (BAN)**

The **RC:MISC** input associated with the HICAP capability is affected by this requirement. The specific Recent Change messages affected are as follows:

- **HICAPINBD**
- **HICAPINB1**
- **HICAPINFO**
- **HICAPINF1**

Whenever an entry is added, deleted, or changed via these messages, the usual 1B data manipulations are performed. A new process has been created which populates the ACI HICOST subtranslator with the current view of the 900 and 8YY HICAP called digits in TELCO BCD binary hunttable format. The new ACI resident counter for the number of HICAP entries in the HICOST table is also populated.

Recording (Not Affected)

Network Management

Measurements Table 4-D summarizes the new measurements for 10-Digit Dialed Number RBC. These measurements are 5-minute counts that are sent with the corresponding DN every 5 minutes to NEMOS.

TABLE 4-D. 10-Digit Dialed Number RBC

Peg Count	Frequency	Description
Calls_Attempted_DNRBC	5-min	Measurement of call attempts received for a particular DN that is under 10d DN RBC
SDQ_Block_DNRBC	5-min	Measurement of calls for which the SDQuery is blocked due to an SD 10d DN RBC being applied to a specific DN
Calls_Final_Handled_DNRBC	5-min	Measurement of calls for which a call is final-handled due to an SD 10d DN RBC being applied to a specific DN
Killed_in_DHT	5-min	Counts the number of voice calls killed during SD Default Handling when the 4ESS switch is no longer allowed to query the NCP for services that have transitioned to the SD environment.

Network Management (cont'd)

Measurements (cont'd)

Processing a Proceed Message

If the 4ESS switch default-handles a call due to a receipt of a TCAP END (SDResponse) message with an operation value of “Provide Instructions – Proceed”, and this Proceed component contains a Reason Code parameter and a Service Indicator parameter, the 4ESS switch increments the measurement indicated by the SI and Reason Code as shown in Table 4-E.

Table 4-E. Reason Codes

Service Indicator	Manual Control	Application Overload
GETS	GETS_MC	GETS_AOC
F-CIC-#1	F-CIC#1_MC	F-CIC#1_AOC
F-CIC-#2	F-CIC#2_MC	F-CIC#2_AOC
F-CIC-general	F-CIC-gen_MC	F-CIC-gen_AOC
N-CIC-tot	N-CIC-tot_MC	N-CIC-tot_AOC
Spares 1-10	SPx_MC	SPx_aoc

Processing a Deny Message

There is no change from SD Phase 1.

Processing a Wait Response

If the operation value of the received TCAP END (SDResponse) message for a call with an SD Transition State of SMO is “Provide – Wait for Instructions”, the 4ESS switch increments the SI measurement associated with the SI received in the END message as shown in Table 4-F.

Table 4-F. End Message

Service Indicator	Measurement
GETS	Calls_Directed_To_GETS
F-CIC-#1	Calls_Directed_To_F-CIC#1
F-CIC-#2	Calls_Directed_To_F-CIC#2
F-CIC-general	Calls_Directed_To_Gen
N-CIC-tot	Calls_Directed_To_N-CIC-tot
Spares 1-10	Calls_Directed_To_SPx

Network Management (cont'd)

Measurements (cont'd)

Processing a Query Response

If the operation value of the received TCAP END (SDResponse) message for a call with an SD Transition Status of SMO is "Provide Instructions – Query Service Processor", the 4ESS switch need not increment the aggregate measurement "SDR_Query"; instead it increments the SI measurement associated with the SI received in the END message as shown in Table 4-G.

Table 4-G. End Message

Service Indicator	Measurement
GETS	Calls_Queried_For_GETS
F-CIC-#1	Calls_Queried_For_F-CIC#1
F-CIC-#2	Calls_Queried_For_F-CIC#2
F-CIC-general	Calls_Queried_For_F-CIC-Gen
N-CIC-tot	Calls_Queried_For_N-CIC-tot
Spares 1-10	Calls_Queried_For_SPx

Processing a Revert to PMO Response

There is no change from SD Phase 2.

SP Response Timer Expires

If the SP Response Timer (T_SPR) expires for a call, the 4ESS switch increments the measurement associated with the SI received in the SDResponse message as shown in Table 4-H.

Table 4-H. SDResponse Message

Service Indicator	Measurement
GETS	SPR_GETS_Timeout
F-CIC-#1	SPR_F-CIC#1_Timeout
F-CIC-#2	SPR_F-CIC#2_Timeout
F-CIC-general	SPR_F-CIC-Gen_Timeout
N-CIC-tot	SPR_N-CIC-tot_Timeout
Spares 1-10	SPR_SPx_Timeout

Network Management (cont'd)

Measurements (cont'd)

If the 4ESS switch clears the incoming trunk for any reason while an SP Response Timer or SP Query Timer (T_SPR or T_SPQ) is running, it need not increment the measurement "SPR_abandon"; instead it increments the measurement associated with the SI received in the SDResponse message as shown in Table 4-I.

Table 4-I. SDResponse Message

Service Indicator	Measurement
GETS	SPR_GETS_Abandon
F-CIC-#1	SPR_F-CIC-#1_Abandon
F-CIC-#2	SPR_F-CIC-#2_Abandon
F-CIC-general	SPR_F-CIC-Gen_Abandon
N-CIC-tot	SPR_N-CIC-tot_Abandon
Spares 1-10	SPR_SPx_Abandon

SP Query Timer Expires

If the SP Query Timer (T_SPQ) expires for a call, the 4ESS switch need not increment the measurement "SPQ_timeout"; and instead it increments the measurement associated with the SI received in the SDResponse message as shown in Table 4-J.

Table 4-J. SDResponse Message

Service Indicator	Measurement
GETS	SPQ_GETS_Timeout
F-CIC-#1	SPQ_F-CIC#1_Timeout
F-CIC-#2	SPQ_F-CIC#2_Timeout
F-CIC-general	SPQ_F-CIC-Gen_Timeout
N-CIC-tot	SPQ_N-CIC-tot_Timeout
Spares 1-10	SPQ_SPx_Timeout

Network Management (cont'd)

Default-Handling

The general approach for default-handling is to use “generic” processing for default-handled calls as much as possible and to avoid service-specific processing.

If the call is default-handled due to abnormal conditions following the receipt by the switch of an SDResponse of Proceed which contains an SI parameter, the switch increments a measurement based on the SI received.

If the 4ESS switch default-handles a call for any reason other than receipt of an SDResponse message with an operation value of “Provide Instructions – Proceed” which does not contain a Reason Code parameter, and the switch has received an SDResponse message containing an SI parameter, it increments the default-handling counter associated with the SI received in the SDResponse message as shown in Table 4-K.

Table 4-K. SDResponse Message

Service Indicator	Measurement
GETS	GETS_Default_Handled
F-CIC#1	F-CIC#1_Default_Handled
F-CIC-#2	F-CIC#2_Default_Handled
F-CIC-general	F-CIC-Gen_Default_Handled
N-CIC-tot	N-CIC-tot_Default_Handled
Spares 1-10	SPx_Default_Handled

Network Management (cont'd)

Network Management (cont'd)

The SD Phase 3 introduces new Network Management controls, measurements, and discretizes at the *4ESS* switches. The network management control that is implemented in the *4ESS* switch as part of SD Phase 3 is the 10d Dialed 10d DN RBC, which causes the DLN to block the sending of SDQuery for a particular DN that is under the 10d DN RBC.

10-Digit Dialed Number Rate Based Control

This control is designed to supplement the DFS Application Overload Control (SD AOC) developed in SD Phase 1. The SD AOC reduces the number of SDQueries when the DFS enters a state of high utilization. The 10 Digit Dialed Number Rate Based Control reduces the number of queries associated with a dialed number that may be part of a mass calling event. By focusing on the particular DN that is putting stress on the network, the 10 Digit DN RBC is more selective than the SD AOC in the traffic that it controls. As part of Phase 3, the SDs monitor the number of SDQueries associated with individual DNs. When the number of SDQueries exceeds an established threshold for a particular 10 Digit DN, the SD sends a rate based control message to the *4ESS* switches similar to the message used for the SD AOC. The *4ESS* switches then performs a rate based control on the DN identified by the SD.

New Controls and Measurements

New Controls and Measurements

The new Network Management controls and measurements are as follows:

- The *4ESS* switch shall accept a new Rate Based Control (10d DN RBC). This control is sent by the SD to the *4ESS* switch within a Unidirectional TCAP message. The message contains the following control parameters:
 -
 - Ten Digit Dialed Number
 - Control Duration
 - Token Replenishment Interval
 - Maximum Token Bank
 - Initial Token Bank
 - Token Replenishment Size
 - Control Type (not used)
 - Reason (not used).

The *4ESS* switches should ignore the Control Type field and the Reason field that are included in the TCAP message for the 10d DN RBC.

Network Management (cont'd)

New Controls and Measurements (cont'd)

- For those calls where 10d DN RBC blocks the sending of an SDQuery, the calls will receive the following treatment:
 - Increment the new counter, SDQ_Block_DNRBC
 - If the SD Transition Status of the call is “SMO”, then final-handle the call with a fast busy tone, increment the new counter
 - Increment the calls-attempted count.
- When a 4ESS switch receives a 10d DN RBC message for a DN that is not currently under 10d DN RBC, then a 10d DN RBC for that DN is initiated using the parameters specified in the message using the control parameters previously listed.

The 4ESS switch initializes a Token Bank for that DN in each DLN that performs the Round Robin Algorithm with the Maximum Token Size set to the Maximum Token Bank parameter; put a number of tokens equal to the Initial Token Bank parameter in each token bank; restart the timers for each token bank for the control with the timers specified in the Control Duration parameter and Token Replenishment Interval parameter; and retain the value of the Token Replenishment Size parameter.

- If a particular DN is already being controlled by the 10d DN RBC and a new control message relating to that DN is received, then at the end of the current Token Replenishment Interval the control parameters in the last control message becomes the control parameters for the DN and the control duration interval timers for that DN is reset. If more than one control message relating to that DN is received while awaiting the end of the current token replenishment interval, then the most recent message is used to set the control parameters and control duration at the end of the current Token Replenishment Interval.
- At the expiration of each Token Replenishment Interval, the 4ESS switch adds a number of tokens equal to the Token Replenishment Size to the token bank associated with the DN, without exceeding the Maximum Token Bank size as specified by the Maximum Token Bank parameter.
- The 4ESS switch shall be able to simultaneously support independent 10d DN RBCs against ten different DNs.

Network Management (cont'd)

New Controls and Measurements (cont'd)

- If the 10d DN RBC already exists against the maximum number (10) of DNs and a new 10d DN RBC relating to a new DN (that is, a DN that is not presently being controlled) is received, then the new control will be ignored and the 4ESS switch sends NEMOS a 30-seconds-discrete indicating when a 10d DN RBC message has been ignored due to reaching the maximum number of controlled DNs. If a token is available for a particular DN that is under 10d DN RBC, then the DLN proceeds to search the SD Round Robin Table to determine which SD to send the query to. The search of the SD Round Robin Table follows the same rules used to determine the selection of an SD as would be used in the absence of the 10d DN RBC.
- The determination of whether a call should be controlled by the 10d DN RBC is independent of the determination of whether that call should be controlled by the DFS AOC and is independent of whether the call should be controlled by the 4ESS switch Pre-SDQuery Manual Control.

New Discretes

New Discretes

The following are the new discretes for SD Phase 3:

- The 4ESS switch sends NEMOS a change discrete indicating whether, during the past 30 seconds, any NEMOS-provided controls or overrides have been removed through a maintenance channel.
 - The 4ESS switch sends NEMOS a 30 second discrete indicating whether a 10d DN RBC has caused any SMO calls to be final-handled during the past 30 seconds.
-

Maintenance/Troubleshooting

Final-Handling Codes Two new Final-Handling Codes were added for this feature, as shown in Table 4-L.

TABLE 4-L. Final-Handling Codes

Final-Handling Code	Failure and Handling Method
631	Last Normal Condition — The call was determined to have valid routing, and was determined to be SD query eligible. Irregular Condition — The switch detected a 10 digit DNRBC control which matched the called number. Handling — Final call, idle associated resources.
2113	Last Normal Condition — The GSDN call was determined to be in SMO. Irregular Condition — The call is default-handled (route and record) without SD processing as the GSDN called numbers are not national, these should be killed. Handling — This call is killed.

SD Test Query The 4ESS switch must allow the technician to initiate an SD Query test command (SDQTST) via the switch maintenance channel. A new additional optional parameter (Access Type) must be supported.

Transition Considerations

Feature Deployment	All 4ESS switches in the network must be upgraded to Phase 3 capabilities before any of the SDs are upgraded to Phase 3.
Feature Activation	This feature is turned on automatically with hardware and software deployment; however, all 4ESS switches must be running the 4E24 Generic, Release 2 before transitioning the GETS service.

Input/Output Manual Pages

Input/Output Manual Pages	<u>Input</u> For the Input Message TEST:SD , a new CODE (27) has been added. Refer to Appendix B for details.

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5 Integrated Digital Services Network Operational Enhancements Feature (5843)

Overview

This feature provides the 4ESS™ switch requirements to resolve the following issues:

- B-Channel status mismatch
- Network modification of the Connected Number Identification Element (IE)
- Insertion of Octet 5 to the Bearer Capability IE if omitted
- Acceptance of more than two Progress messages.

In This Chapter

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Feature Description

Introduction

This feature allows the 4ESS switch to perform the following operational procedures:

- Transport the Connected Number IE as coded by a user
 - Coordinate the status of a B-Channel following a rejected call delivery attempt from the network
 - Add Octet 5 to the Bearer Capability IE for Speech and 3.1-kHz calls (if not included by the originating user)
 - Accept two or more Progress messages from a Primary Rate Interface (PRI) user.
-

Connected Number IE

Customers have raised issues regarding the transport of the Connected Number IE by AT&T. This IE is transported without interpretation by the network. It may be sent in the Connect message to identify the actual called party. The actual called party may differ from the original called party because of Automatic Call Distributors (ACDs) or CPE call forwarding features. The IE is often encoded by users as follows:

- Type of Number: Subscriber Number
- Numbering Plan Identification: Private Numbering Plan.

When delivered from the 4ESS switch to the originating user, the received IE is currently coded as follows:

- **Type of Number:** National Number
- **Numbering Plan Identification:** Integrated Services Digital Network (ISDN)/Telephony Numbering Plan.

This has caused problems with the Software Defined Network (SDN) CPE applications of the customer.

To resolve this problem, the 4ESS switch will receive and deliver the contents of the Q.931 Connected Number IE within a Connect message as encoded by the user. A specific Q.931/Signaling System 7 (SS7) map will be defined for the Connected Number IE Type of Number and Numbering Plan Identification code points.

Feature Description (cont'd)

**Connected
Number IE
(cont'd)**

An administrative capability will also be provided on a per-switch basis to enable or disable this new modification. That is, when this capability is disabled, the *4ESS* switch will process the Connected Number IE as done today.

**B-Channel
Status
Mismatch**

A B-Channel may be moved to a less available status (from in service to out of service) by the CPE without notification to the *4ESS* switch. This is either due to an internal CPE problem or D-Channel unavailability. If this status mismatch occurs, the *4ESS* switch may attempt calls on a channel that the CPE has internally marked out of service (the switch believes the channel is available). The network clears the calls even though other B-Channels on the customer PRI are available to accept the call.

If the CPE responds to an incoming Setup message from the *4ESS* switch with a Release Complete message (Cause Value 44), the network usually attempts to rehunt to a new B-Channel and resends the Setup message. If the CPE responds with a Release Complete message (Cause Value 34), the network does not attempt to rehunt to a new B-Channel and clears the call. In both cases, no procedure is invoked to allow the *4ESS* switch to verify the status of the B-Channel.

Although the *4ESS* switch attempts to rehunt a new B-Channel on receipt of a Release Complete message (Cause Value 44), it may still attempt to initially deliver calls to an out-of-service channel.

In some cases, the CPE may consider a previous call on the channel to still be active while the network has released the call (for example, when the call is connected to an announcement). New calls by the network on this channel are cleared until the channel is reset.

These issues will be resolved as follows:

- If the *4ESS* switch receives a Release Complete message containing Cause Value 34 or 44 as a first response to a Setup message, it will handle the call according to current procedures (clear the call on Cause Value 34 and rehunt to a new channel on Cause Value 44).
- If Cause Value 44 is returned by the user, the *4ESS* switch sends a Service message for the original B-Channel, indicating the network perceived status for that channel.

Feature Description (cont'd)

**B-Channel
Status
Mismatch
(cont'd)**

If the response received in the Service Acknowledge (ACK) message indicates the channel is in service, the *4ESS* switch restarts the channel. Otherwise, the switch updates its status of the channel, but does not restart it.

This capability only applies to call requests involving individual B-Channels. The *4ESS* switch does not send Service Messages if the call rejected by the CPE is for 384- or 1536-Kbps data.

An administrative capability will also be provided on a per-switch basis to enable or disable this new modification.

**Bearer
Capability IE**

Field problems have occurred and calls have been cleared because Octet 5 is missing in the Bearer Capability IE for Speech and 3.1-kHz calls. Currently, the *4ESS* switch PRI only requires and delivers Octet 5 for 56-Kbps data requests (the switch always includes Octet 5 for 56-Kbps requests that it sends, while requests it receives may or may not include Octet 5).

In call-forwarding situations, the CPE that forwards calls back to the network [quite often a Local Exchange Carrier (LEC) or the network of an Other Common Carrier (OCC)] often retransmits the Setup message originally delivered from the *4ESS* switch. Unless Octet 5 is included in the Bearer Capability IE of the originating Setup message from a PRI user, it is not included in the forwarded Setup message. If the call is forwarded back to the AT&T network, no problems are encountered since the *4ESS* switch considers Octet 5 optional. If the Setup message is forwarded to a LEC or OCC network whose PRI conforms to the American National Standards Institute (ANSI) standard or to National ISDN-2 (NI-2) implementation, the forwarded call is often rejected because Octet 5 is not in the Bearer Capability IE.

This issue will be resolved as follows:

If a terminating Trunk Subgroup (TSG) is provisioned for this capability, **and** if the Information Transfer Capability is encoded as "Speech" or "3.1-kHz audio" and Octet 5 is not present, the *4ESS* switch adds Octet 5 with the User Information Layer 1 Protocol encoded as "ITU-T Recommendation G.711 mu-law".

Feature Description (cont'd)

Bearer Capability IE (cont'd)

An administrative capability will also be provided on a per-switch basis to enable or disable this new modification.

Multiple Progress Messages

A Progress message is sent to the user or the network to indicate the progress of a call in the event of inter-working or to cause cut-through on the B-Channel. The network may require cut-through to facilitate announcements before a call is cleared or for transmission of in-band information to the network. The receipt of this message may indicate that the information channel should be monitored for call progress information and/or to provide additional call information to the network.

In the current AT&T PRI implementation, the Progress Indicator IE in the Progress message may have one of the following Progress description values:

- **000 1000 (8)**: In-band information or appropriate pattern is now available.
- **000 0001 (1)**: Call is not end-to-end ISDN and/or further call progress information may be available in-band.

When an ISDN user originates a call that requires a database dip, a Progress message (value=8) may be sent to the user to cause cut-through of the voice path. On an ISDN call, this allows the user to interact with the network (for example, to enter an authorization code). During the process of establishing a call, the call may experience non-ISDN inter-working. If this occurs, a second Progress message (value=1) is sent to the user.

Currently, the *4ESS* switch may send more than one Progress message to the user. However, the switch will accept only **one** Progress message from a user. If a second Progress message is sent to the *4ESS* switch, it returns a Status message indicating the current network call state. If the CPE call state does not match the state indicated in the Status message, the call is often cleared.

The ISDN PRI implementation of AT&T requires the CPE to change the call state when a Progress message is received. If the CPE conforms to the NI-2 implementation of Bellcore or any other PRI standard, the call state is not changed upon receiving the Progress message.

Feature Description (cont'd)

Multiple Progress Messages (cont'd)

If a CPE-based call-forwarding feature is invoked by the customer, the routing of the forwarded outbound call may result in multiple Progress messages being sent to the 4ESS switch (one generated within the AT&T network if cut-through is needed on the voice path, and one generated either by the terminating PRI user or the LEC network if the call is delivered to a non-ISDN environment). The 4ESS switch views the original call delivered to the CPE and the call forwarded back to the network as two separate calls. The CPE internally links the two calls so that those call progress messages associated with the outbound forwarded call are sent back to the network toward the caller. If the CPE conforms to NI-2, the Status message sent from the 4ESS switch results in call clearing (more than one Progress message received because of the outbound forwarded call).

These issues will be resolved as follows:

- The 4ESS switch will no longer return a Status message after receiving more than one Progress message from a terminating PRI user.
- Receipt of more than one Progress message at a terminating PRI interface from a called user will no longer be considered an unexpected event. Receipt of additional Progress messages beyond the first will do the following:
 - Not cause a state change
 - Not cause any timers to be terminated or started
 - Be inter-worked to an ISDN User Part (ISUP) Calling Progress message in the backward direction
 - Not cause a Status message to be sent to the terminating user.
- Receipt of an ISUP Address Complete message (ACM) at an originating switch causes a Progress message to be sent to the calling user, provided that a Progress message with an identical Progress indicator value has not already been sent by the 4ESS switch. The Progress indicator value is derived from the ACM.

Feature Description (cont'd)

Multiple Progress Messages (Contd)

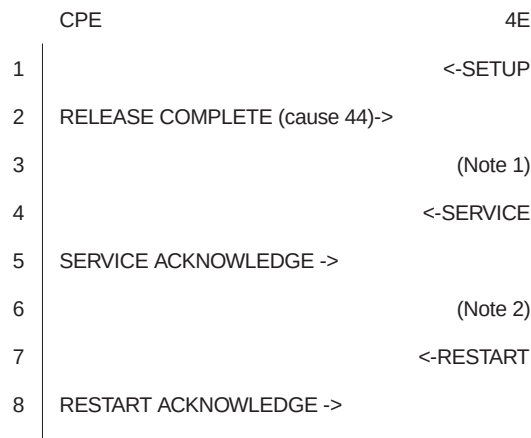
- Receipt of an ISUP Calling Progress message at an originating switch will cause a Progress message to be sent to the calling user, provided that a Progress message with an identical Progress indicator value has not already been sent. The Progress indicator value is derived from the ISUP Calling Progress message Access Transport Parameter (ATP).
- Up to two Progress messages (each with different Progress Indicator IEs) will be passed from the switch to the originating PRI user.

An administrative capability will be provided on a per-switch basis to enable or disable this new modification.

Call Flow

B-Channel Mismatch

The Q.931 call flows for the Connected Number IE and the Bearer Capability IE are not affected. Figure 5-1 illustrates the message exchange for B-Channel mismatch.



tpa 852865.cdr

Notes:

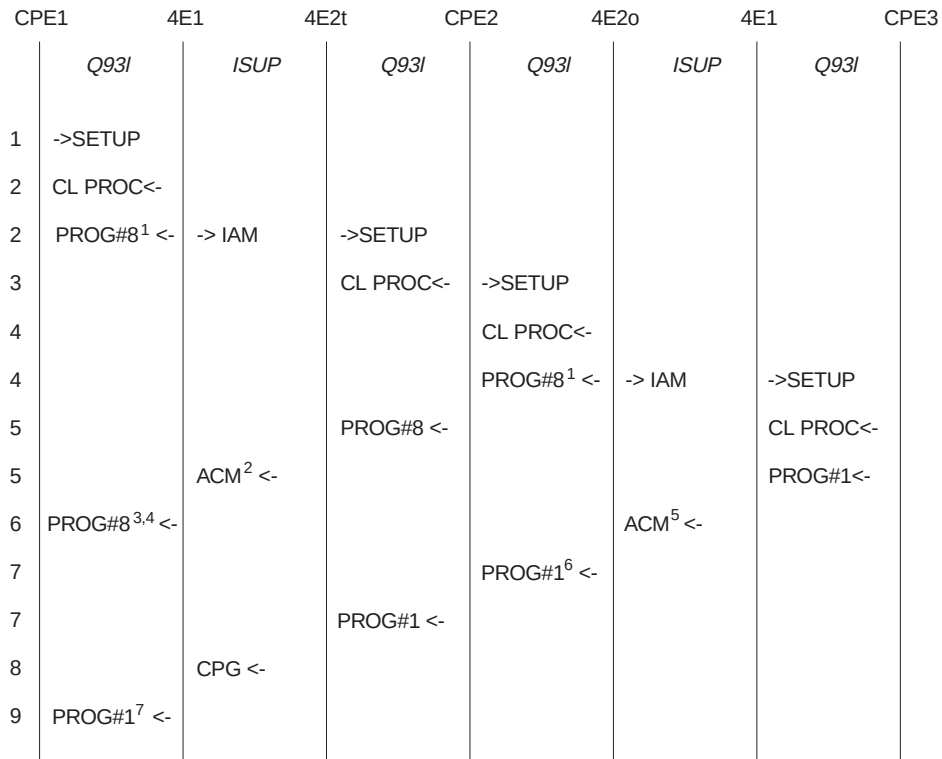
1. The 4ESS switch may rehunt a new channel per existing capabilities.
2. If the Service Acknowledge indicates that the channel is in service, the 4ESS switch restarts the channel. Otherwise, the switch uses the Service Acknowledge information to update its view of the channel, but does not restart the channel.

Figure 5-1. Example of Message Exchange for B-Channel Mismatch

Call Flow (cont'd)

Multiple Progress Messages

Figure 5-2 illustrates the message exchange for call forwarding when multiple Progress messages are sent from the user to the network.



tpa 852866.cdr

Figure 5-2. Message Exchange with Multiple Progress Message Example

Call Flow (cont'd)

This call flow proceeds as follows:

Multiple Progress Messages (cont'd)

1. An SDN call is originated by a caller served by the CPE. Normal call processing at the 4ESS switch generates a Call Proceeding message followed by a Progress message with Progress Indicator #8 back to the CPE.
 2. Receipt of the Progress message causes 4E2t to generate ACM with Called Party Status = "00 No Indication" and Progress Indicator #8 in the ATP.
 3. The ACM triggers a Progress message toward the CPE. Called Party Status = "No Indication" along with the Progress Indicator IE in the ATP causes a Progress message with the Progress Indicator (#8) contained in the ATP to be generated.
 4. The 4ESS switch screens for identical Progress Indicators (sent previously) before delivering a Progress message to the originating user. In this case, no message is sent to the originating user.
 5. Same as 1, except the Progress Indicator is #1.
 6. Same as 2, except the Progress Indicator is #1.
 7. Progress Indicator is #1.
-

Provisioning

Structures Affected

Items **OD4PF64**, **OD4PF65**, **OD4PF66**, and **OD4PF67** are assigned as the office parameters in the OD4OFCCOPY2 structure to indicate if the different capabilities of the ISDN Operational Enhancements are available in the 4ESS switch. **ON** means that the capability is available. The default is **OFF**.

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Provisioning (cont'd)

Structure Affected (cont'd) Table 5-A lists the four PF assignments.

Table 5-A. OD4OFCCOPY2 Structures Affected

Item/State	Word	Disp.	Size	Description
OD4PF64 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	15	1	Connected Number IE is delivered Capability is not available (default) Capability is available
OD4PF65 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	16	1	B-Channel Status Mismatch processing Capability is not available Capability is available
OD4PF66 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	17	1	Enhanced Bearer Capability IE processing Capability is not available Capability is available
OD4PF67 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	18	1	Enhanced Progress Message processing Capability is not available Capability is available

Provisioning (cont'd)

Recent Change Form 809 The on/off indicators are populated or updated using Recent Change (RC) Form 809. The population rules are defined in Table 5-B.

Table 5-B. RC Form 809 Population Rules

Feature Item	ON or OFF	Populates Item	With	Checks
PF64	ON	OD4PF64	OD4FB_ON	None
	OFF		OD4FB_OFF	None
PF65	ON	OD4PF65	OD4FB_ON	None
	OFF		OD4FB_OFF	None
PF66	ON	OD4PF66	OD4FB_ON	None
	OFF		OD4FB_OFF	None
PF67	ON	OD4PF67	OD4FB_ON	None
	OFF		OD4FB_OFF	None

Verify Forms Verify Forms 16az and 8j are used to verify the status of the ISDN Operational Enhancements.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting

The following service audits are performed for the B-channel status mismatch:

1. Only 128 Service ACK messages (per switch) can be outstanding at any given time (including normal processing). If the switch is running the service audit at the time of a failure (for example, Release Complete with Cause Value = 44), the Restart message may not be sent if the switch receives the Service ACK on an in-service trunk.
 2. As part of the service audit processing, the switch times out every 2 minutes and resends the Service message if it has not received a response. This continues for 30 minutes.
 3. On the last attempt of a 30-minute interval, the *4ESS* switch does not respond with a Restart message if the switch receives a Service ACK with an in-service channel. In this case, the switch releases the memory and then sends the Service message.
-

Transition Considerations

Feature Deployment	All <i>4ESS</i> switches in the network must be running the 4E24 Release 2 Generic for this feature to be fully operational.

Transition Considerations (cont'd)

Feature Activation/ Deactivation

The four capabilities described for this feature are enabled by using RC Form 809 to set the appropriate feature indicator bit on a per switch basis. For some capabilities, only the originating **or** terminating switch needs to be enabled. In other cases, both the originating **and** terminating switch need to be enabled. However, the plan is to enable the capabilities in all switches as follows:

1. **Connected Number IE:** This capability becomes visible when both originating and terminating switches have the feature indicator bit turned on.
2. **B-Channel Status Mismatch:** This capability becomes visible when the terminating switch has the feature indicator bit turned on.
3. **Bearer Capability IE:** This capability becomes visible when the terminating switch has the feature indicator bit turned on.
4. **Multiple Progress Messages:** This capability becomes visible when the both the originating and terminating switches have the feature indicator bit turned on.

To turn on each of the capabilities, the PF indicator is set (using RC Form 809) as described in Table 5-C.

Table 5-C. PF Indicator Settings

Feature Item	Capability	ON or OFF	Default
PF64	Connected Number IE	ON	OFF
PF65	B-Channel Status Mismatch	ON	OFF
PF66	Bearer Capability IE	ON	OFF
PF67	Multiple Progress Messages	ON	OFF

Transition Considerations (cont'd)

Absolute Word Change

This feature may also be turned on (activated) or turned off (deactivated) by an absolute word change. Items **OD4PF64**, **OD4PF65**, **OD4PF66**, and **OD4PF67** in the Office Data Assembler (ODA) structure OD4OFCCOPY2 are the parameters that control the state of this feature.

CAUTION:

The OD4OFCCOPY2 structure also contains the on/off bits for many other features. The core address listed is valid for the 4E24 Generic Release, but may not be valid for any subsequent generic release. Be certain that any changes made affect only this feature.

The parameters that control the state of this feature are listed in Table 5-D.

Table 5-D. Item Parameters

Item	Structure	Core Address	Size	Disp.	On	Off
PF64	OD4OFCCOPY2	7123620	1	15	1	0
PF65			1	16	1	0
PF66			1	17	1	0
PF67			1	18	1	0

Input/Output Manual Pages (Not Affected)

6 Tones and Announcements on Unsuccessful Calls After Call Prompting Feature (6273)

Overview

This feature corrects the dead silence condition encountered when an international inbound call-prompter call fails after successful completion of call prompting.

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Feature Description

Overview

This feature, *Tones and Announcements on Unsuccessful Calls After Call Prompting*, corrects the “dead silence” condition encountered when an international inbound call-prompter call fails after successful completion of call prompting. Specifically, the benefits of this feature are as follows:

- The non-revenue producing call attempts and associated network costs are reduced.
- The quality is increased for AT&T international services.

The services using call prompting include the following:

- International Toll Free Service [formerly known as International 800 (I800)]
- Government Emergency Telecommunications Service (GETS)
- Pay 8YY Service.

International Toll Free Service

The AT&T International Toll Free Service (ITFS) was introduced in 1984 to provide toll-free service between the United States and foreign countries. Outbound ITFS allows callers in the United States to reach subscribers at international destinations (for example, Canada, the Caribbean, Mexico, and overseas) toll-free. Inbound ITFS allows callers from international originations to reach subscribers in the United States (the contiguous 48 states, Puerto Rico, the U.S. Virgin Islands, Alaska, and Hawaii) usually at no cost to the caller. Most of the No. 2 Direct Services Dialing (2DSD)-No. 2 Network Control Point (2NCP) features offered to domestic toll-free service subscribers are also available to ITFS subscribers.

The I800 Call Prompter feature became available in 1993. It allows overseas calls to be routed to one of several customer locations based on Dual Tone Multi-Frequency (DTMF) responses to recorded call prompter announcements.

Feature Description (cont'd)

**Government
Emergency
Telecommuni-
cations Service**

The GETS is a Software Defined Network (SDN)-Network Remote Access (NRA) based service where government callers dial a special access number (710-627-4387) to access the network. The caller then provides an authorization code and destination number to complete the call. The GETS is a low-usage service under normal conditions. It is mainly used by government agencies that require increased probability of call completion during emergency situations where network congestion is likely.

The 4ESS™ switch International Switching Center (ISC) development (described in Feature 5528, *Product Release Document* 234-090-223AC) is currently being performed to ensure that GETS calls originated in international locations receive the early answer treatment. The user-network interaction required to complete the call (caller-provided authorization code and destination number) is not possible without the forward voice path being cut through.

Pay 8YY

Foreign Billed 8YY (Pay 8YY) Service (Feature 5399, *Product Release Document* 234-090-223AC) represents calls that originate outside the United States (from World Zone and Non-World Zone 1 countries). These calls are routed to the AT&T Switched Network (ASN) and terminated at AT&T or non-AT&T 8YY number subscriber destinations. Post Telephone and Telegraphs (PTTs) send the Pay 8YY traffic to the 4ESS switch ISC in the following number formats:

- 197-NXX-XXXX
- 197-800-NXX-XXXX
- 880-800-NXX-XXXX [the new Pay 8YY Numbering Plan Area (NPA)]
- 881-888-NXX-XXXX (the second Pay 8YY NPA corresponding to 888)
- 880-NXX-XXXX
- 881-NXX-XXXX
- 800-NXX-XXXX
- 888-NXX-XXXX.

Feature Description (cont'd)

Pay 8YY (cont'd)

All Pay 8YY calls received from the 4ESS switch/ISCs are translated into 10-digit formats of the form 197-880-881-NXX-XXXX and are routed via Real Time Network Routing (RTNR) to the New Haven 4ESS switch. Upon recognizing the special Pay 8YY Service NPAs (197, 880, or 881), the New Haven 4ESS switch sends an Early Address Complete Message (ACM) to the ISC and then plays the following announcement:

“The toll-free number you dialed is not toll free if called from outside the United States. You will be charged at international direct dial rates. If you do not wish to be charged, please hang up now.”

At the New Haven 4ESS switch, calls identified as AT&T 8YY subscribers are handled within the ASN. Calls to Other Common Carrier (OCC) 8YY subscribers (identified by the lack of an NCP address or an error message received from the database) are routed to the Southern New England Telephone (SNET) End Office (EO) for completion by the appropriate carrier (MCI, Sprint, or others). The overseas caller is charged for the call at the current International Long Distance (ILD) rate by the corresponding PTT and the 8YY subscriber is billed for the call by the selected ILD(AT&T or another carrier).

The Pay 8YY Service, Phase 5, provides signaling enhancement (Early ACM) to support those calls that require DTMF digits to be entered by the overseas callers in response to the AT&T Call Prompter.

Feature Description (cont'd)

Call Prompting For domestic call prompting, sending an Early ACM is sufficient to through-connect the 2-way speech path to allow user/network interaction. For international environments, the international Integrated Services Digital Network (ISDN) User Part (UP) and some national signaling systems do not through-connect the forward speech path (the direction from the caller to the network) before the answer message signal. Regardless of signaling systems, Early ACM guarantees the through connection of the 2-way speech path, thereby allowing user/network interaction.

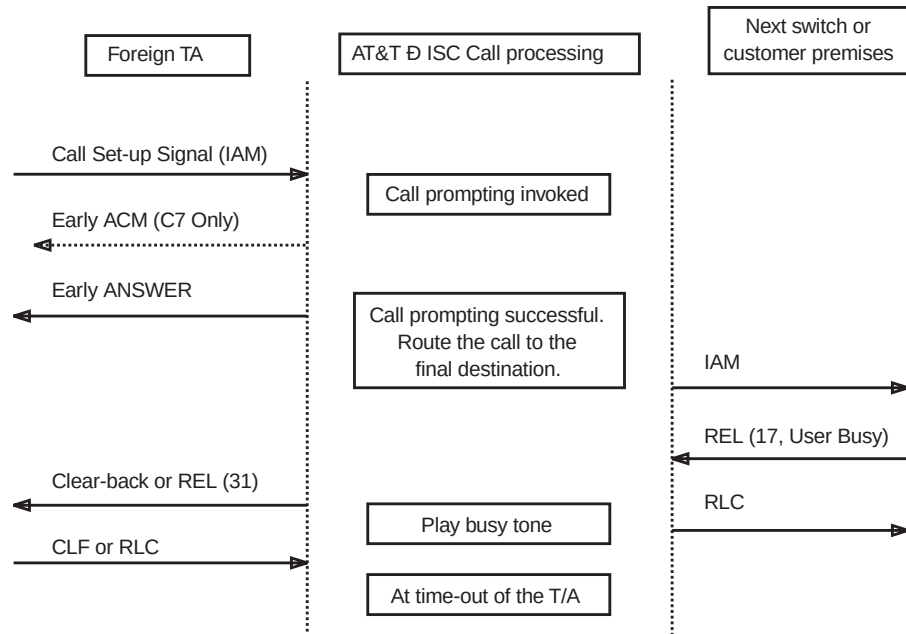
As a result of this Early ACM, the call is artificially advanced to the answered state on the international leg of the call, and is treated as successful **before** the call reaches its final destination. However, the call could still fail after the completion of call prompting as the network continues to route the call to its final destination. When this happens, the handling of call failures requires special treatment.

Based on the signaling protocols, any failure after a call is answered is considered a protocol error. Therefore, to avoid causing protocol errors after sending the Early ACM, the 4ESS switch ISC blocks the call failure indications in the signaling messages, and releases the failed call as normal.

Currently, if the call failure after call prompting is due to user busy (Cause Value 17), the 4ESS switch ISC plays the busy tone (see Figure 6-1). No tone/announcement is played for any other types of call failure (see Figure 6-2). In this case, the calling party does not receive a signaling indication or a tone/announcement for the call failure. The solution to rectify this situation is depicted in Figure 6-3.

Feature Description (cont'd)

Call Prompting (cont'd)



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Figure 6-1. Call Failure after Call Prompting (User Busy)

Feature Description (cont'd)

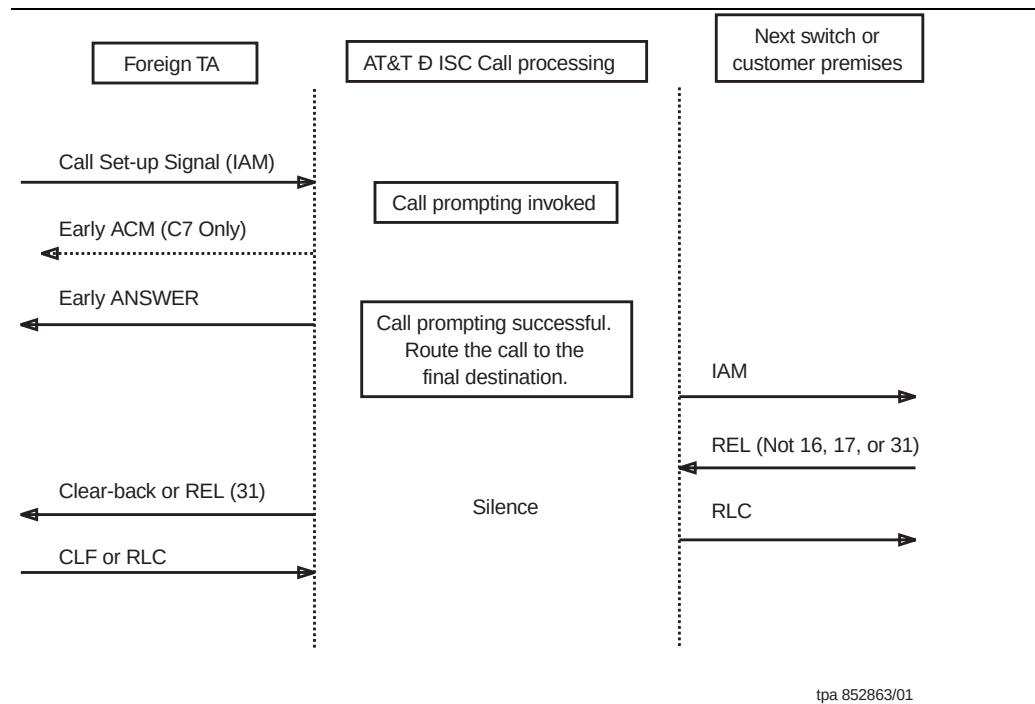
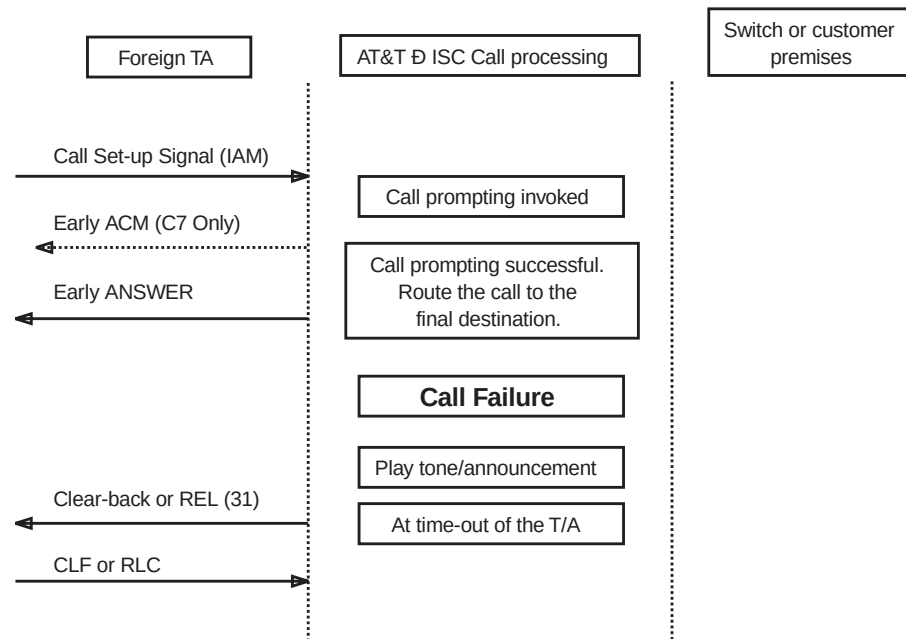


Figure 6-2. Call Failure after Call Prompting (Excluding User Busy)

Feature Description (cont'd)

Call Prompting (cont'd)



tpa 852864/01

Figure 6-3. Tone/Announcement for a Call Failure at the 4ESS™ Switch ISC after Call Prompting

Call Flow (Not Affected)

Provisioning

Structure Affected	The OD4OFCCOPY structure is assigned a new office parameter, OD4PF40 , to indicate if this feature is on or off. The default is ON (disabled).

Recent Change Form 809	When the 1B software is updated to the 4E24 Release 2 Generic, this feature is automatically turned on. To turn the feature off, Recent Change (RC) Form 809 is used to set item PF40 to ON (1) . This enables Feature 6273.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

**Related
Documenta-
tion**

The Features related to this chapter are listed in Table 6-A.

Table 6-A. Related Features

Feature	Title	Product Release Document
3777	<i>Inbound I-800 Call Prompter</i>	234-090-173AC
5399	<i>Foreign-Billed 800 Service Enhancement—Phase 5</i>	234-090-223AC
5528	<i>Early Answer for GETS Inbound International Calling</i>	234-090-223AC

**Feature
Deployment**

It is not necessary for the 4E24 Release 2 Generic to be deployed in all 4ESS switches for this feature to be fully operational.

**Feature
Activation**

This feature is automatically turned off when the 1B software is updated to the 4E24 Release 2 Generic. To activate this feature, use RC Form 809 to set Feature Item PF40 to **OFF** (enables this feature).

**Feature
Deactivation**

To deactivate this feature, use RC Form 809 to set Feature Item PF40 to **ON** (disables this feature).

Transition Considerations (cont'd)

Absolute Word Change

This feature may also be turned on by an absolute word change. Item **OD4PF40** in the Office Data Assembler (ODA) OFCCOPY2 structure is the parameter that controls the state of this feature.

CAUTION:

The OD4OFCCOPY2 structure also contains the on/off bits for many other features. The core address listed is valid for the 4E24 Generic Release, but may not be valid for any subsequent generic release. Be certain that any changes made affect only this feature.

- Core address: 7123617
 - Word: 5
 - Size: 1
 - Displacement: 15
 - On: 1
 - Off: 0.
-

Input/Output Manual Pages (Not Affected)

7 Call Origination Treatment at the Originating AT&T Switch for Calls Arriving Over Inter-toll Trunks Feature (6413)

Overview

This feature provides the network infrastructure that allows AT&T to offer network services and features for 1+ Long Distance (LD) switched traffic originating from areas served by a 5ESS[®] toll switch.

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Feature Description

Introduction

This feature, *Call Origination Treatment at the Originating AT&T Switch (OAS) for Calls Arriving over Intertoll Trunks*, describes the network infrastructure for the 4ESS™ switch OAS to apply call origination treatment (OAS functionality) on calls that arrive over intertoll trunks originating from a 5ESS toll switch. The call origination treatment includes the requirements for the following:

- Segmentation Directory (SD)
- Service call processing
- Network Access Interrupt (NAI) call processing
- Automatic Message Accounting (AMA) recording
- Far-End Network (FEN) Call Denial Screening.

Background

This feature originally addressed the issue of *Easy Reach** telecommunications services calls originating from a 5ESS toll switch. Today, Easy Reach call processing is restricted to traffic arriving over Local Exchange Carrier Connecting (LCC) type trunks. Since 5ESS toll switch traffic is routed to the 4ESS™ switch network via intertoll trunks, a workaround solution was required to provide *Easy Reach* telecommunications services capability on these calls.

The *Easy Reach* telecommunications services provides the infrastructure on which to build the capability to allow callers to exercise their subscribed Automatic Number Identification (ANI)-based feature on 1+ dialed *Easy Reach* telecommunications services calls. The current workaround allows this feature interaction. However, it is implemented via special provisioning that is **not** supported by the standard 4ESS switch provisioning process. The workaround routes all 500 traffic arriving at Sacramento from the Honolulu 5ESS toll switch to the Atlanta (4) 4ESS switch. The Atlanta 4ESS switch routes the calls to the interconnecting Atlanta O6T 5ESS switch Operator Service Position System (OSPS). The OSPS then routes the calls to the attached Quantum Data and Routing System (QDRS) platform for 500 call processing.

*Registered service mark of AT&T.

Feature Description (cont'd)

Background (cont'd)

Once this feature is activated, the following needs will be served:

- The current workaround will be removed.
- The network infrastructure will be provided that will allow subscriber ANI-based services and features to be offered for switched access 1+LD traffic originating from a 5ESS switch. In the current environment, this traffic receives Real-Time Network Routing (RTNR) without features.

Architecture

Figure 7-1 illustrates the call origination architecture described in this feature.

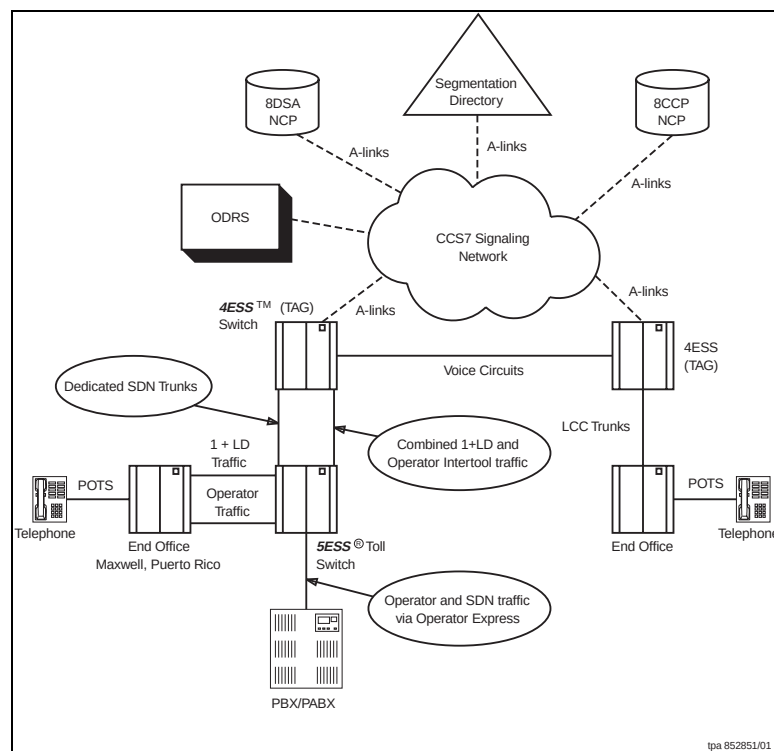


Figure 7-1. Call Origination Treatment Architectural Diagram

Call Flow

This call flow assumes the feature is activated at the *5ESS* switch and the calls arrive over intertoll trunks with the Trunk Subgroup (TSG) characteristic FENCLASS=ACCESU (a new FENCLASS). Additionally, this feature may be turned off at the *5ESS* switch which results in the following:

- No Call Processing Upchained (CPUP) Generic Operations Parameter (GOP) is sent to the *4ESS* switch.
- No SD query is sent by the *4ESS* switch.

If the Called Party Number is part of the 500-NXX dialing plan under this scenario, the call receives Easy Reach call processing and existing *Easy Reach* telecommunications services call processing requirements. The call flow is as follows:

1. A 1+LD or operator requested call is routed by the Local Exchange Carrier (LEC)/End Office (EO) to an AT&T *5ESS* toll switch.
2. If the call is an operator-requested call, the *5ESS* switch OSPS provides the proper operator call treatment.
3. If the call is routed to the *4ESS* switch network for call completion, the *5ESS* switch processes the call as today under the following conditions:
 - The call is an operator-requested call.
 - The call is not a switched access call.
 - This feature is not activated in the *5ESS* toll switch.

The *5ESS* switch formulates an outgoing Initial Address Message (IAM) without the new Handoff CPUP GOP under the above three conditions. Proceed to Step 5.

Note: For all of the above cases except the operator requested call, the *5ESS* toll switch includes any Originating Line Identifier/ Interexchange Identification (OLI/II) and charge number parameters received in the outgoing IAM.

Call Flow (cont'd)

4. If the call is switched access and is routed to the *4ESS* switch, the *5ESS* switch does not provide AMA recording and NAI call processing on the call under the following conditions:
 - The call is not operator requested.
 - This feature is activated in the *5ESS* switch.

The *5ESS* switch formulates an outgoing IAM with the new Handoff CPUP COP under the above two conditions.

5. The *5ESS* toll switch routes the call to the *4ESS* switch based on the dialed number via the intertoll connecting trunks (FENCLASS=ACCESSU).
6. If the *4ESS* OAS receives an incoming IAM that contains an OLI or charge number parameter, it processes these parameters per current procedures and the related requirements contained in this chapter.
7. If the *4ESS* OAS receives an incoming IAM containing the Handoff CPUP GOP, it sends an SD query (via IAM intercept) per existing SD call processing requirements and as modified by this feature. *Proceed to Step 12.*
8. The *4ESS* switch applies FEN Call Denial Screening per existing requirements and as modified by this feature.
9. If the *4ESS* OAS receives an incoming IAM, the OAS routes the call as today with no features under the following conditions:
 - The IAM does not contain the Handoff CPUP GOP.
 - The Called Party Number is not a 500 number that is part of the 500-NXX dialing plan.
 - The Called Party Number is not an 8YY number.

End of Call Flow.

Call Flow (cont'd)

10. If the 4ESS OAS receives an incoming IAM that contains an 8YY Called Party Number, the OAS currently applies 800 call processing on the call.

Note: For all 800 call scenarios where the 4ESS OAS records the OLI or charge number parameters, the parameters are recorded via existing 800 recording procedures.

End of Call Flow

11. If the 4ESS OAS receives an incoming IAM that does not contain the Handoff CPUP GOP, and the Called Party Number is a 500 number that is part of the 500-NXX dialing plan, the OAS provides the following:

- Existing *Easy Reach* telecommunications service call processing
- NAI call processing
- AMA recording.

Proceed to Step 19.

Note: Step 12 through Step 18 assume a CPUP GOP is received in the IAM.

12. If the Direct Link Node (DLN) did not generate an SD Query, the 1B Processor may generate the SD Query.
13. If the 4ESS OAS receives an incoming IAM containing the Handoff CPUP GOP on an intertoll connecting trunk with the "Provide OAS Call Processing" indicator set to Yes, the OAS performs the following functions:
- Provides SD call processing [determines SD Transition Type (SDTT)]
 - Applies NAI call processing per existing NAI requirements and as modified by this feature
 - Provides AMA recording per existing AMA recording requirements and as modified by this feature.

Call Flow (cont'd)

14. If the SDTT of the call is in the Segmentation Mode of Operation (SMO) mode, the 4ESS switch suspends call processing and waits for a response from the SD. *Proceed to Step 17.*

15. If the call falls into the POTS transition type, the call is currently routed without any features under the following conditions:

- The transition status is Present Mode of Operation (PMO).
- The Called Party Number is not part of the 500-NXX dialing plan.

Proceed to Step 19.

16. If the call falls into the POTS transition type, the transition status is PMO, and the Called Party number contains a 500 number that is part of the 500-NXX dialing plan, the OAS provides the following:

- Existing *Easy Reach* telecommunications services call processing
- NAI call processing
- AMA recording.

Proceed to Step 19.

17. The SD sends an SD Response to the 4ESS OAS. It may also send a Service Processor (SP) Query to the appropriate SP (based on existing SD requirements).

Call Flow (cont'd)

-
18. The *4ESS* switch receives the SD Response (and may also receive an SP Response based on existing requirements) and applies the appropriate *4ESS* switch call processing logic.
 19. If the *4ESS* switch receives the NAI query response, it applies the appropriate NAI call processing.
 20. The OAS routes the call and does not send the new Handoff CPUP GOP in the outgoing IAM. **End of Call Flow.**
-

Provisioning

Structure Affected

Item **OD4PF72** is assigned as the office parameter in the OD4OFCCOPY2 structure to indicate if this feature is on (active) or off (disabled). The default is **OFF**.

Recent Change Form 809

The RC Form 809 is used to turn on this feature. The population rules are as follows:

- FEATURE ITEM = **PF72**
 - ON OR OFF = **ON**.
-

Recording

The *5ESS* switch does not provide recording for 1+LD switched access traffic that is upchained to the *4ESS* switch network for call origination treatment. The *4ESS* switch records these calls with the following AMA attributes:

- Call codes 060 and 306
- Structures 00001/00101 or 01078/01080 for calls with ISDN features.

The *4ESS* switch does not provide Access Charge Verification (ACV) records for these calls.

The *4ESS* switch provides AMA recording as specified in the FEN Block data for each incoming call arriving on an intertoll trunk with the TSG characteristic FENCLASS=ACCESU under one of the following conditions:

- The ISUP Handoff CPUP GOP with the “Provide OAS Call Processing Indicator” is set to Yes.
- The Called Party Number field contains a number that is part of the 500-NXX dialing plan.

If the OLI received is a Cellular Mobile Carrier (CMC) OLI (61, 62, or 63), Call Code 306 is recorded. If the OLI is not received (or is received and is not a CMC OLI), Call Code 060 is recorded.

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

**Related
Documentation**

The following are related to this feature:

- Feature 4324: *Easy Reach 1+500 Dialing Plan* (4E20 Release 2 Generic)
 - Feature 4564: *Segmentation Directory Phase 1* (4E22 Release 2 Generic)
 - Feature 4880: *Segmentation Directory Phase 2* (4E23 Release 1 Generic)
 - Feature 5460: *Network Access Interruption Phase 3* (4E22 Release 2 Generic)
 - Feature 5641: *Segmentation Directory Phase 3* (4E24 Release 1 Generic).
-

**Feature
Deployment**

It is not necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

**Feature
Activation/
Deactivation**

Before this feature can be activated in the 4ESS switch, the following activities must be completed:

- Billing/Recording take-back from GTE at Honolulu
- FENCLASS=ACCESU established on the 5ESS toll switch to 4ESS switch TSGs
- FEN Block administration on intertoll TSGs from Honolulu and San Juan to allow NAI, FEN Call Denial Screening, and AMA recording
- SD Phase 1 and Phase 2 deployed in the network
- SD Phase 3 deployed in the 4ESS switch (to allow the 1B Processor to send a query when DLN Queries are off)
- SD POTS Transition Type set to SMO in all 4ESS switch offices
- Feature activated at the 5ESS toll switch.

This feature is activated by setting the ODA bit (Item OD4PF72) to **ON**. To deactivate this feature, set OD4PF72 to **OFF** (the default).

Transition Considerations (cont'd)

Absolute Word Change This feature may also be turned On (activated) or turned Off (deactivated) by an absolute word change. Item **OD4PF72** in the ODA structure is the parameter that controls the state of this feature.

CAUTION:

*The OD4OFCCOPY2 structure also contains the on/off bits for many other features. The core address listed is valid for the 4E24 Generic Release, but may **not** be valid for any subsequent generic release. Be certain that any changes made affect only this feature.*

- Core address: 7123620
 - Word: 6
 - Size: 1
 - Displacement: 14
 - On: 1
 - Off: 0.
-

Input/Output Manual Pages (Not Affected)

8 TCAP Parameter for Transmission Enhancement Control 2 Feature (6492)

Overview

The purpose of this feature is to remove the usage of the CFA4 bit, which is used to trigger *AT&T TrueVoice** avoidance. All other existing methods of *AT&T TrueVoice* avoidance are still active.

* Registered service mark of AT&T.

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Feature Description

Background

The *AT&T TrueVoice* telecommunications service offers enhanced voice quality to AT&T customers. It was discovered that this voice enhancement service impacted transmission quality by interfering with other network elements. As a result, the Force Via Switch Routing (FVSR) network and triggers were created to provide relief to customers who experienced voice quality impact. The Customer Specific Routing Option (CSRO) triggers consist of the following:

- Service Indicator (SI)
- Trunk Subgroup (TSG)
- Automatic Number Identification Trigger Table (ANITT)
- High Capacity (HICAP)
- Network Control Point (NCP).

Feature 6492 focuses on the NCP trigger for *AT&T TrueVoice* avoidance. Currently, the Customer Features Available 4 (CFA4) bit in the Transaction Capabilities Application Part (TCAP) parameter Advanced 800 (A800) billing information is used as the FVSR/NCP trigger for *AT&T TrueVoice* avoidance. However, the CFA4 bit must be returned to *MultiQuest** telecommunications services.

* Registered service mark of AT&T.

Introduction

Presently, it is confirmed that *AT&T TrueVoice* is being removed from the AT&T Switched Network (ASN). Therefore, there is no longer a need to provide an NCP-based *AT&T TrueVoice* avoidance indicator to the *4ESS*TM switch.

The purpose of this feature is to remove the usage of the CFA4 bit, which is used to trigger *AT&T TrueVoice* avoidance. All other existing methods of *AT&T TrueVoice* avoidance are still active.

Because the CFA4 bit is no longer used for *AT&T TrueVoice* avoidance, Circuit Selection Capability Indicator (CSCI) is no longer set to 2 by the *4ESS* switch when the CFA4 bit is set. In the *AT&T TrueVoice* environment, the CSCI setting will perform *AT&T TrueVoice* avoidance actions. Due to the removal of *AT&T TrueVoice*, the CSCI setting causes no network activity to occur. It is possible that CSCI will be used for other network actions in the future. Therefore, it is necessary to implement the requirement that removes the *4ESS* switch action to set CSCI to 2 upon the receipt that CFA4 bit is set to 1.

Call Flow

Call Flow

The following sequence illustrates one possible scenario with the TCAP parameter for Transmission Enhancement Control 2 activated:

1. The Originating AT&T Switch (OAS) receives one of the following types of calls listed in Table 8-A and performs the related actions.

Table 8-A. Call Types Received by OAS for Transmission Enhancement Control 2

If ...	Then...
A toll free call is received	2DSD 2NCP database is queried
A <i>MultiQuest</i> call is received	<i>MultiQuest</i> 2NCP is queried

2. The OAS receives the call and the appropriate queries are made. One of the actions in Table 8-B occurs.

Table 8-B. Query Actions for Transmission Enhancement Control 2

If...	And...	Then...	Action
The 2DSD 2NCP is accessed	Customer record indicates <i>AT&T TrueVoice</i> avoidance is required.	CFA4 bit is set to 0 and is sent to the OAS in the A800 billing information TCAP parameter.	<i>Go to Step 3.</i>
The <i>MultiQuest</i> 2NCP is accessed	Customer record indicates CFA4 bit must be set to 1.	CFA4 bit is set to 1 and is sent to the OAS in the A800 billing information TCAP parameter.	<i>Go to Step 4.</i>

3. The OAS receives the CFA4 bit equal to zero and the call is routed through the Real-Time Network Routing (RTNR) network with no CSCI value set. Regular toll free call processing proceeds. **End of Call Flow.**
4. The OAS receives the CFA4 bit equal to one and the call is routed through the appropriate *MultiQuest* call processing with CSCI value no longer set to 2. **End of Call Flow.**

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

Feature Activation	This feature is turned on automatically with software deployment.

Input/Output Manual Pages (Not Affected)

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9 **4ESS™ Switch to Network System (NEMOS) Link Upgrade Feature (6643)**

Overview This feature increases the capacity on the data links used to connect the 4ESS™ switch to the Network Management Operations System (NEMOS).

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Feature Description

Overview

This feature increases the capacity on the data links that are used to connect the 4ESS switch to the Network Management Operations System (NEMOS). The upgraded links run at 56-kbps V.35, and can accommodate higher volumes of traffic, compared with the 9.6K bps RS-232C connection in use prior to this feature. The links are in the Dedicated Wide Area Network (DWAN),

The performance improvement provided by this feature is needed to meet current and future needs, and is expected to benefit the Network Operations Center (NOC) and NEMOS. The NOC uses NEMOS to collect traffic information, network surveillance and performance management information from the AT&T Switched Network. The traffic information is contained in 5-minute data sent to NEMOS from each 4ESS switch in the AT&T Switched Network, and it must be available (data ready) at NEMOS within 90 seconds after the end of a 5-minute period.

The capacity of the previous 9.6-kbps links was not sufficient to support expected increases in data volume. Data volume over the links has increased significantly with the deployment of a large number of new features, such as the Domestic End-to-End Class of Service, Service Identification and Automatic Routing.

This feature improves link capacity significantly, while providing additional capacity for future growth. A volume of 300 kb of 5-minute data can now transmit in less than 84 seconds, even when the overall efficiency of a link is at 50 percent.

Prior to this feature, the links on the 4ESS switch side that were used for NEMOS communications were known as Net A (SDL 28) and Net B (SDL 30). Two other links on the 3B Processor, referred to as AMASE links (SDL 20 and SDL 22), were used to connect the 4ESS switch to BILLDATS. Because all switches are migrating to the Call Detail Reporting Platform (CDRP), these two ports are free. Because of the need to support IRAS/NECOM and improve overall communications reliability, SDL 20 and SDL 22 are reused to implement the 56-kbps link, and are referred to as Net C and Net D. This has no impact on the Operation Systems (OS) that use Net A and Net B.

Feature Description (cont'd)

Overview (cont'd)

Net A and Net B are used by the 4ESS switch to communicate with other OS: Integrated Routing Assignment System (IRAS), Data Acquisition Recording, Integrated Communications System (DARICS), Signaling Operations Platform-Provisioning (SOP-P), and National Electronic Switching Assistance Center (NESAC) maintenance channel. Because of the importance of NEMOS to maintain network management functions with the 4ESS switch at all times, this feature provides two new 56-kbps links at each 4ESS switch. These are Net C and Net D. This minimizes the impact on the OSs that use Net A and Net B to access the 4ESS switch. NESAC and NECOM may also receive higher throughputs from the 4ESS switch when using the 56K-bps links.

Because IRAS and its communications front-end system, NECOM, may generate higher data volumes, and may move other traffic to its shared links with NEMOS, this feature expands the number of links that can be shared with the OSs (in addition to the link speed upgrade). This means that there are now 2 links operating at 56 kbps (Net C and Net D) and 2 links operating at 9.6 kbps (Net A and Net B).

Refer to Figure 9-1 (link configuration prior to this feature) and to Figure 9-2 (link configuration provided by this feature).

Feature Description (cont'd)

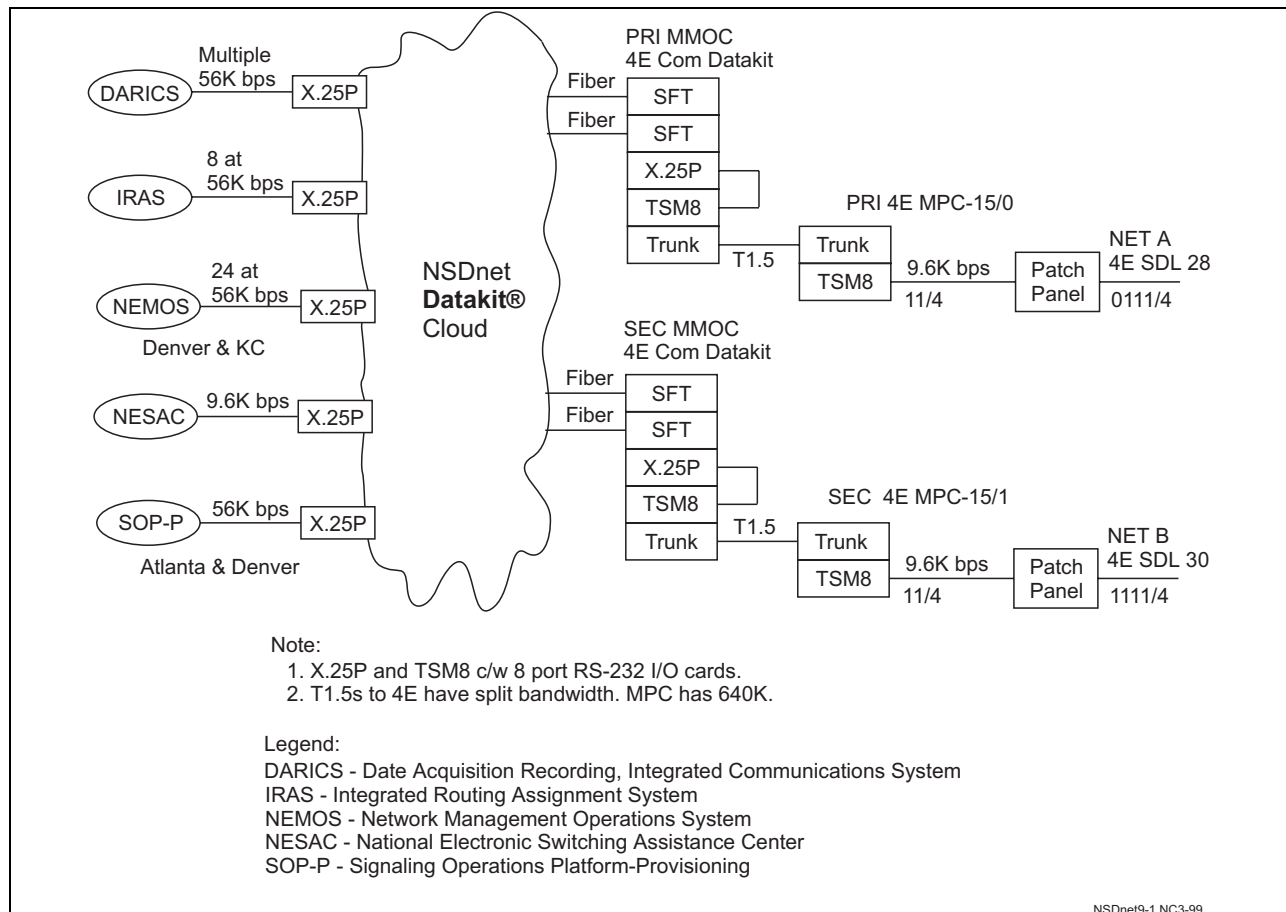


Figure 9-1. Link Configuration Prior to Feature 6643

Feature Description (cont'd)

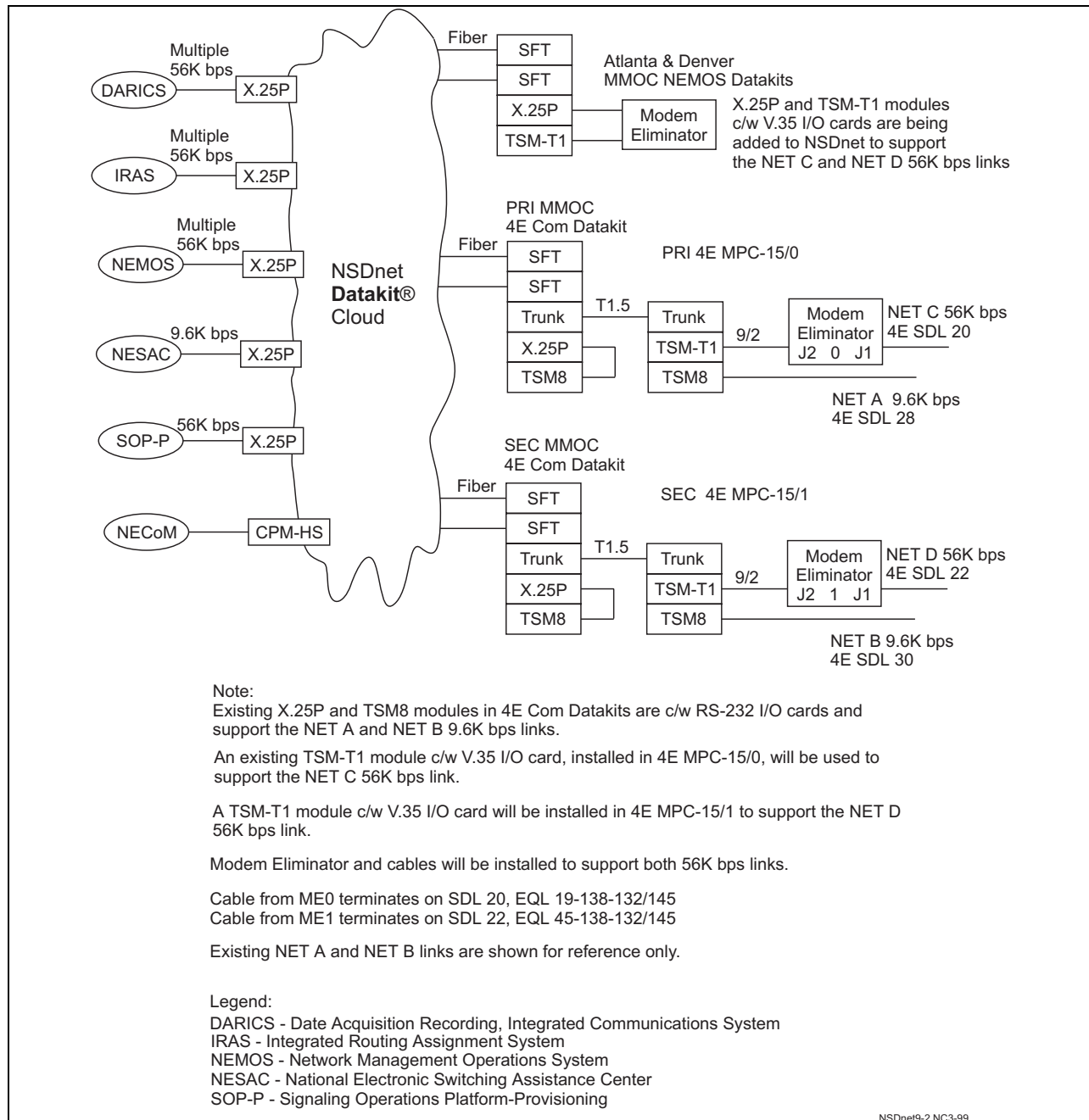


Figure 9-2. Link Configuration with Feature 6643

Feature Description (cont'd)

Degrowth

The SDL 20 and SDL 22 links were degrown prior to the deployment of this feature. The cables for the AMASE application were removed at the following Equipment Location Numbers (EQLs): 19-138-132/145 (SDL 20, Cable Group ED4A104-30, G168), and 45-138-132/145 SDL 22 Cable Group ED4A104-30, G169.

The following name changes have occurred as a result of this feature:

- SDL 20 (OC AMA) is changed to SDL 20 (Net C)
- SDL 22 (IC AMA) is changed to SDL (Net D).

Feature Capabilities

Specific capabilities provided by this feature include the following:

- Two links, Net C and Net D, using a 56K bps V.35 interface, were installed on the 4ESS switch, as shown in Figure 9-2. The Net C link, SDL 20, terminates at MPC 15 #0, Slot 9, Port 2 in the 4ESS switch office. The Net D link, SDL 22 terminates at MPC 15 #1, Slot 9, Port2.
- This upgrade adds 2 modem eliminators and 1 TSM-T1 into the 4ESS switch office. The existing TSM-T1 module on MPC-15/0 is reused. Only Switched Virtual Circuits (SVCs) are supported on the new Net C and Net D links, since IRAS is the only OS that uses Permanent Virtual Circuits (PVCs), and IRAS will not use Net C or Net D.
- The new Net C (SDL 20) and Net D (SDL 22) support 21 SVCs per link. The maximum number of active channels (virtual circuits) is 12 per link; initially there will be 10 active channels.
- The 4ESS switch (and the 3B Attached Processor) support the use of the Net C and Net D links by the following Operating Systems (OS) and applications: NEMOS, NECOM, and NESAC maintenance channel.
- The cables used in the 56K-bps configuration for SDL 20 are connected as follows: MPC 15 #0, Slot 9, Port 2 is cabled to Modem Eliminator (ME) 0 connector J2, ME 0 connector J1 is cabled to the 3B21D EQL 19-138-132/145.

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Use pursuant to Company instructions

Feature Description (cont'd)

Feature Capabilities (cont'd)

- The 56K-bps configuration for SDL 22 is as follows: MPC 15 #1, Slot 9, Port 2 is cabled to ME 1 Connector J2, ME 1 connector J1 is cabled to the 3B21D EQL 45-138-132/145.

Deployment

The software for this feature was deployed as a Broadcast Warning Message (BWM) over the 4E24 Release 1 generic.

Required Equipment Changes

The following list summarizes the equipment changes required at each *4ESS* switch office and at NEMOS sites to support this feature:

3B Processor Direct Memory Access (DMA) Capacity—DMA capacity improvement is required because the majority of the 5-minute data travels through the Attached Processor Interface (API) to the 3B Processor Input/Output Processor (IOP) via the DMA.

3B Processor IOP Capacity—The IOP from the 3B21D is IOP2, which offers higher capacity than provided by the 3B20D.

3B IOP Circuit Packs—The new circuit packs on the 3B21D are UN582, and can support 56K bps transmission (as well as 9.6K-bps).

4E-NSDNet Connection—The 56-kbps connection to Datakit switches uses modem eliminators, TSM-T1 modules and the associated cables instead of a TSM8 module. These are required in each *4ESS* switch office.

Datakit Switches in MMOC—Additional X.25P modules, TSM-T1 modules, modem eliminators, and associated cables are required at the Datakit switches.

NEMOS-NSDnet Connection—NEMOS already uses multiple 56-kbps links to connect to the NSDnet. Additional links, as well as additional shelves of its Front End Processor are required. Software at the NEMOS Kansas City and Denver sites require enhancement.

Feature Description (cont'd)

**Required
Equipment
Changes
(cont'd)**

Refer to the Task-Oriented Practices (TOPs) 234-353-424, Issue 2, *3B Growth/Degrowth*, for procedures on installing the hardware used by this feature, and for updating the Equipment Configuration Database.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording

Option Change In order to prevent errors, the Automatic Message Accounting (AMA) option was changed from teleprocessing to tape. When this feature is installed, the AMA teleprocessing links will not be available.

Network Management

Impact This feature directly impacts the NOC and the NEMOS organizations, as described in the "Description" section of this chapter.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature/ Hardware Dependencies	This feature is dependent on the <i>4ESS Switch 3B21D Attached Processor System (APS) Upgrade Feature (5222)</i> . The link-capacity upgrade can be done only after the APS is upgraded to the 3B21D.

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

Feature Activation	This feature is activated automatically with software deployment and completion of the required installation and reconfiguration of hardware components that are required to achieve the capacity improvement. The specific hardware installation procedures are described in the Task-Orientated Practice 234-353-425. The <i>4ESS</i> switch software for this feature was deployed as a BWM over the 4E24 Release 1 generic.

Input/Output Manual Pages (Not Affected)

10 Digital Link Phase 3 Equal Access Capability Feature (6685)

Overview

This feature allows AT&T Digital Link Phase (ADL) 2 and ADL 4 customers to presubscribe to other toll carriers for their intra-LATA or inter-LATA toll service.

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Feature Description

Introduction

This feature allows AT&T Digital Link Phase 2, also known as *4ESS*[™] switch Local Nodal Phase 2, and ADL 4, also known as *4ESS* switch End Office Local Nodal Phase 4, customers to presubscribe to other Toll Carrier for their intra-LATA or inter-LATA toll service. Presubscription is provisioned in the customer record in the 2DSA/2NCP. For calls presubscribed to other Toll Carrier, the 2DSA/2NCP passes the Carrier Identification Code (CIC) and Carrier Selection Identification (CSI) to the *4ESS* switch, along with the LATA of the originating ADL location.

The *4ESS* switch determines routing based on the CIC and originating LATA. At present, all ADL Equal Access (EA) calls routed for other toll carriers over a Local Service Provider (LSP) trunk group to existing Meet Point tandem offices, which carry toll traffic from other toll carriers to DL customers. The LSP provides a tandeming function and hands the calls off to the appropriate toll carrier.

This feature also develops the capability in the network to support direct routing of ADL EA calls to other toll carriers. Direct interconnection with a limited number of toll carriers is expected to occur in the future.

Benefits

The AT&T Digital Link product allows AT&T Long Distance nodal customers to add local traffic to their existing dedicated facilities that are directly connected to the AT&T Switched Network. Local traffic is transported over the same trunk groups that carry inter-LATA and intra-LATA toll traffic between the customer and the AT&T Serving Office.

The AT&T Digital Link adds local calling capabilities to existing nodal services which use the SDN and *MEGACOM** network platforms.

* Registered service mark of AT&T

Feature Description (cont'd)

Benefits (cont'd)

The AT&T Digital Link is available to customer locations subscribed to the Intra-state nodal services listed in Table 10-A.

Table 10-A. Intrastate Nodal Services.

Nodal Service	Network Platform
AT&T Software Defined Network Service (SDN)	SDN
AT&T UniPlan Dedicated Service	<i>MEGACOM</i>
AT&T UniPlan Basic Service Option	<i>MEGACOM</i>
AT&T UniPlan OneRate Service	<i>MEGACOM</i>
AT&T UniPlan FlatRate Pricing Option	<i>MEGACOM</i>
AT&T Virtual Telecommunications Network Service (VTNS)	both SDN and <i>MEGACOM</i>
AT&T CustomNet utilizing Special Access	<i>MEGACOM</i>
AT&T College-Connect Calling Service	<i>MEGACOM</i>

The following capabilities outline AT&T Digital Link capabilities:

- Outbound local Plain Old Telephone Service (POTS) calls that are originated by the customer
- Outbound toll free calls to 8YY numbers
- Inbound voice calls to POTS numbers assigned to the customer with Direct Inward Dial (DID) capabilities. The POTS numbers assigned to customers are either new numbers assigned by AT&T or ported numbers.

Feature Description (cont'd)

**Benefits
(cont'd)**

The AT&T Digital Link customers are expected to maintain an appropriate number of lines or trunks to another local service platform, and use PBX ARS capabilities to direct the following call types to the other platforms:

- Equal access, either on a presubscribed or dial-around basis, to other carriers

Note: The purpose of Feature 6685 is to address this limitation for presubscribed calls.

- Calls to 500 and 900 service codes
- N11 calls including 211, 311, 411, 611, and 911
- Operator-assisted calls, however AT&T DL customers may subscribe to Universal T1.5 Operator Express to obtain AT&T 0+ and 00- capabilities.

The AT&T Digital Link also offers other attributes. The following list displays these attributes:

- Local calling area that differs from the LEC local calling area. In general AT&T Digital Link offers end-user customers a larger local calling area than the LEC; however, situations exist where a call classified as local by the LEC is classified as toll in the AT&T Digital Link Feature.
 - The PBX customers support both inband and ISDN PRI interfaces.
Note: While service operations issues presently limit the sale of AT&T Digital Link to ISDN PRI customers, from a network call-processing view the ISDN PRI is fully supported.
 - Offer uniformity across platforms. The AT&T Digital Link is supplied from a 4ESS switch platform and a Phase 4 platform using the AT&T owned 5ESS® switch or other non-4ESS switch. All network platforms provide the same functionality on end-user customers.
-

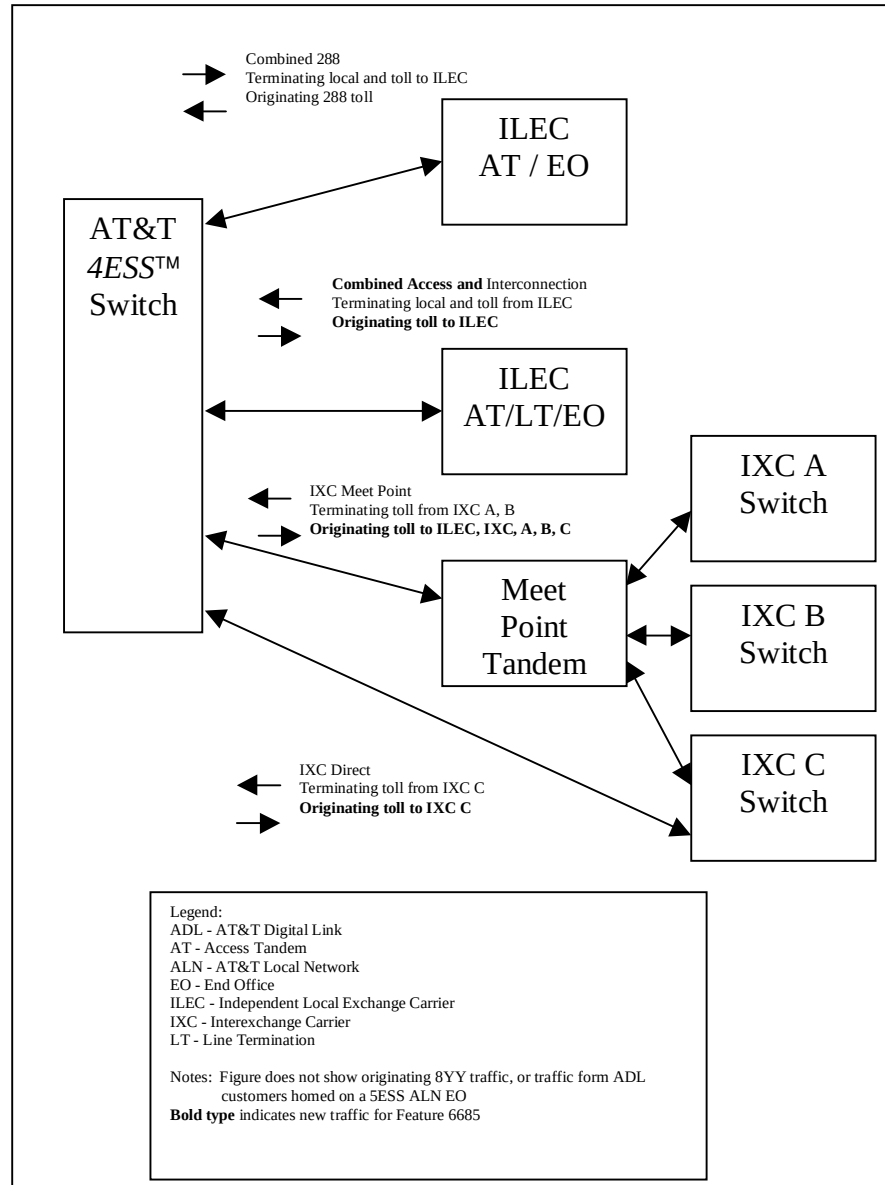


Figure 10-1. Example of Carrier-Trunking Scenario Where ILEC Allows Combined 288 Trunking

Call Flows

**Carrier
Trunking Call
Flow**

There are numerous examples of how a call can be processed between AT&T and other carriers to support ADL, and which type of call may be delivered over what type of trunk. The following call flow shown in Figure 10-1 presents the following scenario:

1. The ILEC permits AT&T to use Combined 288 trunk groups.
2. The Combined 288 trunk groups deliver terminating local calls to ILEC served numbers for completion.
3. The ILEC determines the local settlement pay rate. **End of Call Flow.**

**Combined 288
Trunk Groups**

The AT&T Combined 288 trunk groups are engineered two-way trunk groups built to ILEC end offices and access tandems. They carry traditional access traffic, which consists of originating 288 switched access traffic from the LEC and terminating AT&T toll calls to the LEC for completion. These trunk groups also carry terminating local traffic from AT&T to ILEC when an ADL customer places a local call to the ILEC-served number. Business arrangements allow AT&T to pay for the appropriate settlement rates for each type of traffic: local rates for local traffic, and toll rates for toll traffic, without any requirement to deliver local traffic on a separate trunk group. These trunks do not carry ADL3 originating equal access traffic, and are not changed by this feature.

**Interconnection
Trunk Groups**

The Interconnection trunk group is used for one-way traffic to deliver terminating local and toll calls from the ILEC to AT&T. The ILEC has the capability of building Interconnection trunk groups from access tandems or local tandems, or directly from ILEC end offices when allowed by traffic volume. With the option of ADL3, these trunk groups have the following options:

- Remain unchanged
- Convert into Combined Access and Interconnection trunk groups.

A Combined Access and Interconnection trunk group is used for the following two functions:

- Carrying terminating local and toll calls to the ILEC to AT&T
- Carrying originating 288 traffic from ILEC services.

Presently, ILEC toll services are limited to intra-LATA toll only, but may expand to include inter-LATA.

Call Flow (cont'd)

IXC Meet Point Trunk Group	The AT&T IXC Meet Point trunk groups are built between the <i>4ESS</i> switch and one Meet Point tandem per LATA. Presently, arrangements of the IXC Meet Point trunk groups are through ILEC access tandems, but future tandems that belong either to AT&T or a third party may be substituted. Prior to ADL3, these trunk groups were used to deliver terminating toll traffic to AT&T through a Meet Point arrangement. The tandem being the Meet Point, provides a tandem switching function and acts as the access tandem for NPA-NXXs served by the AT&T <i>4ESS</i> switch. With ADL3, the IXC Meet Point trunk group is used for two-way traffic and also carries originating equal access from ADL3 customers to toll services provided by the IXCs.
IXC Direct Trunk Group	The IXC Direct trunk group is an upgrade of the IXC Meet Point trunk group to accommodate for the increasing volume of terminating toll traffic to the AT&T <i>4ESS</i> switch. This trunk group is a direct connection to the <i>4ESS</i> switch and is preferred to the Meet Point arrangement through the ILEC tandem. There are no IXC Direct trunk groups at this time. Prior to ADL3, this trunk group was used for one-way traffic to deliver terminating toll traffic directly to AT&T. With ADL3, this trunk group is used for two-way traffic and carries originating equal access from ADL3 customers to toll services provided by the IXC.

Call Flow (cont'd)

Equal Access Traffic from ADL3 Customers

Figure 10-1 also illustrates the options that various toll carriers have for receiving equal access traffic from ADL3 customers.

Originating ADL Equal Access to ILEC Toll Services

Originating ADL Equal Access to ILEC toll services are delivered over three different routes, or a combination of these routes, as specified by the ILEC. The following options show the different types of routes:

- IXC Meet Point trunk groups
- Combined Access and Interconnection trunk groups
- IXC Direct trunk groups ordered by the ILEC acting as a toll carrier.

Originating ADL Equal Access to Toll Services of IXCs with Direct Trunking to the 4ESS switch

The following routes display how originating ADL Equal Access calls are processed to toll services of IXCs with direct trunking to the 4ESS switch:

- IXC Meet Point trunk group
 - IXC Direct trunk group converted to two-way traffic.
-

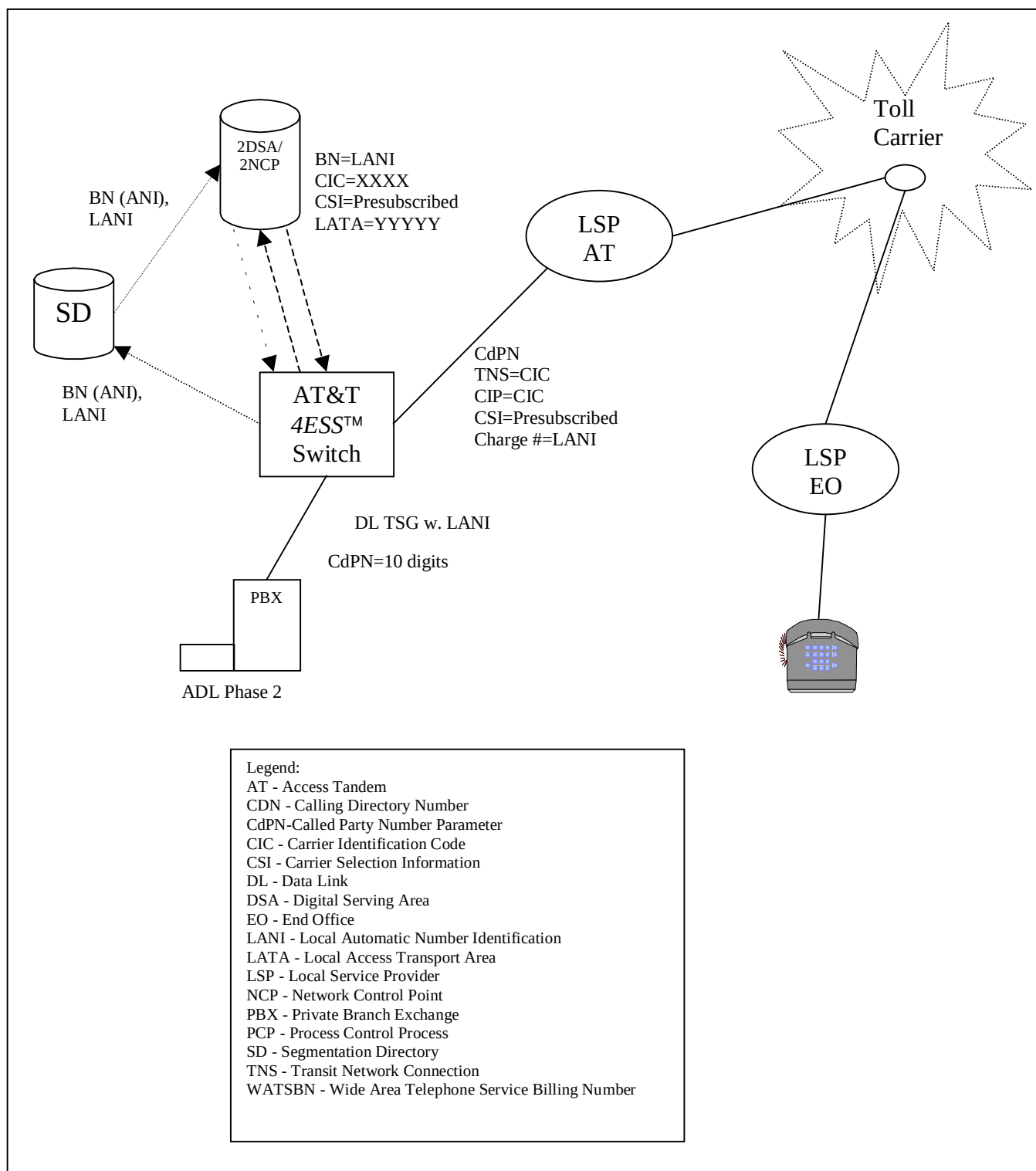


Figure 10-2. Call Flow of ADL Equal Access Presubscription Call from a 4ESS Switch, SDN ADL Customer

Call Flow (cont'd)

ADL Equal Access Presubscription Call Flow

Figure 10-2 illustrates a call flow of a 4ESS switch served Digital Link (DL) customer who makes an originating direct dial toll call by either dialing a 10-digit NPA-NXX-XXXX, 011+CC+NN for international calls, or 1+call for 1+ dial plan if the customer is SDN subscribed. The following call flow demonstrates one possible scenario:

1. The originating 4ESS switch recognizes a Digital Link (DL) call based on the presence of LANI.
2. The 4ESS switch sends a query to the 2DSA/2NCP including the LANI to indicate an SDN-based DL call. The 4ESS switch either sends the query directly, or through the Segmentation Directory (SD).
3. The NCP performs the following functions based on the presence of a LANI:
 - Check the customer data for a presubscription to another toll carrier.
 - Determine one of the following call types:
 - Local
 - Intra-LATA
 - Inter-LATA/international.
 - Identify the CIC associated with the call type.
 - Determine the LATA of the ADL customer location.
 - Send the 4ESS switch the following information:
 - CIC in the TCAP Digits parameter
 - CSI in a new TCAP CSI parameter indicating a presubscribed call
 - LATA in a new TCAP Digits parameter
 - LANI in the TCAP Digits parameter.
4. The 4ESS switch performs the following functions based on the receipt of the CIC, CSI, and LATA:
 - Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access Table in the OSPS ID field.
 - Translate the CRI number to determine routing.
 - Suppress the LRN LNP query.

Call Flow (cont'd)

ADL Equal Access Presubscription Call Flow (cont'd)

- Send the call to the LSP AT with the following information in the ISUP IAM:
 - TCAP Digits (Routing Number) in the CdPN parameter.
 - Charge number populated with the TCAP Billing Number (LANI); this parameter is sent only if it differs from the CPN.
 - CPN populated with current ADL requirements unless a Q.931 station number is available.
 - CIC populated in the TNS and CIP parameters.
 - CSI populated in the CSI parameter.
 - JIP of the OAS.
 - OLI=00 when ADL customer does not provide OLI.
- Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call.

This record is identified uniquely due to the presence of Module 920 and Module 947, which is suppressed in RICS.

5. The 4ESS switch creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.
 6. The LSP AT receives the call and sends it on to the appropriate Toll Carrier based on the CIC value received in the TNS parameter.
 7. The LSP AT returns an exit message to the 4ESS switch when the call is sent to the IXC. This message is used to initiate carrier connect time recording. **End of Call Flow.**
-

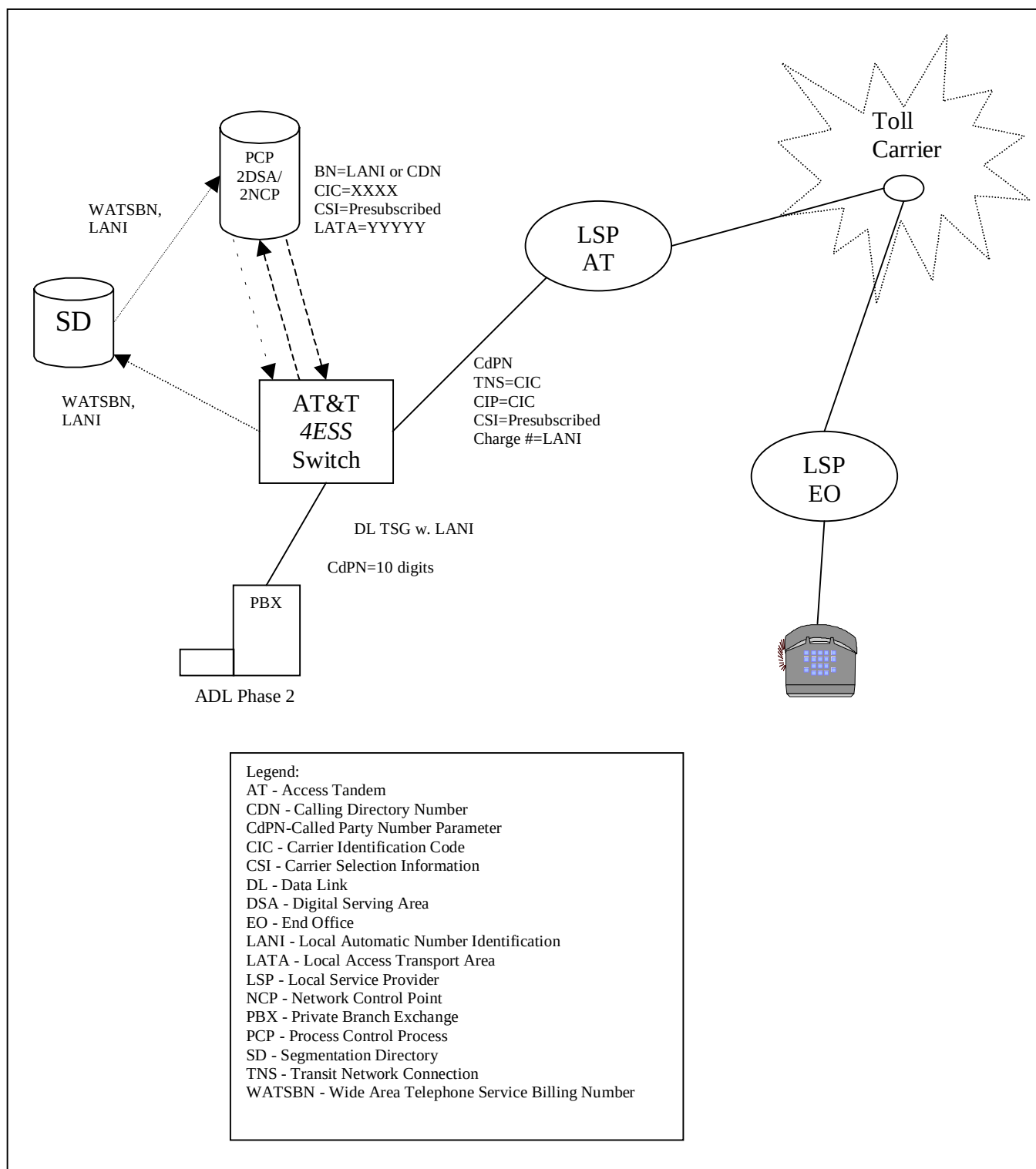


Figure 10-3. Call Flow of a Presubscription Call from a 4ESS Switch, MEGACOM ADL Customer

Call Flow (cont'd)

**Presubscription
Call from a
4ESS Switch,
MEGACOM
ADL Call Flow**

Figure 10-3 illustrates a 4ESS switch served DL customer who makes an originating direct dial toll call by dialing either NPA-NXX-XXXX or 011+CC+NN. This customer is presubscribed to another toll carrier for intra-LATA or inter-LATA/international toll service. The following call flow depicts one scenario:

1. The originating 4ESS switch receives the call in the POTS domain.
2. The 4ESS switch sends a query to the PCP 2DSA/2NCP including the LANI and the WATSBN. This is either sent directly or through the SD.
3. The NCP performs the following functions based on the presence of an LANI:
 - Check the customer data for a presubscription to another toll carrier
 - Determine one of the following call types:
 - Local
 - Intra-LATA
 - Inter-LATA/international.
 - Identify the CIC associated with the call type.
 - Determine the LATA of the ADL customer location.
 - Send the 4ESS switch the following information:
 - CIC in the TCAP digits parameter
 - CSI in a new TCAP CSI parameter indicating a presubscribed call
 - LATA in a new TCAP digits parameter
 - LANI in the TCAP digits parameter.
4. The 4ESS switch performs the following functions based on the receipt of the CIC, CSI, and LATA:
 - Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access Table in the OSPS ID field.
 - Translate the CRI number to determine routing.

Call Flow (cont'd)

**Presubscription
Call from a
4ESS Switch,
MEGACOM
ADL Call Flow
(cont'd)**

- Suppress the LRN LNP query
- Send the call to the LSP AT with the following information in the ISUP IAM:
 - TCAP Digits (Routing Number) in the CdPN parameter
 - Charge number populated with the TCAP Billing Number (LANI); this parameter is sent only if it differs from the CPN.
 - CPN populated with current ADL requirements unless a Q.931 station number is available.
 - CIC populated in the TNS and CIP parameters.
 - CSI populated in the CSI parameter.
 - JIP of the OAS.
 - OLI=00 when ADL customer does not provide OLI.
- Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call.

This record is identified uniquely due to the presence of Module 920 and Module 947, which is suppressed in RICS.

5. The 4ESS switch creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.
 6. The LSP AT receives the call and sends it on to the appropriate Toll Carrier based on the CIC value received in the TNS parameter.
 7. The LSP AT returns an exit message to the 4ESS switch when the call is sent to the IXC. This message is used to initiate carrier connect time recording. **End of Call Flow.**
-

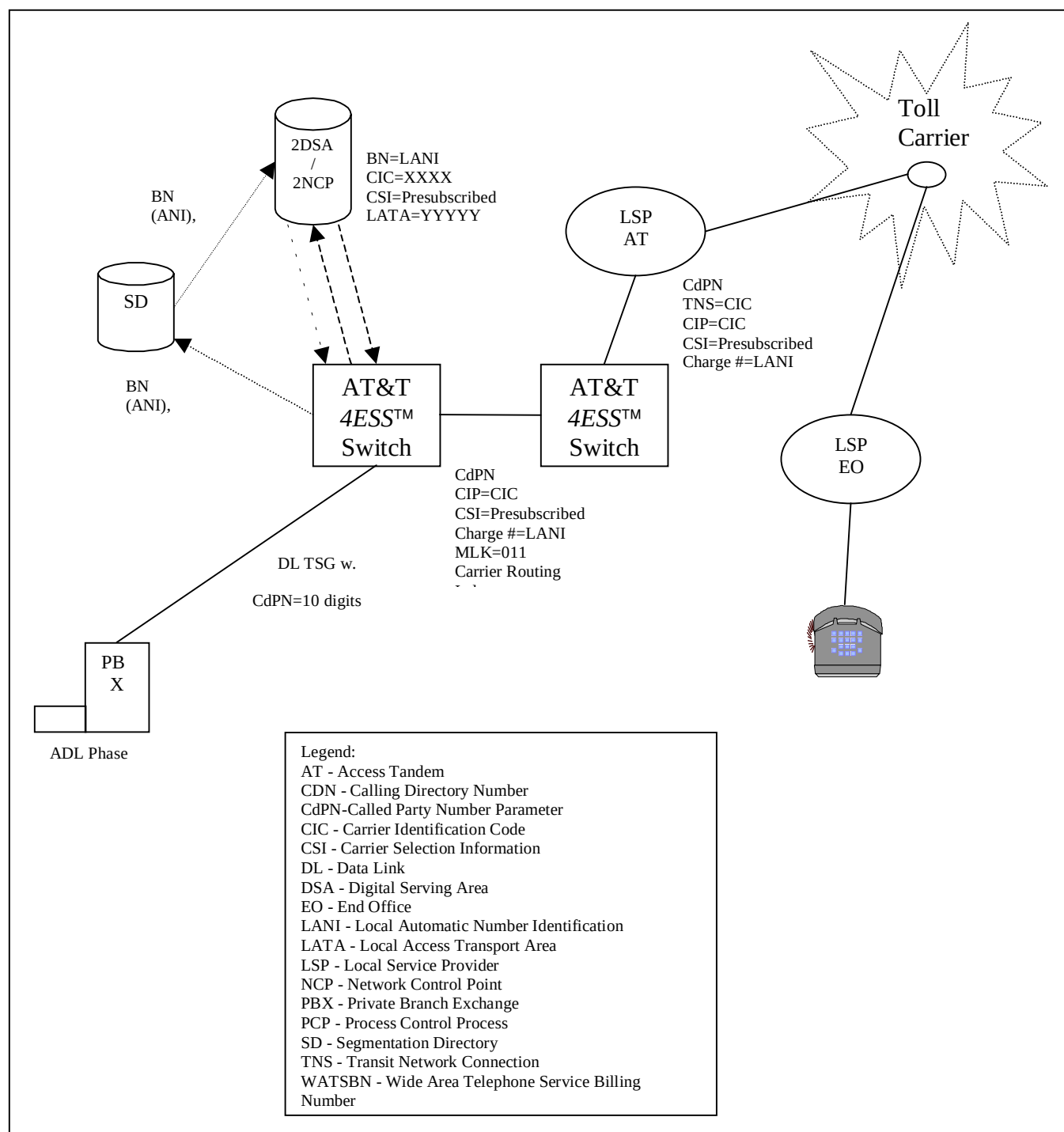


Figure 10-4. Call Flow of an ADL Equal Access Presubscription Call from a 4ESS Switch, SDN ADL Customer

Call Flow (cont'd)

ADL Equal Access Presubscription Call from a 4ESS, SDN ADL Call Flow

Figure 10-4 illustrates a call flow of a 4ESS switch served Digital Link (DL) customer who makes an originating direct dial toll call by either dialing a 10-digit NPA-NXX-XXXX, 011+CC+NN for international calls, or 1+call for 1+ dial plan if the customer is SDN subscribed. The following call flow demonstrates one possible scenario:

1. The originating 4ESS switch recognizes a call as a Digital Link (DL) call based on the presence of LANI.
2. The 4ESS switch sends a query to the 2DSA/2NCP including the LANI to indicate an SDN-based DL call. The 4ESS switch either sends the query directly, or through the Segmentation Directory (SD).
3. The NCP performs the following functions based on the presence of a LANI:
 - Check the customer data for a presubscription to another toll carrier.
 - Determine one of the following call types:
 - Local
 - Intra-LATA
 - Inter-LATA/international.
 - Identify the CIC associated with the call type.
 - Determine the LATA of the ADL customer location.
 - Send the 4ESS switch the following information:
 - CIC in the TCAP Digits parameter
 - CSI in a new TCAP CSI parameter indicating a presubscribed call
 - LATA in a new TCAP Digits parameter
 - LANI in the TCAP Digits parameter.
4. The OAS performs the following functions based on the receipt of the CIC, CSI, and LATA:
 - Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access table in the OSPS ID field.
 - Translate the CRI number to determine routing.
 - Suppress the LRN LNP query.

Call Flow (cont'd)

**ADL Equal
Access
Presubscription
Call from a
4ESS, SDN
ADL Call Flow
(cont'd)**

- Identify routing and send the call to the TAS with the following information in the ISUP IAM:
 - Dialed number in the CdPN parameter
 - Charge number populated with TCAP Billing Number (LANI)
 - CPN populated with current ADL requirements
 - CIC populated in the CIP parameter
 - CSI populated in the CSI parameter
 - JIP of the OAS
 - OLI=00 when ADL customer does not provide OLI
 - MLK bits of the DNHR parameter sent to 011 to indicate an ADL Equal Access call
 - CRI in the UTA Generic Operations Parameter.
 - Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call
5. The TAS recognizes the call as an ADL Equal Access call based on the DNHR MLK = 011 and translates the CRI digits received in the UTA GOP parameter of the IAM to determine routing.
 6. The TAS sends the call to the LSP AT with the following information in the ISUP IAM:
 - The dialed number in the CdPN parameter.
 - The charge number populated with the TCAP Billing Number LANI; this parameter is sent only if it differs from the CPN.
 - The CPN populated with current ADL requirements unless a Q.931 station number is available.
 - The CIC populated in the TNS and CIP parameters.
 - The CSI populated in the CSI parameter.
 - The JIP of the OAS.
 - The OLI=00 when ADL customer does not provide OLI.
 7. The TAS creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.

Call Flow (cont'd)

**ADL Equal
Access
Presubscription
Call from a
4ESS, SDN
ADL Call Flow
(cont'd)**

8. The LSP AT receives the call and sends it on to the appropriate Toll Carrier based on the CIC value received in the TNS parameter.
 9. The LSP AT returns an exit message to the 4ESS switch when the call is sent to the IXC. This message is used to initiate carrier connect time recording. **End of Call Flow.**
-

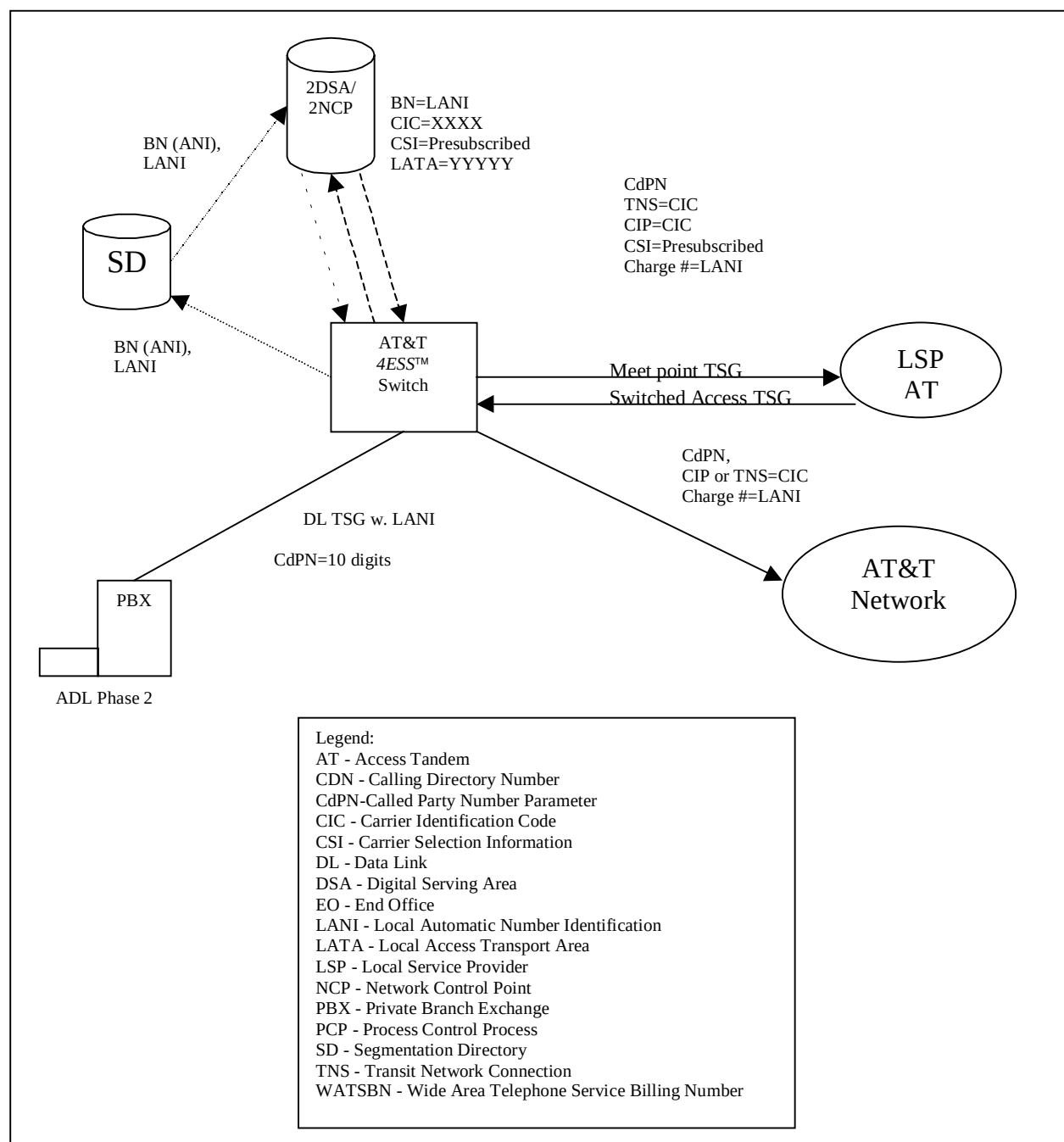


Figure 10-5. Call Flow of an ADL Equal Access Call Presubscribed to a Carrier Solutions CIC

Call Flow (cont'd)

ADL Equal Access Presubscription Call to a Carrier Solutions CIC Call Flow

Figure 10-5 illustrates a call flow of a 4ESS switch served Digital Link (DL) customer who makes an originating direct dial toll call by either dialing a 10-digit NPA-NXX-XXXX, 011+CC+NN for international calls, or 1+call for 1+ dial plan if the customer is SDN subscribed. The following call flow demonstrates one possible example:

1. The originating 4ESS switch recognizes the call as a Digital Link (DL) call based on the presence of LANI.
2. The 4ESS switch sends a query to the 2DSA/2NCP including the LANI to indicate an SDN-based DL call. The 4ESS switch either sends the query directly, or through the Segmentation Directory (SD).
3. The NCP performs the following functions based on the presence of a LANI:
 - Check the customer data for a presubscription to another toll carrier.
 - Determine one of the following call types:
 - Local
 - Intra-LATA
 - Inter-LATA/international.
 - Identify the CIC associated with the call type
 - Determine the LATA of the ADL customer location
 - Send the 4ESS switch the following information:
 - The CIC in the TCAP Digits parameter
 - The CSI in a new TCAP CSI parameter indicating a presubscribed call
 - The LATA in a new TCAP Digits parameter
 - The LANI in the TCAP Digits parameter.
4. The OAS performs the following functions based on the receipt of the CIC, CSI, and LATA:
 - Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access Table in the OSPS ID field.
 - Translate the CRI number to determine routing.
 - Suppress the LRN LNP query .

Call Flow (cont'd)

ADL Equal Access Presubscription Call to a Carrier Solutions CIC Call Flow (cont'd)

- Identify routing and send the call to the LSP AT with the following information in the ISUP IAM:
 - Original dialed number in the CdPN parameter
 - Charge number populated with the TCAP Billing Number (LANI)
 - CPN populated with current ADL requirements
 - CIC populated in the CIP parameter
 - CSI populated in the CSI parameter
 - JIP of the OAS
 - OLI=00 when ADL customer does not provide OLI
 - MLK bits of the DNHR parameter sent to 011 to indicate an ADL Equal Access call
 - CRI in the UTA Generic Operations Parameter.
 - Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call
5. The TAS recognizes the call as an ADL Equal Access call based on the DNHR MLK = 011 and translates the CRI digits received in the UTA GOP parameter of the IAM to determine routing.
 6. The TAS sends the call to the LSP AT with the following information in the ISUP IAM:
 - The dialed number in the CdPN parameter.
 - The charge number populated with the TCAP Billing Number LANI; this parameter is sent only if it differs from the CPN.
 - The CPN populated with current ADL requirements unless a Q.931 station number is available.
 - The CIC populated in the TNS and CIP parameters.
 - The CSI populated in the CSI parameter.
 - The JIP of the OAS.
 - The OLI=00 when ADL customer does not provide OLI.
 7. The 4ESS switch creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. This is based on the call egressing the ASN on an LSP LOCAL trunk. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.

Call Flow (cont'd)

**ADL Equal
Access
Presubscription
Call to a
Carrier
Solutions CIC
Call Flow
(cont'd)**

-
8. The LEC receives the call, performs appropriate call processing, and sends it on to AT&T on a switched access trunk group provisioned for Carrier solutions with the CIC value in the CIP or TNS parameter.
 9. The AT&T *4ESS* switch receives the call on the switched access trunk group, and performs Carrier Solutions call processing based on the Carrier Solutions CIC in the CIP or TNS parameter. The call appears as a new call to the *4ESS* switch. **End of Call Flow.**
-

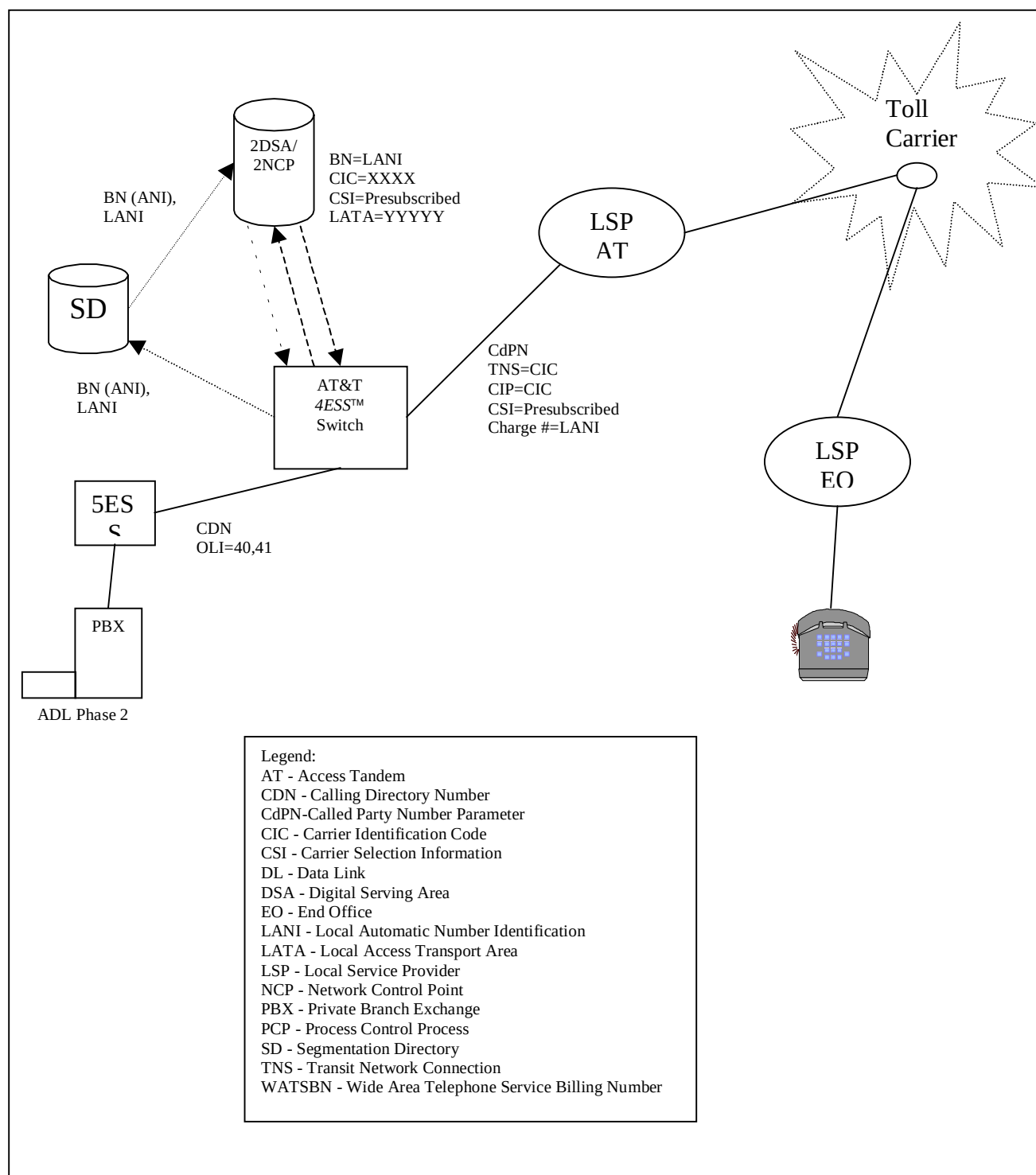


Figure 10-6. Call Flow of Presubscribed Call from a 5ESS Switch SDN ADL or PCP MEGACOM Customer

Call Flow (cont'd)

Call Flow for a Presubscribed Call from a 5ESS switch SDN ADL or PCP MEGACOM Customer

1. The ALN EO receives a 10D, 1+ 10D or 011+CC+NN from the PBX
 2. The ALN EO associates an ARS Group, PNDP, MCRI and SFG data with the call, as specified in the ADL Phase 4 Technical Plan, and performs the following functions:
 - For customers with features on local calls, Digit Analysis at the ALN switch classifies all local and intra-LATA calls as Type CI=INTER. All calls are routed using the RTI provisioned in the carrier forms associated with 288 or 732. This RTI# points to a TG connecting to the 4ESS switch. The 5ESS switch also looks into the ICF form to verify that the carrier is allowed to complete intra-LATA toll calls.
 - For customers with no features on local calls, the 5ESS switch provides local/toll differentiation and routes local calls to the terminating local switch or tandem.
- Note:** Toll calls are classified as Type CI=INTER or Type CI=TOLL and the call is routed to a 4ESS switch.
- For all calls sent to the 4ESS switch, the following information is encoded in the SS7 message:
 - Called party number = dialed digits
 - Calling party number = TG Billing Number
 - Originating Line Information = 41 (form the MCRI/II digits)
 - Charge Number = SDN ANI (billing number provisioned in the SFG)
 - User Service Information (USI) = Bearer Capability
 - JIP
 - CSI = carrier presubscribed
 - TNS parameter = for International calls only.
3. The 4ESS switch creates a query to the SDN 2DSA/2NCP with OST = 41, as detailed in the Phase 4 Technical Plan, when it receives the ISUP IAM with OLI = 41.
 4. The 2DSA/2NCP receives the SP query message or the NCP query, and retrieves the customer record. Based on the receipt of OST = 40 or 41, the SDN 2DSA/2NCP performs ADL processing using the content of the digits as the local ANI.
 5. The NCP performs the following functions based on the presence of TCAP digits used as the LANI:
 - Initiate the LTD logic and identify the call as an intra-LATA toll call.

Call Flow (cont'd)

Call Flow for a Presubscribed Call from a 5ESS switch SDN ADL or PCP MEGACOM Customer (cont'd)

- Check the customer data for presubscription to another intra-LATA toll carrier; if so the CIC of that toll carrier is identified
 - Send the 4ESS switch the following information:
 - The CIC in the TCAP Digits parameter
 - The CSI in a new TCAP CSI parameter indicating a presubscribed call
 - The LATA in a new TCAP Digits parameter
 - The LANI in the TCAP Digits parameter.
6. The 4ESS switch performs the following functions based on the receipt of the CIC, CSI, and LATA:
- Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access Table in the OSPS ID field.
 - Translate the CRI number to determine routing.
 - Suppress the LRN LNP query.
 - Send the call to the LSP AT with the following information in the ISUP IAM:
 - The original dialed number in the CdPN parameter.
 - The charge number populated with the TCAP Billing Number LANI; this parameter is sent only if it differs from the CPN.
 - The CPN populated with current ADL requirements unless a Q.931 station number is available.
 - The CIC populated in the TNS and CIP parameters.
 - The CSI populated in the CSI parameter.
 - The JIP of the OAS.
 - The OLI=00 unless OLI is sent in an ISDN Q9.31 message.
 - Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call.

This record is identified uniquely due to the presence of Module 920 and Module 947, which is suppressed in RICS.

Call Flow (cont'd)

**Call Flow for a
Presubscribed
Call from a
5ESS switch
SDN ADL or
PCP
MEGACOM
Customer
(cont'd)**

- Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call
- This record is identified uniquely due to the presence of Module 920 and Module 947, which is suppressed in RICS.
7. The 4ESS switch creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. This is based on egressing the ASN on an LSP LOCAL type of trunk. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.
 8. The LSP AT receives the call and sends it on to the appropriate toll carrier based on the CIC value received in the TNS parameter. The LSP AT returns an exit message to the 4ESS switch when the call is sent to the IXC. This message is used to initiate carrier-connect time recording.
 9. The 5ESS switch generates AMA records as follows:
 - For all toll calls, an access AMA record including AMA Modules 306 and 611 to record OLI and Trunk Billing Number (LANI)
 - For all local non-featured calls, a billing AMA record including AMA Modules 306 and 611. **End of Call Flow.**
-

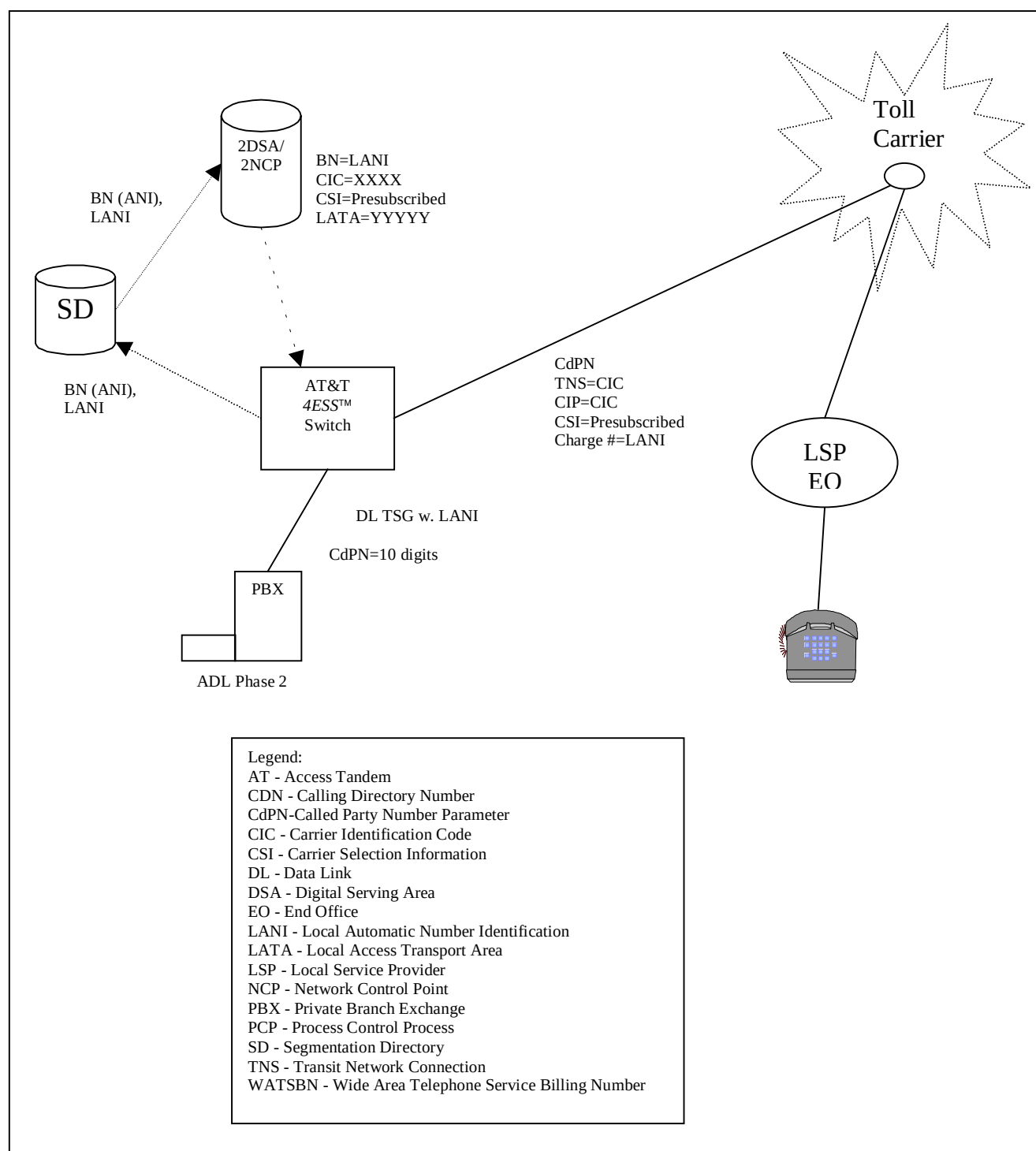


Figure 10-7. Call Flow of an ADL Equal Access Presubscription Call from a 4ESS Switch, SDN ADL Customer with Direct Connect Trunks to the Toll Carrier

Call Flow (cont'd)

ADL Equal Access Presubscription Call from a 4ESS switch, SDN ADL Customer with Direct Connect trunks to the Toll Carrier Call Flow

Figure 10-7 illustrates a call flow of a 4ESS switch served Digital Link (DL) customer who makes an originating direct dial toll call by either dialing a 10-digit NPA-NXX-XXXX, 011+CC+NN for international calls, or 1+call for 1+ dial plan if the customer is SDN subscribed. The following call flow demonstrates one possible example:

1. The originating 4ESS switch recognizes call as a Digital Link (DL) call based on the presence of LANI.
2. The 4ESS switch sends a query to the 2DSA/2NCP including the LANI to indicate an SDN-based DL call. The 4ESS switch either sends the query directly, or through the Segmentation Directory (SD).
3. The NCP performs the following functions based on the presence of a LANI:
 - Check the customer data for a presubscription to another toll carrier.
 - Determine one of the following call types:
 - Local
 - Intra-LATA
 - Inter-LATA/international.
 - Identify the CIC associated with the call type
 - Determine the LATA of the ADL customer location
 - Send the 4ESS switch the following information:
 - The CIC in the TCAP Digits parameter
 - The CSI in a new TCAP CSI parameter indicating a presubscribed call
 - The LATA in a new TCAP Digits parameter
 - The LANI in the TCAP Digits parameter.
4. The 4ESS switch performs the following functions based on the receipt of the CIC, CSI, and LATA:
 - Construct a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC.
 - Access the OSPS ID Access table and use the constructed 10-digit number to determine the Carrier Routing Index (CRI). This information is provisioned in the OSPS Access Table in the OSPS ID field.
 - Translate the CRI number to determine routing.
 - Suppress the LRN LNP query.

Call Flow (cont'd)

**ADL Equal
Access
Presubscription
Call from a
4ESS switch,
SDN ADL
Customer with
Direct Connect
trunks to the
Toll Carrier
Call Flow
(cont'd)**

- Send the call to the toll carrier over direct connect trunks with the following information in the ISUP IAM:
 - TCAP Digits (Routing Number) in the CdPN parameter.
 - Charge number populated with TCAP Billing Number (LANI); this parameter is sent only if it differs from the CPN.
 - CPN populated with current ADL requirements unless a Q.931 station number is available.
 - CIC populated in the TNS and CIP parameters.
 - CSI populated in the CSI parameter.
 - JIP of the OAS.
 - OLI=00 when ADL customer does not provide OLI.
- Create an SDN AMA record reflecting the Billing Number received in the originating number fields with the following appended:
 - Module 941 to record the CIC
 - Module 920 to record the CSI
 - Module 947 to indicate an ADL call.

This record is identified uniquely due to the presence of Module 920 and Module 947, which is suppressed in RICS.

5. The 4ESS switch creates a true access record with a call code of 110 to designate an originating access record and reflecting the LANI as the originating number. Module 908 is appended to identify the Access ID of the LSP LOCAL TSG.
 6. The LSP AT receives the call and sends it on to the appropriate toll carrier based on the CIC value received in the TNS parameter.
 7. The LSP AT returns an exit message to the 4ESS switch when the call is sent to the IXC. This message is used to initiate carrier connect time recording. **End of Call Flow.**
-

Provisioning

Provisioning	Recent Change (RC) Form 809 is used to activate/deactivate this feature, and to indicate whether it is available or not available in the <i>4ESS</i> switch. The FEATURE ITEM field on RC 809 is populated with PF63 and the ON OR OFF field is set to either ON or OFF. To make this feature available, set the ON OR OFF field to ON. To discontinue the availability of this feature, set the ON OR OFF field to OFF. The default is OFF. Verification is accomplished by Verify Forms 16az and 8j.

Recording

Recording	For all ADL originated non-8YY voice calls routed to an IXC or LSP, the TAS generates an ADL Originating Access record with Call Code = 110. The ADL originating access recording requirements are based on the Bellcore GR 1083, with the exception of long-duration calls; AT&T long-duration requirements follow. An Access ID Module, Module 908, is appended to the ADL originating access record to differentiate IXCs from LSPs. The LOCAL NODAL Module (939) is appended to the record, and contains the JIP associated with the OAS or the JIP received in the ISUP IAM JIP parameter. With the introduction of this feature, the following modules with the call code value of 110 are supported by the Recorded Information Selection System (RICS) and the Network Recording Management (NRM) : • 908 • 915 • 920 • 939 • 947 • 949. These modules are handled in the same manner as Access records with the call code value of 119 or 720.

Network Management (Not Affected)

Maintenance Troubleshooting (Not Affected)

Transition Considerations

Dependency on Other Features	This feature is dependent on the deployment/availability of following features, services, and capabilities: • <i>4E Local For Nodal Customers- Phase 2 Feature (5371)</i> • <i>End Office Local Nodal Phase 1 Feature (5538)</i> • <i>Additional Recording Capabilities for Digital Link Feature (6762)</i> • <i>Universal 1.5 Access Feature (4570).</i>
Feature Deployment	It is necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational. This feature is activated/deactivated by Recent Change Form 809, as described in the “Provisioning” section in this chapter.
Feature Activation	This feature can also be activated by Absolute Word Change. This method is not recommended but may be required in certain circumstances.

Transition Considerations (cont'd)

**Absolute Word
Change**

Item **OD4PF63** in the **OD4OFCCOPY2** structure is the office parameter that controls the On/Off state of this feature.

CAUTION: *The OD4OFCCOPY2 structure contains On/Off bits for many features. Be certain that any change you make will affect this feature only.*

- Structure: OD4OFCCOPY2
- Core Address: 7123620
- Size of OD4PF63: 1
- Displacement: 14
- On: 1
- Off: 0 (default).

The core address listed is valid for the 4E24 Generic, but may not be valid for any subsequent generic.

Input/Output Manual Pages (Not Affected)

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11 **Dial 1 Service Integration Feature (6750)**

NOTE:

Feature 6750 has been decommitted as of January 22, 1999. Leave the ON/OFF bit assigned to this feature in the OFF state. This will prevent undesirable conditions from occurring.

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12 Additional Recording Capabilities for AT&T Digital Link Phase 2 Feature (6762)

Overview This feature provides for recording of the Access ID for calls egressing the AT&T Switched Network on Local Service Provider trunks.

In This Chapter This chapter contains the following topics:

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Feature Description

Introduction

This feature modifies the *4E Local for Nodal Customers* Feature (5371). When Feature 5371 was introduced in 4E22 Release 4, it created the Local Service Provider (LSP) type of trunk to handle traffic to and from the AT&T end office *4ESS*™ switch. However, Feature 5371 did not provide for recording the Access ID for calls egressing the AT&T Switched Network on LSP trunks. This feature modifies Feature 5371 to provide that capability.

As provided by this feature, the *4ESS* switch triggers an Access ID event for all calls that egress the switch on LSP local trunk groups that are provisioned with an Access ID. This causes the switch to append Automatic Message Accounting (AMA) Module 908 to the AMA and the Access Charge Verification (ACV) records.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording

Module 908	As previously described, this feature appends existing AMA Module 908 to the AMA and the ACV records for all calls that egress the switch on LSP local trunk groups that are provisioned with an Access ID. The 4ESS switch populates the Access ID in Module 908 using existing procedures. Module 908 is used by Access Management to identify AT&T Digital Link local service based on the Access ID value that is provisioned on the LSP local trunk groups. Module 908 is appended to the AMA and ACV records regardless of whether the records are generated by the 3B Processor or the Call Detail Recording Platform (CDRP).

Network Management (Not Affected)

Maintenance/Troubleshooting(Not Affected)

Transition Considerations

Feature Deployment	It is not necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.
Feature Activation	This feature is activated automatically with software deployment.

Input/Output Manual Pages (Not Affected)

13 **4ESS™ -2000 Switch SCS Cache Change to 128 Milliseconds Feature (6881)**

Overview

This feature improves the sound quality of short duration announcements by decreasing the cache increment from 512 milliseconds and 1.024 seconds to increments of 128 milliseconds.

In This Chapter

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Feature Description

Background

Prior to this feature, the 4ESS™ Service Circuit System (SCS) stored announcements in cache in a single 513-millisecond increment or in 1.024-second increments. When these announcements were put together, the overall announcement such as a string of digits sounded unclear and choppy. This new feature allows for announcement lengths of 128, 256, 384, 512, 640, 768, and 896 milliseconds; and 1.024 seconds to 32.640 seconds, in 128 millisecond increments.

Specific Capabilities

Specifically, this feature provides the following capabilities:

- Provides a utility for converting existing SCS cache-based announcements to 128-millisecond increments.
 - Provides each SCS with a total of 512 seconds of SCS cache-based announcements.
 - Provides a total of 4096 eighth second (128 milliseconds). Note that this means that a total of 512 seconds of announcements can be stored in cache.
 - Provides for a length of a single cache-based announcement of from 128 milliseconds to 32.640 seconds, in 128-millisecond increments.
 - Provides that the Centralized Announcement Update Control System (CAUCS) restricts creating records of new announcements to cache and copies of existing announcements to cache during feature deployment. However, after deployment, this restriction is removed.
 - Provides that CAUCS updates the announcement table with the correct announcement "length value" for all existing cache-based announcements after the SCS and Announcement Administrative Processor (AAP) utility has been applied.
-

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational. However, all Service Circuit Units (SCUs) and AAPs must be running the latest software update for this feature to be usable as described in "Feature Activation".
Feature Interactions	This feature impacts the <i>Announcement Audit Feature 5379</i> . Cache-based announcements will fail until this feature has been deployed at all SCS locations.
Feature Activation	This feature is turned on automatically by software deployment—SCU and AAP software only.
Feature Backout	This feature can be backed out as long as an announcement record or a delete to the cache memory has not taken place with the new SCU software of this feature. Once a cache memory record has occurred with the new SCU software, Feature 6881 can no longer be backed out; in this case, the SCU disks would have to be re-copied to eliminate this feature.

Input/Output Manual Pages (Not Affected)

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14 700-PIC Verification for AT&T Network Connections Feature (6896)

Overview

This feature allows AT&T Network Customers (ANC) end users to dial their Presubscribed Interexchange Carrier (PIC) verification numbers to receive a carrier-specific announcement.

In This Chapter

This chapter contains the following topics:

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Feature Description

Introduction

This feature provides wholesale end users with the ability to verify their Long Distance [(inter-Local Access and Transport Area (LATA)) Carrier and their Regional/Local Toll (intra-LATA) Carrier. This feature allows AT&T Network Customers (ANC) end users to dial the industry standard Presubscribed Interexchange Carrier (PIC) verification number to receive a carrier-specific announcement.

This feature also provides the necessary routing treatments to route the ANC 700 verification calls to the appropriate Public Announcement System (PAS) based on the Carrier Identification Code (CIC) value of the incoming call.

This feature improves the accuracy and value of the 4ESS™ switch Calling Party Number (CPN) Anomaly Report, which is used to indicate if CPNs are not being passed from switches connected to the AT&T Switched Network (ASN), as required by the Federal Communications Commission.

The Calling Party Number Identification Service (CPNIS), also known as Caller ID, relies on the proper delivery of the CPN through the ASN. In the past, AT&T has been held responsible for CPN anomalies (deviations from normal conditions) that occurred because the CPN was not passed from connecting switches. This feature allows AT&T to detect and document these events so that it can initiate prompt corrective action.

Feature Description (cont'd)

Dependencies

Feature 5791

The *CIC-Based NAI Feature* (5791), 234-010-223AC, specifies the CIC derivation rules for carrier solutions calls that access the AT&T Switched Network (ASN) through the ISDN User Part-Network Interconnect (ISUP-NI) or Multi-Frequency (MF) signaling over switched access trunk groups.

Feature 5840

Carrier Solutions 1+CIC Wholesale Phase 1 Feature (5840), 234-010-224AC, changes the paradigm of how the CIC is used to determine wholesale calls.

Feature 5918

Carrier Solutions Inband Signaling for Carrier Solutions Nodal Customers Feature (5918), 234-010-232AC, specifies the requirements for carrier solution calls accessing the ASN through nodal trunk groups.

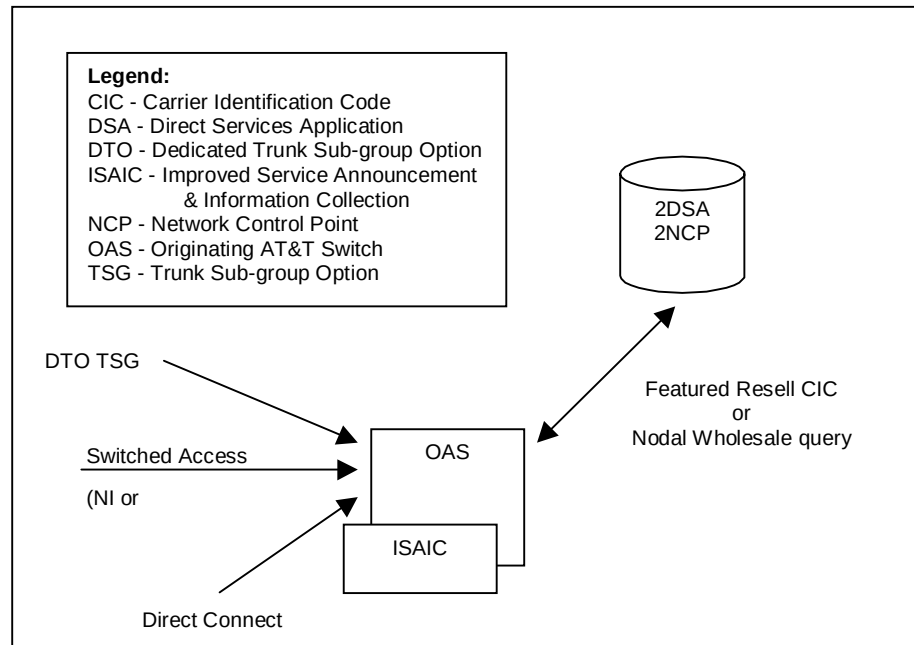


Figure 14-1. 700-PIC Verification Call Flow in SMO

Call Flow

Overview

Figure 14-1 depicts the network call flow for the 700-PIC verification feature in SD (4ESS switch) Mode of Operation (SMO). This is with the assumption that Improved Service Announcement & Information Collection (ISAIC) is deployed at every 4ESS switch.

Call Flow (cont'd)

700-PIC Verification in PMO

The following call flow depicts one possible scenario for the AT&T Network Connections (ANC) 700-PIC verification announcement calls and interactions with the AT&T 700-verification announcement calls in the 4ESS switch PMO:

1. The calling party is either presubscribed (PICedd) to a wholesale CIC or prefixes the dialed number with 1+0+CIC, where CIC is a wholesale CIC. The caller dials one of the following numbers:
 - The Industry PIC Verification North American Numbering Plan (NANP) number for inter-LATA long distance carrier verification is one of the following:
 - 1+700+555+4141
 - 1+0+CIC+700+555+4141.
 - The Industry PIC verification NANP number for intra-LATA Local Toll carrier verification is one of the following:
 - 1+NPA+700+4141
 - 1+0+CIC+NPA+700+4141.
2. The PIC of the calling party or the 1+0+CIC dialed by the calling party causes one of the following to occur:
 - The local exchange office routes the call over a switched access Dedicated Trunk Subgroup Option (DTO) Trunk Sub-Group (TSG) or a switched access 10288 trunk group.
 - The call is routed over a nodal trunk group when the carrier solution customer is a nodal customer.
3. The call arrives at the 4ESS switch and the 4ESS Originating AT&T Switch (OAS) derives the CIC for the incoming call.
4. The 4ESS OAS derives the CIC for incoming switched access calls based on Feature 5198, Feature 5840, and Feature 5791 using the CIC derivation rules and procedures.
5. Incoming nodal access calls require one of the following actions to occur as a new requirement for Feature 6896:
 - If the AD2 value assigned to Feature 6896 is not encountered in the code group translations, then the 4ESS switch derives the CIC from a nodal access wholesale call. This feature also requires that the 4ESS switch maps the derived CIC to the Calls In Progress (CIP) ISUP signaling parameter and pass it in the IAM through the ASN. This causes Emergency Call Record (ECR) features to be separated from call processing.

Call Flow (cont'd)

700-PIC Verification in PMO (cont'd)

- If the AD2 value assigned to Feature 6896 is encountered in the code group translations, then the 4ESS switch derives the CID from the trunk group before proceeding with call processing.
6. The 4ESS OAS identifies the call as an incoming call wholesale PIC verification call by the following:
 - The call is switched access or nodal access wholesale
 - The call is PIC verification based on one of the following dialed numbers:
 - 700+555+4141
 - NPA+700+4141.

Note: An incoming wholesale call in the format of 0+700+555+4141, 0+NPA+700+4141, or a Hotel/Motel 1+PIC verification call is considered a wholesale operator call but receives the processing specified by this feature.

7. The 4ESS OAS processes the call, sets the resell flag, and determines if the incoming call is one of the following:
 - The call is a switched access wholesale call with a non-featured CIC. Proceed to Step 10.
 - The call is a switched access wholesale call with a featured CIC. Proceed to Step 8.
8. The switched access wholesale call with a featured CIC is determined and the call is processed by the guidelines in Table 14-A.

Table 14-A. Switched Access Wholesale Call-Handling Methods

If...	Then...
The 4ESS OAS receives an optional parameter "Reseller Indicator = Non Featured" from the DSA SDN/2NCP.	The 4ESS OAS continues to apply call-processing requirements defined in Feature 5840.
The 4ESS OAS receives a Connection Control-Connect (CCC) operation in the TCAP end message with no Reseller Indicator parameter.	The 4ESS OAS continues to apply call-processing requirements defined in Feature 5840. <i>Proceed to Table 14-B.</i>

Call Flow (cont'd)

Table 14-B. CCC Operation in the TCAP End Message with No Reseller Indicator Parameter

If...	Then...
The TCAP end message indicates a non-700-PIC verification routing number.	The 4ESS switch routes the call according to the database response.
The TCAP end message indicates a routing of either 700+555+4141 or NPA+700+4141.	The 4ESS switch applies the ANC 700-PIC verification announcement logic. <i>Proceed to Step 10.</i>

700-PIC Verification in PMO (cont'd)

9. Carrier Solutions Nodal (CSN) calls access the ASN through the Software Defined Network Access (SDNA) domain. The 4ESS OAS queries the DSA SDN/2NCP database with the 10-digit dialed number, upon receipt of the inter-LATA PIC verification number, and one of the following occurs:
 - If the dialed number is 700+555+4141, then as a new requirement, the Software Defined Network Service Management System (SDNSMS) CAL Logic at the database returns 700+555+4141 as the routing number to the 4ESS switch for an ANC resell customer record.
 - If the dialed number is NPA+700+4141, then the call is treated as any other dialed 10-digit number. This is because the NPA+700+4141 is not found in the Domestic Terminating Table (DTT). Domain information is set to POTS. The 4ESS switch applies the ANC 700-PIC verification announcement routing logic upon receipt of the verification numbers as the routing numbers. *Proceed to Step 10.*

Call Flow (cont'd)

700-PIC Verification in PMO (cont'd)

10. The 4ESS switch determines the routing treatment to process the call. As part of the called number digit translations, the 4ESS switch uses the 10-digit code group translations setup to screen 700+555+4141 numbers, and the 10-digit PLU table translations to screen NPA+700+4141 calls. The following occurs:

DOM = POTS

CALLTYP = SDX

CALLDATA = Subsequent Digit Index (SDINDEX) value

AD1 = RSI (Route Selection Index)

AD2 = A new proprietary spare mnemonic value is applied to the 700-PIC verification application.

Note: The new proprietary AD2 value is used to drive the 4ESS switch to perform the new CIC to RSI screening with new table structures, and executes the requirements in Steps 11 and 12.

11. The 4ESS switch determines if a CIC is present and one of the following occurs:

- If a CIC is present, then the 4ESS switch determines if it is a resell CIC, nodal CIC, or associated with a Route Selection Index (RSI) value as follows:
 - If the CIC is not resell or nodal, then the 4ESS switch derives RSI=0 and routes the call in accordance with RSI=0, which is the default handling to transfer the call to an AT&T announcement. *Proceed to Step 13.*
 - If the CIC is resell or nodal, then the 4ESS switch checks the CIC to RSI mapping in the new table structure. *Proceed to Step 13.*
 - If the CIC is associated with an RSI, a new 4ESS switch table structure allows the CIC to be associated with an RSI value. *Proceed to Step 12.*
 - If the CIC is not associated with an RSI, then the 4ESS switch derives RSI=1 and vacant code treatment is applied to the call. *Proceed to Step 13.*

Note: The 4ESS switch must allow multiple CICs to be associated with a single RSI value when implementing the association of a CIC to an RSI value.

- If a CIC is not present, then the 4ESS switch derives RSI=0 and routes the in accordance with RSI=0, which is the default handling to transfer the call to an AT&T announcement. *Proceed to Step 13.*

Call Flow (cont'd)

700-PIC Verification in PMO (cont'd)

12. The 4ESS switch uses the RSI value to determine the RSI routing activity associated with the call. The RSI capability is used to obtain the routing information for the announcement.
13. The 4ESS RSI translations is used to determine the ISAIC announcement to be played for the call. The 4ESS switch uses the following existing PAS-routing capability to route to the specific ISAIC announcement:
CALLTYP = PAS
CALLDATA = 12-digit value.
The 12-digit CALldata value corresponds to the 5-digit Voice Storage System Identity (VSSID) and the 7-digit SCS Service Identity (SID) entry on RC604-Add a new PAS Announcement. The 12-digit announcement number is the same in all switches for the single RSI value. Answer Supervision (ANSWR) is marked yes (Y) on the recent change form to trigger recording for the call.
14. The 4ESS switch checks to see if the DT10 is set and performs the code group translations on the 10-digit number for switched access wholesale calls. If the 4ESS switch determines the CIC is associated with a RSI value in the new table structure, then the DT10 is ignored for the 3-digit code match for 700. This also applies to operator calls associated with Feature 5822.

Note: With the activation of this feature, all other 700-numbered calls are blocked for Carrier Solutions, except 700-555-4141.

15. The OAS initiates an AMA record for the wholesale 700-PIC verification call and appends Expanded Switched Access Module (EBAF) Module 941 as defined in Feature 5840. For nodal access calls, EBAF 908 is appended. The 4ESS switch then populates the dialed number in the corresponding CDRP event to ensure the PIC verification number is recorded in the AMA record. Features 5840 and 5918 require the use of the following SDN structure codes:
 - SC 1063
 - SC 1065
 - SC 1067
 - SC 1069
 - SC 1430
 - SC 1431
 - SC 1432
 - SC 1433.

Call Flow (cont'd)

700-PIC Verification in PMO (cont'd)

16. The RICS sends the wholesale 700-PIC verification call records to CBIS for billing. **End of Call Flow.**
-

Provisioning

Provisioning

This feature impacts the network routing provisioning process and requires it to be updated to accommodate the new routing capabilities introduced.

RC Form 604

Recent Change Form 604 is used to add a new PAS announcement. The SAN is provided by the CSPM. The following fields are populated as follows:

- VSSID = 00000
- SID = 000abcd, where abcd is the SAN
- TYPE = SCS
- ANSWR = Y for ANC or N for AT&T
- SSI = FHA.

RC 304

Recent Change Form 304 is used to establish routing for the RSI value. The following fields are populated as follows:

- CALLTYP = PAS
- CALldata = 12-digit number consisting of the VSSID and the Service Identity (SID).

RC 346

Recent Change Form 346 establishes the PLU table routing for this feature.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.
Feature Activation	This feature is automatically deployed by software development.
Transition Plan	In order to activate this feature, changes to existing network routing processes are required to have this feature function properly.

Inter-LATA PIC Verification Transition

Currently, 6-digit processes 700-555 numbers and routes the call to the SP1 announcement channel on the Mass Announcement Platform at one of the five *4ESS* switches. Due to this fact, all 700-555 calls are routed to an announcement regardless of whether the correct 700-555-4141 number is dialed. As part of the transition plan for this feature, network routing requires that the correct 10-digit number be dialed before the PIC verification announcement is played. This is accomplished by provisioning each *4ESS* switch with 700-555-4141 in the PLU table.

Transition Considerations (cont'd)

Transition Plan (cont'd) The routing for the 10-digit 700-PIC verification code in the PLU for the AT&T 700-PIC verification calls shall be changed from the Service Processor 1 (SP1) announcement platform to a PAS announcement in the ISAIC. The CPSW shall then vacant code NPA-NXX (700-555) after the 700-555-4141 code is in the PLU and is routed to the AT&T PAS announcement. This ensures that 700-555-4141 be routed to the AT&T 700-PIC verification announcement. All other line numbers in NPA-NXX (700-555) are final handled, except 4141.

The transition plan for this feature is depicted in the following steps:

1. Provision a PAS announcement on the ISAIC platform to provide the AT&T Inter-LATA PIC verification announcement.
2. Use RC Form 604 as described under the "Provisioning" section in this chapter.
3. Use RC Form 304 as described under the "Provisioning" section in this chapter.
4. Use RC Form 346 as described under the "Provisioning" section in this chapter.
5. Vacant code NPA-NXX (700-555).

Transition Considerations (cont'd)

Transition Plan (cont'd)

Intra-LATA PIC Verification Transition

Currently, the 4ESS switch routes NPA-700-4141 calls to the SP1 announcement channel on the Mass Announcement Platform at one of the few 4ESS switches, where the PLU table routing already exists for each valid NPA-700-4141 Intra-LATA PIC verification code. As part of the transition plan for this feature, changes to the routing of Intra-LATA PIC verification announcements for AT&T customers are needed in order for the ISAIC Service Circuit System (SCS) to provide announcements.

The transition plan for this feature is depicted in the following steps:

1. Provision a PAS announcement on the ISAIC platform to provide the AT&T Intra-LATA PIC verification announcement.
2. Use RC Forms 304 and 604 as described under the "Provisioning" section in this chapter.
3. Change the PLU table routing for each of NPA-700-4141 codes as follows:
 - **CALLTYP = SDX**
 - **CALLDATA = SDINDEX**
 - **AD1 = RS1**
 - **AD2= new value defined for this feature.**

Input/Output Manual Pages

Input/Output Manual Pages

The two new manual pages created for this feature are as follows:

- Proprietary input message – **ver:misc-fht-cic**
- Proprietary output message – **ver:misc-fht-cic**.

Refer to Appendix B for details.

15 Voice Over Internet Protocol (VoIP) - Mexico Feature (7028)

Overview

This feature provides the appropriate Automatic Message Accounting (AMA) recording for the Voice Over Internet Protocol (VoIP) service using Adjunct Logical Address (ALA) routing over Commercial Primary Rate Interface (C-PRI) and Common Platform Adjunct (CPA) interfaces.

In This Chapter

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Feature Description

Background

The fast changing telecommunications business is experiencing non-traditional and other Internet Protocol (IP) based new services that are not governed by international settlement rates. The need to facilitate international settlement rate negotiations has prompted the AT&T Consumer Market Division (CMD) to develop a concept of VoIP for its International Consumer Long Distance (ICLD) services. With this capability, the IP network provides an alternate route for carrying international traffic that is not subject to normal international settlement routes.

The new feature enhancements provide the network with the capability to identify and route VoIP Long Distance (LD) calls to the appropriate IP network. An Internet Protocol Gateway (IPGW) provides the interface between the AT&T Switched Network (ASN) and the IP network, which transports calls to the Public Switched Telephone Network (PSTN) or to the Postal Telephone and Telegraph (PTT) network.

Introduction

This feature provides the appropriate Automatic Message Accounting (AMA) recording for the VoIP service using Adjunct Logical Address (ALA) routing over Commercial Primary Rate Interface (C-PRI) and Common Platform Adjunct (CPA) PRI interfaces.

C-PRI Trunks

With the deployment of this feature, the 4ESS™ switch creates an AMA record with Access ID Module 908 appended when C-PRI trunks are provisioned with a non-zero access ID.

CPA PRI Trunks

This feature provides a new Trunk Subgroup (TSG) bit that enables CPA trunks to trigger the 4ESS switch to create an AMA record when the following occurs:

- The 4ESS switch acts as the Hand-off AT&T Switch (HAS)
- The 4ESS switch acts as the Originating AT&T Switch (OAS).

Feature Description (cont'd)

Introduction (cont'd)

ALA Routing

The ALA is used to invoke REACH to route calls to a HAS where an IPGW is located. At the HAS/OAS ALA routing is used to route calls to the C-PRI or CPA PRI interface.

Note: The ALA routing is not intended for C-PRI trunks; therefore, network problems may occur. This is well understood by the customer, and may be addressed in the future with a different feature.

Call Flow

Call Flow

The VoIP call flow is based on basic ICLD services supported in the AT&T Switch Network (ASN). The call flow depicted in Figure 15-1 is in the pre-Segmentation Directory (SD) Phase 2, where the OAS determines and activates the Universal Subscriber Data Structure (USDS) query.

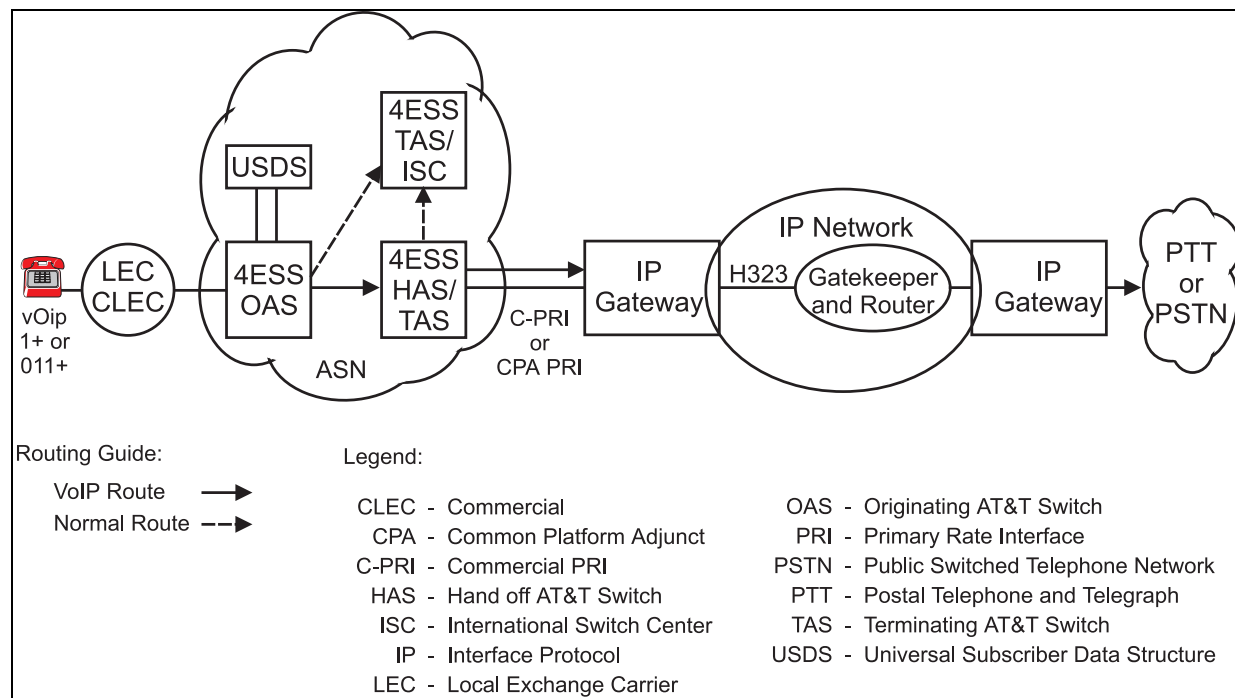


Figure 15-1. High-Level VoIP (ANI-Based) Service Architecture

Call Flow (cont'd)

Pre-SD Phase 2 Call Flow The following call flow is an example of one possible scenario where the OAS routes eligible calls to a 4ESS switch HAS equipped with C-PRI trunks to the IPGW/IP network:

1. A caller dials an overseas number, 011+52+ national telephone number for Mexico.
 2. The Local Exchange Carrier (LEC) routes the call to AT&T.
 3. The OAS checks its Automatic Number Identification (ANI) trigger table for an ANI match.
 4. The OAS finds an ANI match with the USDS query bit set to **yes**.
 5. The OAS launches a USDS query with the ANI and the called number.
 6. The USDS finds an ANI and country code table match and returns an Adjunct Local Address (ALA) = 7 value to the OAS.
 7. The OAS routes the call to the HAS using the appropriate Multiple Routing Treatment (MRT) table ALA=7 and REACH.
 8. The HAS receives the identified REACH call and routes it over C-PRI trunks, using its own ALA=7 MRT, to a Gateway with the access ID provisioned on the TSGs.
 9. The HAS sends a Q.931 SETUP message to the Gateway.
 10. The Gateway responds to the HAS with a Q.931 **ALERTING** message.
 11. The Gateway/IP Network completes the call to a Postal Telephone and Telegraph (PTT) in Mexico.
 12. The Mexico PTT completes the call to the destination and sends an ALERTING message to the Gateway.
 13. The called party answers the phone.
 14. The Mexico PTT sends a **CONNECT** message to the HAS.
 15. The Gateway sends a **Q.931 CONNECT** message to the HAS.
 16. The HAS sends a **Q.931 CONNECT ACKNOWLEDGE** message and begins timing the call.
 17. The caller or called party hangs up.
 18. The HAS and Gateway complete the disconnect procedure.
 19. The HAS generates an AMA record with the Access ID Module 908 containing the particular terminating access id of 130 for VoIP. **End of Call Flow.**
-

Provisioning

Provisioning

A new Recent Change (RC) TSG indicator is created for this feature with its values and population rules listed in Table 15-A. This indicator is Spare 5 (S5) for the 4E24 Release and is expected to change to NSA for the 4E25 Release.

Equipped with Yes and No values, this indicator suppresses AMA records when it is set to No. When set to Yes, the AMA records are not suppressed for TSG calls terminating with PRIT=CPA. These population rules are listed in Table 15-B. The default for this indicator is No. Additional provisioning rules are not required.

The NSA field will replace S5 for the 4E25 and later Releases. The values for NSA are listed in Tables 15-C and 15-D.

Table 15-A. S5 Values and Population Rules

Form Entry	Symbol	Value
Blank, N	4XLTB_SPARN	0
Y	4XLTB_SPARY	1

Table 15-B. TSG Population Rules

TSG Form Entry		Populates ITEM	With
S5	Blank	XL4TB_S5	4XLTB_SPARN
	N		4XLTB_SPARN
	Y		4XLTB_SPARY

Table 15-C. NSA Population Rules

TSG Form Entry		Populates ITEM	With
FIELD	VALUE		
NSA	Blank	XL4TS_NSA	4XLTS_NSA_N
	N		4XLTS_NSA_N
	Y		4XLTS_NSA_Y

Table 15-D. NSA Population Rules

Item/State or Value	Word	Displ.	Size	Description
XL4TS_NSA XL4TS_NSA_N (= 0) XL4TS_NSA_Y (= 1)	21	10	1	Non-suppression of AMA recording terminating CPA PRI calls blank or N = DEFAULT normal state, AMA recording suppressed Y = provide AMA recording.

Recording

Recording

CPRI Trunks

An AMA Structure Code is generated for calls terminating over C-PRI trunks when a 4ESS switch is serving as a hand-off switch or as both the originating and terminating switch.

CPA Trunks

An AMA Structure Code is generated for calls terminating over CPA trunks when the TSG bit is set to Yes; and the 4ESS switch is serving as a hand-off switch or as both the originating and terminating switch.

Access ID Module 908

The Access ID Module 908 is appended to the AMA record generated for calls terminating over C-PRI, or CPA trunks when the originating or terminating trunk Access ID has a non-zero value.

Note: This only applies when an AMA record is generated by a 4ESS switch serving as a hand-off switch, or as both the originating and terminating switch.

With the activation of this feature, the tables listed in Table 15-E are modified in the following ways:

- Table 88 is populated with a value of 908.
- Table 902.a is populated with the value of the Access ID associated with the originating trunk.
- Table 902.b is populated with the value of the Access ID associated with the terminating trunk. For VoIP trunks, a value of 130 is to be provisioned; however any non-zero Access ID (ACCID) provisioned on the TSG triggers the creation of Module 908.

Table 15-E. Module 908 – Access ID Module

Table Number	Number of Characters	Definition
88	4	Module Code
902.a	4	Originating Access ID
902.b	4	Terminating Access ID

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment	It is not necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.
Feature Activation	This feature is turned on automatically with software deployment; However, the TSG to the IPGW must be provisioned correctly to receive the expected AMA records.

Input/Output Manual Pages (Not Affected)

16 Modification Request to AT&T Digital link Phase IV Feature (7063)

Overview

This Modification Request (MR) identifies additional *4ESS*[™] switch functionality required to allow alternate routing features to engage Software Defined Network (SDN) and *MEGACOM*[®] 800 telecommunications services calls addressed to AT&T Digital Link Phase IV (ADL4) nodal locations. The intent is to have the following types of features engage under the same conditions (either individually or in combination) to alternate route calls that are addressed to either an ADL2 or an ADL4 nodal location:

- Switch-based Interim Split Access/Flexible Egress Routing (SAFER)/AMA Call Detail Recording Adjunct (ACDR)
- Network Control Point (NCP)-based Centralized Alternate Destination Call Redirection (CADCR)/Alternate Destination Redirection (ADR).

*Registered service mark of AT&T.

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Feature Description

Interaction of Alternate Routing Features with ADL4

Current Operation of Alternate Routing Features

Both switch-based and NCP-based alternate routing features are available to 4ESS™ switch nodal subscribers. These features are triggered at the Originating AT&T Switch (OAS) when trunks to the nodal location are busy, or when an Integrated Digital Services Network (ISDN) User Part (UP) Release message with a Cause Value of either 17 or 34 is received from the Terminating AT&T Switch (TAS) indicating that a user or network busy condition is encountered in attempting to complete the call.

The SDN Off-Net Overflow on Terminating Busy (OFOB) feature is an NCP-based alternate routing feature that allows the subscriber to specify an alternate destination for SDN calls encountering a network busy condition. The subscriber purchases this feature on a network basis and specifies its deployment on a per-location basis. Figure 16-1 illustrates the current operation of SDN OFOB when an SDN call is routed to a 4ESS switch nodal location provisioned to support this feature.

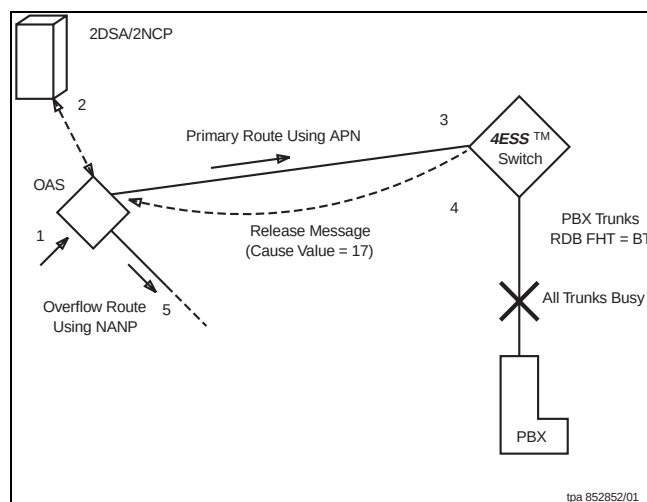


Figure 16-1. Current Operation of SDN Off-Net Overflow on Busy

Feature Description (cont'd)

Interaction of Alternate Routing Features with ADL4 (cont'd)

At the OAS, an originating SDN call triggers the involvement of an NCP that provides routing instructions to the 4ESS switch. The NCP routing instructions contain both an Action Point Number (APN) and a North American Numbering Plan (NANP) address if alternate routing is allowed on the call. The call is routed first by its APN address to the TAS. If trunks to the PBX are busy and if SDN OFOB applies at this particular location, the 4ESS switch returns a Release message with Cause Value = 17 (User Busy). This triggers alternate routing at the OAS using the NANP address provided by the NCP.

Note: The SDN OFOBG is engaged only after an interim SAFER search. In this example, it is assumed that the primary APN address provided is not associated with interim SAFER.

Cause Value = 17 is returned by the TAS in the ISUP Release message when all PBX trunks are busy, and when the Routing Data Block (RDB) used to route to the PBX trunk group has its Final-Handling Treatment (FHT) parameter set to BT (Busy Tone).

Note: If the FHT parameter is set to NCA (No Circuit Announcement), Cause Value = 34 is returned. The receipt of Cause Value 34 at the OAS currently does not trigger SDN OFOB, and the call is subject to final-handling treatment.

Current Operation of Alternate Routing Features with ADL4

Figure 16-2 illustrates the current operation of SDN OFOB when an SDN call that qualifies for alternate routing is routed to a nodal location served by an ADL4 switch.

Feature Description (cont'd)

Interaction of Alternate Routing Features with ADL4 (cont'd)

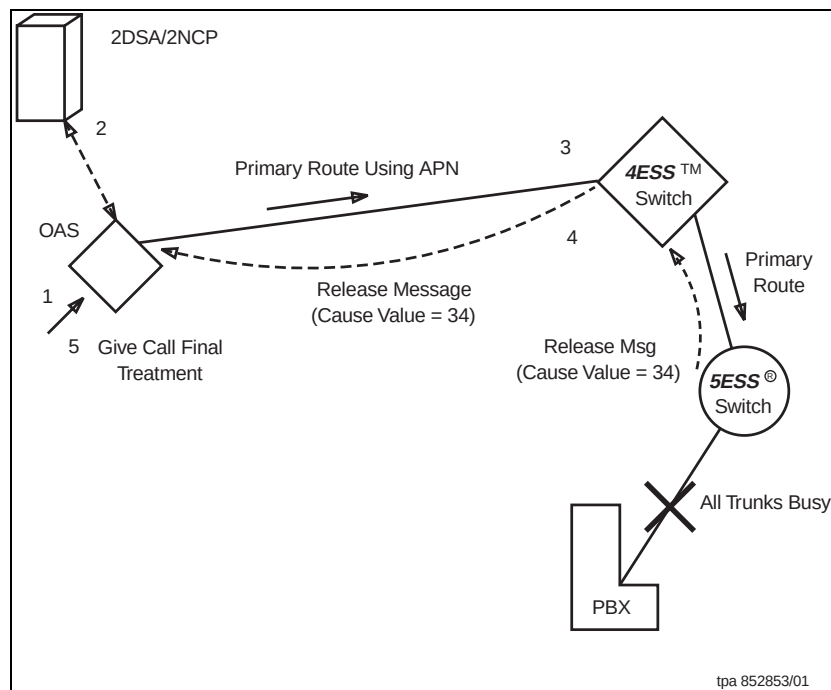


Figure 16-2. Current Operation of SDN Off-Net Overflow On Busy with ADL4

Call processing up to the point that the call arrives at the TAS is the same as described in the preceding paragraphs. In this case, the call attempts to route to the nodal location served by the ADL4 switch. If all trunks to the ADL4 switch are busy, the TAS returns an ISUP Release message to the OAS with Cause Value = 34. If the PBX trunk group to the nodal location is busy or unavailable, the 5ESS electronic switch returns a Release message with Cause Value = 34 to the TAS. The TAS, in turn, returns a Release message and Cause Value 34 to the OAS. In either case, the OAS does not attempt the alternate route after receiving the Release message with Cause Value 34. The OAS final handles the call.

Feature Description (cont'd)

Modified Operation of Alternate Routing Features to Accommodate ADL4

The scenario presented in the previous section illustrates the characteristics of the ADL4 architecture that impact the operation of alternate routing features on calls addressed to ADL4 nodal locations. The characteristics are as follows:

- The presence of the ADL4 switch between the nodal customer and the 4ESS switch network
- The ADL4 switch uses the ISUP Release message with Cause Value = 34 to indicate that the nodal trunk group is busy.

The scenario shows that alternate routing is not engaged when a Cause Value 34 is received at the OAS. It demonstrates that current 4ESS switch alternate routing functionality does not accommodate the needs of ADL4. A recent investigation of 4ESS switch alternate routing that pertains specifically to ADL4 operation is summarized as follows:

- The 4ESS switch tries to set up a call to an APN address. When an ISUP Release message with Cause Value = 17 is received, the switch attempts an alternate route if an alternate route is provided by either the NCP or interim SAFER. If Cause Value = 34 is received, the switch does not attempt to alternate route the call.
- The 4ESS switch tries to set up a call to an NANP address. When an ISUP Release message with Cause Value = 17 or 34 is received, the switch attempts an alternate route if an alternate route is provided by the NCP.

In order to accommodate nodal subscriber locations served by both 4ESS and ADL4 switches, the conditions under which the OAS engages alternate routing features is expanded. The OAS triggers alternate routing whenever it receives an ISUP Release message with a Cause Value of either 17 or 34 in response to its attempt to complete the call to either an APN or an NANP address. This modification is illustrated in Figure 16-3.

Feature Description (cont'd)

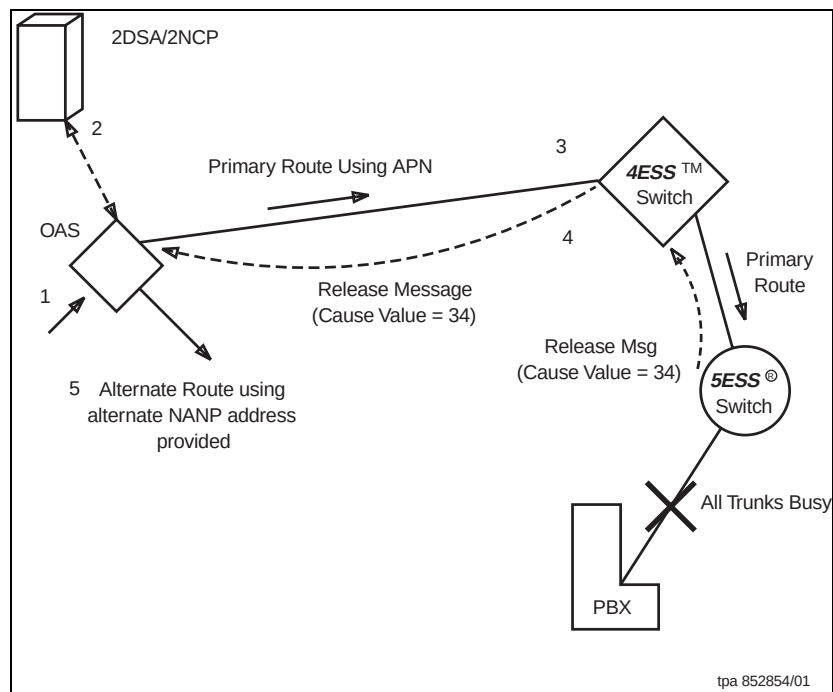


Figure 16-3. SDN Overflow on Busy to an ADL4 Location with MR

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Related Documentation	This feature is a modification request to Feature 5538, <i>End Office Local Nodal</i> (4E23 Release 2 Generic).

Feature Deployment	It is not necessary for all <i>4ESS</i> switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

Feature Activation	This feature is automatically turned on by software deployment.

Input/Output Manual Pages (Not Affected)

17 **4ESS™ Switch Domain Value Output Enhancement Feature (7222)**

Overview

This feature enables 4ESS™ switches to send the domain value to each Call Irregularity Message (CIM) and allows the Network Operations Center-International Network Management (NOC-INM) to perform root-cause analysis of problems.

In This Chapter

This chapter contains the following topics:

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Feature Description

Background Prior to this feature, the 4ESS switches did not send domain values for most of the Final-Handling Codes (FHCs). Additionally, 80 percent of the CIMS had no domain values. Without having these domain values, the NOC-INM was hampered from identifying, analyzing, and resolving international call failures; for example, it could not distinguish international failed calls from domestic ones at an Originating AT&T Switch (OAS). Since an FHC can be shared by both domestic and international calls, the CIMS of FHC lost their meaning for NOC-INM without domain values.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

**Feature
Deployment**

It is not necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

**Feature
Activation**

This feature is turned on automatically by software deployment.

Input/Output Manual Pages (Not Affected)

18 Modified Feature Group D Support for AT&T Network Connect Feature (7240)

Overview This feature provides support for AT&T Network Connect calls over a new trunk type, referred to as a *modified* Feature Group D trunk, and over a Feature Group C LCC Type of Trunk (TOT).

In This Chapter This chapter contains the following topics:

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Feature Description

Introduction

This feature provides a solution for AT&T Network Connection (ANC) resellers who are not always able to provide the Automatic Number Identification (ANI)/Charge Number (CN) and /or Original Line Indicator (OLI)/Information Indicator (II) on each call. The ANC was previously referred to as Carrier Solutions.

This feature allows ANC customers to interconnect with the AT&T Switched Network using the ANC platform, but without the need for ANI/CN and/or II/OLI, which was required prior to this feature.

Before this feature was deployed, the 4ESS™ switch supported ANC calls that were signaled only with Equal Access MF or ISUP-Network Interconnect (NI) FG-D. The new capabilities provided this feature allow the 4ESS switch to process ANC incoming calls over modified Feature Group D (FG-D) trunks and Feature Group C (FG-C) LCC TOT.

Modified FG-D trunks carry the following types of calls:

- FG-D [including Charge Number (CN)/Automatic Number Identification (ANI) and Information Indicator (II)/Original Line Indicator (OLI) failures]
- Dedicated Trunk Group Option (DTO) with the EAS TG parameter = E (instead of R).

Feature Group C ANC trunks are LCC trunks with CCTT = Y, and carry ANC FG-C calls.

While this feature expands the definition of Resell Call to include ANC calls signaled using FG-D (with and without ANI/CN and II/OLI) and FG-C (over LCC Type of Trunks), it does not change the way the 4ESS switch recognizes ANC calls. The 4ESS switch identifies ANC calls based on the setting of CCTT = Y Trunk Sub-group parameter on the incoming trunk group.

Feature Description (cont'd)

Introduction (cont'd)

Additional capabilities of this feature allow the following CIC-based features to operate with modified FG-D arrangements:

- Feature 5198—*Carrier Solutions CIC Based Determination*
- Feature 5754—*Network Access Interrupt (NAI) and Directory Assistance (DA)*
- Feature 5822—*Enhanced CIC Routing for Operator Services*
- Feature 6143—*Enhanced CIC Routing for Directory Assistance*
- Feature 6266—*Enhanced CIC Routing for International Calls*
- Feature 6500—*Carrier Solutions Enhanced CIC Based Maintenance.*
- Feature 6896—*700 PIC Verification Announcement for SCP*
- Modification Request (MR) to Feature 5791—*Long Term CIC-Based Network Access Interrupt (NAI).*

In addition, this feature provides the capabilities to properly interact with the following features:

- Feature 5791—*Long Term CIC Based Network Access Interrupt (NAI)*
 - Feature 5840—*1+CIC Wholesale Features*
 - Feature 6777—*DSA Based Architecture for TSAA/AVA.*
-

Call Flow

Calls Dialed to Domestic or International Termination

The call flow and signaling are as follows:

1. The calling party dials a domestic or international number, as follows:
 - **Domestic Calls**—The calling party is either presubscribed (PIC'ed) to an AT&T Resell CIC or prefixes the dialed number with 101+CIC (where CIC is an AT&T Resell CIC). The caller dials 1+10-digit NANP/7-digit NANP number (or 101+CIC+7/10-digit NANP number).
 - **International Calls**—The calling party is either presubscribed (PIC'ed) to an AT&T Resell CIC or prefixes the dialed number with 101+CIC (where CIC is an AT&T Resell CIC). The caller dials 011+CC+NN (or 101+CIC+011+CC+NN) or 1+NPA-NXX-XXXX (or 101+CIC+1+NPA-NXX-XXX) where the NPA or NPA-NXX could be for an IWZ1 destination (calls to Canada and nations in the Caribbean are international calls that fall with the NANP).

Either the PIC of the calling party or the 1+0+CIC dialed by the calling party causes the local exchange office to route the call to the ANC carrier switch.
2. The ANC carrier switch sends a call to the 4ESS switch over a modified FG-D trunk group [which appears the same as a Dedicated Trunk Subgroup Option (DTO) call]. The customer may or may not send Automatic Number Identification (ANI) and Original Line Indicator (OLI) on the call, if one of the following occurs:
 - If ANI/CN and II/OLI are available on the call, the 4ESS switch proceeds with ANC call processing using existing procedures.
 - If ANI/CN and II/OLI are not available on the call (Equal Access or other), proceed to Step 3.

Call Flow (cont'd)

Calls Dialed to Domestic or International Termination (cont'd)

3. The 4ESS switch derives the CIC, based on signaling type and call originations, as provided by Feature 5791. When the CIC is derived, the CIC Code Table is queried to determine if CIC-based processing should be applied, as determined by Features 5840 and 6500 as follows:
 - If the CIC processing, based on the match in the CIC Code Table, resulted in RESELL or FEATURED RESELL, proceed to Step 4.
 - Follow existing call process for all other results.
4. At this point in the call flow, the 4ESS switch has received a call without ANI/CN and II/OLI, and the CIC has been determined to be an ANC CIC. Since the ANI/CN and the II/OLI are not available, the Originating AT&T Switch (OAS) will not launch a NAI query to the 2LAC/2NCP (skipping the processing provided by Feature 5791).
5. The OAS performs the following (as provided by Feature 5198):
 - Does not query the Segmentation Directory (SD) from the 1B Processor
 - Ignores the SDResponse
 - Bypasses the Adjunct Based Capability (ABC) ANI Trigger Table (ANI-TT)
 - Bypasses the Destination Number Trigger Table (DN-TT)
 - Does not query the USDS
 - Applies Vacant Code for data, 500, 700, 710, and 900 calls on an administrative basis.
6. The 4ESS switch sets the Signaling Service Type (SST) of the call to RSLDS, as determined by Feature 5198. The OAS derives the following (as applicable):
 - **Domestic Calls**—The existing SII value 91 (LDS RESELL)
 - **International Calls**—The SII value of ILDS OUTBOUND RESELL (SII value of 92).

Call Flow (cont'd)

Calls Dialed to Domestic or International Termination (cont'd)

7. The 4ESS switch has determined that the derived CIC is either RESELL or FEATURED RESELL, and has applied the appropriate call screening to calls without ANI/CN and II/OLI. The call flow and signaling proceed as follows:
 - If the CIC is FEATURED RESELL, the OAS *does not* invoke the processing provided by Feature 5840 for calls without ANI/CN and II/OLI. As a result, the switch *does not* construct a 10-digit pseudo ANI in the format 165+4-digit CIC+NPA for calls with ANI failures (per Feature 5840, to query the UGT/1NCP). Proceed to Step 8.

Note: The step above avoids unnecessary database dips to the UGT/1NCP and the 2DSA/2NCP, and routing per Feature 5198. This occurs because the 2DSA needs to find a match for ANI and CIC in the ANI/CIC TT, in order for the 2NCP to provide Account Code and Geographic Restrictions with Auth Code features, as provided by Feature 5840. If a match is not found, the 2NCP sends the indication to the 4ESS switch that the ANI is not featured. In that case, the switch default routes the call in the POTS domain, as provided by Feature 5198.

- Proceed to Step 8 if the CIC is RESELL.
8. The OAS applies call processing as provided by ANC features, as determined by the DN translations and signaling type (EA or FG-C). The following processing occurs, based on what the DN translation determines for the call:
 - **Directory Assistance Calls**—For DA calls of the format NPA+555+1212 and EA or FG-C Type of Signaling, the OAS processes the call per Feature 6143. The call is routed either to an external DA platform over OCC Type of Trunk (TOT), or default-routed to an AT&T 5ESS Operator Services Position System (OSPS) over FG-C trunks, as provided by Feature 5754.

Call Flow (cont'd)

Calls Dialed to Domestic or International Termination (cont'd)

- **Operator Calls**—For Operator calls (per Feature 5822) and EA (FG-D calls with ANI failures), the OAS processes the call per Feature 5822. The call is routed either to an external operator platform over OCC TOT, or final-handled per the default treatment provided by Feature 5198.
- **International and EA Calls**—For international and EA calls (FG-D calls with ANI failures), the OAS processes the call per Feature 6266. Feature 6143 determines that the call is routed either to an external international platform over OCC TOT, or default-routed via the AT&T Switched Network, as provided by Feature 5198.
- **PIC Verification**—The 4ESS switch processes the call per Feature 6896 if the PIC Verification number is in the format 700-555-4141.
- **1+POTS Calls**—If the call is a 1+POTS call, the 4ESS switch routes the call per Feature 5198.

Note: The OAS pegs the appropriate Per-CIC based measurement counts, as provided by Feature 6500. In addition, the BN NPA call screening provided by Feature 6500 is bypassed

9. The OAS generates the appropriate Automatic Message Accounting (AMA) records, as provided by Feature 5198. In addition, the OAS appends Module 941 to calls arriving over modified FG-D trunks and FG-C ANC trunks. The IC/INC Indicator (Table923) of Module 941 is set to 1. This indicates the Resell status of the call. The Char 1-4 of the IC/INC Code field (Table 57) of Module 941 contains the derived CIC. Char 5 of Table 57 is set to either 0 for operator calls (which are processed per Feature 5822), or to 1 for 1+ dialed calls.

Note: Module 908 is appended to AMA records if the Access ID is populated on the incoming modified FG-D trunk group and FG-C ANC trunks.

Provisioning (Not Affected)

Recording

Overview

The procedures for recording ANC calls are not changed by this feature. The following information is provided for clarification of the interaction between the existing procedures and the new capabilities provided by this feature.

The 4ESS switch [and the Call Detail Reporting Platform (CDRP)] continue to use Structure Codes SC 1078, SC 1080, SC 1500 or SC 1501 for incoming calls without ANI/CN and II/OLI over modified FG-D trunks and FG-C trunks with LCC TOT, as provided by Feature 5198.

Structure Codes SC 001 and SC 0101 are not used, because the ANI/CN is not available. Structure Code SC 1078 is used whenever the Calling Party Number is available for ISUP signaled calls. Structure Code SC 1080 is used for Long Duration calls with the same triggers as SC 1078. The associated Call Code is 60 (for Station Paid).

Automatic Message Accounting (AMA) Module 941 is appended (by the switch and the CDRP) to records for incoming calls without ANI/CN and II/OLI over modified FG-D trunks and FG-C ANC TOT, because they are considered as Resell Calls. The IC/INC Indicator (Table 923) in Module 941 is set to 1, and the IC/INC Code (Table 57) is populated with the Carrier Identification Code (CIC), if it is available in the Characters 1-4. The Character 5 is set either to 0 for operator assisted calls (as provided by Feature 5822), or to 1, for all other 1+ Resell Calls.

The Rating Point Bill Number field (Table 25) is populated with the TRN that is populated on the incoming trunk.

The 4ESS switch and the CDRP append Module 908 to records for incoming calls without ANI/CN and II/OLI over modified FG-D trunks, if the Access ID is provisioned on the modified FG-D trunks.

Network Management (Not Affected)

Maintenance/ Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

This feature was deployed as a Software Change Package (SCP) over 4E23 Release 4, and built into 4E24 Release 1.

It is not necessary for all 4ESS switches in the network to be running the 4E24 Release 2 Generic for this feature to be fully operational.

Feature Activation

This feature is activated automatically with software deployment.

Input/Output Manual Pages (Not Affected)

19 Recent Change Administration System to Off-Line Processor (OLP) High-Speed Interface Feature (7294)

Overview

This feature provides Dual-serial Channel Interface (DCI) connectivity at the National Electronic Systems Assistance Center (NESAC) Off-Line Processor (OLP) switches.

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Feature Description

Overview

This feature, Recent Change Administration System (RCAS) to OLP High-Speed Interface, allows for higher bandwidth throughput to transfer files between the RCAS and OLPs. Refer to Figure 19-1 for an overall architectural view. The connection between the intermediate *Sun** workstation and the OLPs will be the DCI. The connection between the intermediate *Sun* workstation and the RCAS server will be Ethernet (10-BaseT). Software development is required in the NESAC WRCAS3 RCAS server and the intermediate *Sun* workstation to handle this file transfer. The OLP 3B Processors require an Equipment Configuration Database (ECD) change to support the connections. This feature is a custom-hardware installation at Warrenville only.

* Registered trademark of Sun Microsystems, Inc.

Feature Development

A joint AT&T and Lucent Technologies team was established to determine the most effective method for the following:

- Targeting feature development to automate long and repetitive retrofit procedures
- Reducing (through automation/development) the time necessary to deploy software updates and retrofits
- Reducing Operations and Maintenance staff workload.

The current data transfer method [using the 56-kb/s Office Data Assembler Data (ODAD) link] between RCAS and the OLPs no longer meets the throughput needed to handle the work that NESAC needs to perform during the retrofit cycle.

Once this feature is available, RCAS will download the 1A Files to the field switches using the ODAD links. The advantages are as follows:

- The transfer speed is increased between RCAS and the OLPs.
- RCAS monitors (unlike the OLPs) the transmission of the 1A File to the field switch.
- RCAS restarts the transmission if it fails.

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Use pursuant to Company instructions

Feature Description (cont'd)

Feature Development (cont'd)

This feature provides the groundwork to remove the nonstandard Volume Table of Contents (VTOC) files for the outboard disk drives of the 3B Attached Processor System (APS) in each OLP.

Hardware and Physical Design

Three workstations equipped with one of the following specifications are provided by NESAC:

- *SUN SPARC*5* computers [100-MHz, 32-Mb Random Access Memory (RAM), 2.1 gigabyte hard drive]
- Ultra 1 (143 MHz, 32-Mb RAM, 2.1 gigabyte hard drive).

*Registered trademark of SPARC International Inc. Licensed exclusively to Sun Microsystems, Inc.

The workstation architecture is illustrated in Figure 19-1.

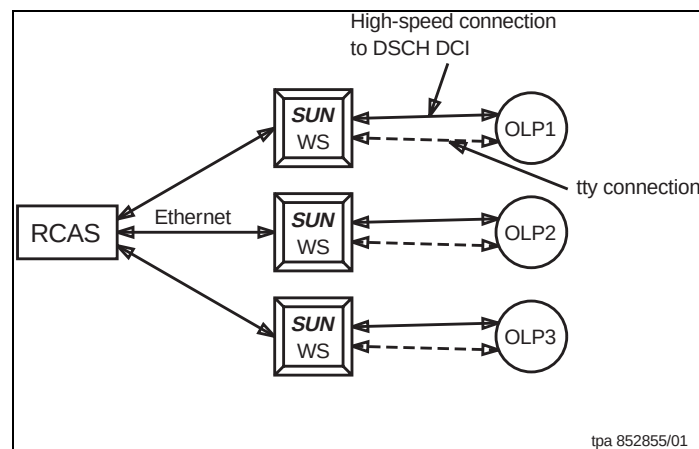


Figure 19-1. Workstation Architecture

Feature Description (cont'd)

Hardware and Physical Design (cont'd)

For the 3B21 Processor, the hardware needed is as follows:

- ED3T083-30, G114B [3B21 DCI System Bus Card (SBus)]
- ED3T083-30, G115B (3B21 DCI Cable Bracket)
- ED3T083-30, G118B (3B21 DCI Cable Pair, 100 feet)
- ED4A104-30, G204 (UN582-DB25 Conversion Cable).

For the 3B20 Processor, the hardware needed is as follows:

- ED4C473-34, G20B (3B20 Kit, Field Retrofit SBus)
- ED4C473-34, G21B (3B20 Kit, Field Retrofit Cable Bracket)
- ED4C473-34, G24B (3B20 DCI Cable Pair, 100 feet)
- ED4C208-35, G7TN74 (DB25 Conversion Cable).

An Ethernet cable between RCAS and the workstations is also needed (not 3B20 or 3B21 specific). This cable is provided by NESAC.

Call Flow (Not Affected)

Provisioning

The current retrofit procedure is as follows:

1. The RCAS collects the ODA from the 4ESS™ switch and transmits it to Lucent Technologies.
2. Lucent applies ODA retrofit processing for the new generic and returns it to RCAS.
3. The NESAC executes software in RCAS to apply any Positive Call Processing (PCP) Automatic Number Identification (ANI) changes that have occurred in the switch and then transmits the ODA to the OLP.
4. Once on the OLP, the ODA is integrated with the latest field generic [containing all official Software Change Packages (SCPs), Network Management (NWM) Programs and 1B Library packages).
5. The NESAC then executes software to configure critical ODA translators for OLP compatibility (IO and PUBB).
6. The Network Service Automator (NSA) and Integrated Routing Assignment System (IRAS) update the trunking and routing to reflect provisioning recent changes performed during the quiet period.
7. Audits are performed in the OLPs on the database.
8. The office database (1A File) is moved to the UPDATE file. The NESAC then executes software to restore critical translators from Step 5.
9. The ODA is written to tape and the 1A File is sent from the OLP to the 4ESS switch via the ODAD links.

A 2-way command line interface is provided to move data files. The architecture allows the transfer of any 3B Processor disk file between RCAS and the OLPs, and between the OLPs and RCAS. The norm 1A File is protected and only overwritten when **explicitly** requested.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Related Documentation	Detailed information on RCAS may be found in the <i>Recent Change Administration System Operations and Maintenance Guide</i> , 234-356-001AC.

Feature Deployment	The 4E24 Release 2 Generic must be deployed in all 4ESS switches for this feature to be fully operational.

Feature Activation	This feature is turned on by running a script at the OLP when a new generic is loaded.

Input/Output Manual Pages (Not Affected)

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Growth and Retrofit Documents

The following memorandum includes a table listing Lucent Practices, Task Oriented Practices, and Installation Engineering Handbooks affected by new hardware and software in the 4E24 Release 2 Generic.

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Input/Output Messages

The following lists include the input and output messages for the 4E24 Release 2 Generic. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is indicated.

4E24R2 Input Messages (IM-4B000-01)

Message ID	New/Mod/Del	Feature
alw:xtsi	Modified	4789
analy:xtsi	Deleted	4789
clr:tsibp	Modified	4789
copy:xtsi	Modified	4789
dgn:xtsi	Modified	4789
dump:tsimem	Modified	4789
dump:xtsi-ibu	New	4789
dump:xtsi-spu	Modified	4789
ex:xtsi	Modified	4789
inh:xtsi	Modified	4789
init:pmos-util	Modified	4789
load:tsimem	Modified	4789
load:xtsi-ibu	New	4789
load:xtsi-ireg	Modified	4789
op:tsibp	Modified	4789
rmv:xtsi	Modified	4789
rst:xtsi	Modified	4789
rst:xtsi-all	Modified	4789
set:tsibp	Modified	4789
stop:analy-xtsi	Deleted	4789
upd:xtsi	Modified	4789
ver:vfunc	Modified	4789
ver:vfunc-stat	Deleted	4789
ver:vfunc-xtsiib	Modified	4789

Input/Output Messages (cont'd)

4E24R2 Output Messages (OM-4B000-01)

Message ID	New/Mod/Del	Feature
analy:xtsi	Deleted	4789
clr:tsibp	Modified	4789
copy:xtsi	Modified	4789
dgn:xtsi-ill	Modified	4789
dgn:xtsi-not	Modified	4789
dgn:xtsi-pub	Modified	4789
dgn:xtsi-term	Modified	4789
dgn:xtsi-test	Modified	4789
dump:tsi-creg-x	Deleted	4789
dump:tsimem	Modified	4789
dump:xtsi-creg	Modified	4789
dump:xtsi-d3u	Modified	4789
dump:xtsi-ibu	New	4789
dump:xtsi-ireg	Modified	4789
dump:xtsi-spu	Modified	4789
ex:xtsi-addr	Modified	4789
ex:xtsi-ill	Modified	4789
ex:xtsi-loop	Modified	4789
ex:xtsi-not	Modified	4789
ex:xtsi-pub	Modified	4789
ex:xtsi-susp	Modified	4789
ex:xtsi-term	Modified	4789
ex:xtsi-test	Modified	4789
load:tsimem	Modified	4789
load:xtsi-ibu	New	4789
load:xtsi-ireg	Modified	4789
op:pmos	Modified	4789
op:sdcc	Modified	4789
op:tsibp	Modified	4789
rept:0	Modified	4789
rept:pmos-tskid	Modified	4789
rmv:xtsi	Modified	4789
rst:xtsi	Modified	4789

Input/Output Messages (cont'd)

4E24R2 Output Messages (OM-4B000-01) (cont'd)

rst:xtsi-schedul	Modified	4789
set:tsibp	Modified	4789
stop:analy-xtsi	Deleted	4789
upd:xtsi	Modified	4789
ver:misc-suxtsi	Modified	4789
ver:misc-xtsid3u	Modified	4789
ver:stat-xtsiab	Deleted	4789
ver:subutp-xtsii	New	4789

Proprietary Input Messages

test:sd	Modified	5641
vewr:misc-fht-cic	New	6896

Proprietary Output Messages

ver:misc-fht-cic	New	6896

OS Interfaces

NOTE: The information in this item is based on the Project Plan and the Product Release Document for this release.

Several features in this release interact with various Operation Support Systems (OSSs). The following features interact with various Operations Support Systems, including AMA, CDRP, IRAS, NEMOS, and TOPAS.

- 5641 NEMOS
- 6413 AMA
- 6643 AMA, NEMOS
- 6762 AMA, CDRP
- 7028 AMA
- 7240 AMA, CDRP
- 7294 IRAS

New or Changed Alarms

NOTE: The information in this item is based on the features documented in the Product Release Document for this release.

There are no new alarms related to the features documented on the Product Release Document for the 4E24 Release 2 Generic.

Measurements/OSOR

The information in this item is based on the features documented in the current Product Release Document.

Feature 4789/5600, XTSI Release 3 Feature, includes several new or modified measurements as follows:

• TCL_IBU. This count is incremented by one each time a call is lost during software initialization, a recovery phase, or because of a failure of an IBU; and the call had progressed to or beyond the "waiting-for-answer" state.
• IBU_AMO. For administration purposes, each of the units specified is assigned, via CMS 1A, to a Terminal Equipment Center (TEC 1 to 5). All maintenance usage for units assigned to TEC 1 to 5 are combined and accumulated in a register assigned to the Maintenance Operations Center (MOC). The occupancy counter for this unit is scanned every 180 seconds. After each scan, the accumulating register for the unit type is incremented by the number of units found maintenance busy. This data is converted to hundred-call seconds (CCS) units before output. Thus, the printout of the register for the IBU reflects in CCS the amount of time the units were maintenance busy. No maintenance usage is charged in a frame that is duplex failed.
• IBU_OUT. This is the accumulated outage for the IBU. This counter contains the time in CCS that the specified terminal units are not available for service. The Service Degrading Conditions Table is scanned every 10 seconds and the number of units found failed in each category is added to the plant counters. Outage is defined as follows: SP, VIF, DT, DIF and EST – Duplex controller failure VIU, DTU, DIU, ESU, D3U, IBU - out-of-service unit is not protection switched. No outage is counted against units resident in a duplex failed frame.
• IBU_UE. This counter counts malfunctions, the symptoms of which cannot be reproduced under program control. An interrupt associated with the IBU causes this counter to be incremented by one. The unit Fault Recognition program increments this counter.
• IBU_LF. This item is defined as a fault occurrence that can be resolved through analysis to a replaceable equipment unit. This counter is incremented by one when an interrupt causes execution of the FR program, which requests that the unit be diagnosed; and the diagnostic finds the trouble source.

Measurements/OSOR (cont'd)

• IBU_NLF. This register is incremented by one when a fault occurs that cannot be resolved through analysis to a replaceable equipment unit. It is incremented only when a fault recognition program requested the diagnostic. [The unit diagnostic would complete with an All Tests Pass (ATP) result.]
• IBU_PDGN. This counter is incremented by one each time the unit diagnostic program is executed, unless its execution has been manually requested.
• IBU_MDGN. Each time the unit diagnostic program is executed by a manual request, this counter is incremented by one.
• IBU_PATP. This counter is incremented by one each time the unit diagnostic program is executed with an ATP result. This does not include diagnostics requested manually.
• IBU_MATP. This counter is incremented by one each time the unit diagnostic program is executed by a manual request with an ATP result.

Feature 5641, Segmentation Directory Phase 3 – Release 1, includes several new measurements for 10-Digit Dialed Number RBC. The following measurements are 5-minute counts that are sent with the corresponding DN every 5 minutes to NEMOS:

• Calls_Attempted_DNRBC. Measurement of call attempts received for a particular DN that is under 10d DN RBC
• SDQ_Block_DNRBC. Measurement of calls for which the SDQuery is blocked due to an SD 10d DN RBC being applied to a specific DN
• Calls_Final_Handled_DNRBC. Measurement of calls for which a call is final-handled due to an SD 10d DN RBC being applied to a specific DN
• Killed_in_DHT. Counts the number of voice calls killed during SD Default Handling when the 4ESS switch is no longer allowed to query the NCP for services that have transitioned to the SD environment.

Feature Activation Summary

The following is a summary of how the features documented in the Product Release Document for this release are activated.

Release Feature Activation Summary

1. **Feature 545 - 1B Processor US/RUAS Y2K Readiness.**

This feature is activated by software and hardware deployment.

2. **Feature 554 - Domestic End-to End Class of Service.**

This feature is turned on automatically by software deployment.

3. **Feature 4789 - XTSI Release 3.**

This feature is activated by the following:

- Software deployment
- Recent Change/Verify(RC/V) - Office Data Assembler (ODA)
- Hardware deployment.

4. **Feature 5641 - Segmentation Directory Phase 3 – Release 1.**

This feature is turned on automatically with hardware and software deployment; however, all 4ESS switches must be running the 4E24 Generic, Release 2 before transitioning the GETS service.

5. **Feature 5843 – Integrated Digital Services Network Operational Enhancements**

This feature is activated by an on/off bit with Recent Change Form 809. It can also be activated by an absolute word change.

REL	ON/OFF	ODA Word	Field Name	Address	Disp&Size
4E24R2	RC 809	OD4OFCCOPY2	OD4PF64	7123620	H= (15 octal),S=1
4E24R2	RC 809	OD4OFCCOPY2	OD4PF65	7123620	H= (16 octal),S=1
4E24R2	RC 809	OD4OFCCOPY2	OD4PF66	7123620	H= (17 octal),S=1
4E24R2	RC 809	OD4OFCCOPY2	OD4PF67	7123620	H= (18 octal),S=1

6. Feature 6273 – Tones and Announcements on Unsuccessful Calls After Call Prompting.

This feature is activated by an on/off bit with Recent Change Form 809.
It can also be activated by an absolute word change.

<i>REL</i>	<i>ON/OFF</i>	<i>ODA Word</i>	<i>Field Name</i>	<i>Address</i>	<i>Disp&Size</i>
4E24R2	RC 809	OD4OFCCOPY2	OD4PF40	7123617	H= (15 octal),S=1

7. Feature 6413 – Call Origination Treatment at the OAS for Calls Arriving Over Intertoll Trunks.

This feature is activated by an on/off bit with Recent Change Form 809.
It can also be activated by an absolute word change.

<i>REL</i>	<i>ON/OFF</i>	<i>ODA Word</i>	<i>Field Name</i>	<i>Address</i>	<i>Disp&Size</i>
4E24R2	RC 809	OD4OFCCOPY2	OD4PF72	7123620	H= (14 octal),S=1

8. Feature 6492 - TCAP Parameter for Transmission Enhancement Control 2.

This feature is turned on automatically with software deployment.

9. Feature 6643 - 4ESS Switch to NEMOS Link Upgrade.

This feature is activated automatically with software deployment and completion of the required installation and reconfiguration of hardware components that are required to achieve the capacity improvement.

10. Feature 6685 - Digital Link Phase 3 Equal Access Capability

This feature is activated by an on/off bit with Recent Change Form 809.
It can also be activated by an absolute word change.

<i>REL</i>	<i>ON/OFF</i>	<i>ODA Word</i>	<i>Field Name</i>	<i>Address</i>	<i>Disp&Size</i>
4E24R2	RC 809	OD4OFCCOPY2	OD4PF63	7123620	H=14 (octal),S=1

11. Feature 6750 - Dial 1 Service Integration

Feature 6750 has been decommitted. Leave the ON/OFF bit assigned to this feature in the OFF state. This will prevent undesirable conditions from occurring.

12. Feature 6762 - Additional Recording Capabilities for AT&T Digital Link Phase 2

This feature is activated automatically with software deployment.

13. Feature 6881 – 4ESS – 2000 Switch SCS Cache Change to 128 Milliseconds.

This feature is activated automatically by software deployment.

14. Feature 6896 - 700-PIC Verification for AT&T Network Connections

This feature is automatically deployed by software development.

15. Feature 7028 - Voice Over Internet Protocol – Mexico

This feature is turned on automatically with software deployment; however, the TSG to the IPGW must be provisioned correctly to receive the expected AMA records.

16. Feature 7063 - Modification Request to AT&T Digital Link Phase IV

This feature is automatically turned on by software deployment.

17. Feature 7222 - 4ESS Switch Domain Value Output Enhancement

This feature is turned automatically by software deployment.

18. Feature 7240 - Modified Feature Group D Support for AT&T Network Connect

This feature is activated automatically with software deployment.

19. Feature 7294 - Recent Change Administration System to Off-Line Processor High-Speed Interface

This feature is turned on by running a script at the OLP when a new generic is loaded.

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A Appendix A – Acronyms and Abbreviations

Acronyms and Abbreviations

The following acronyms and abbreviations are used throughout this document:

Acronym	Definitions
2DSA	No. 2 Direct Services – ANI Based
2NCP	No. 2 Network Control Point
2NCPAS	2 Network Control Point Administration System
AAP	Announcement Administrative Process
ACD	Automatic Call Distributor
ACG	Automatic Call Gapping
ACK	Acknowledge
ACM	Address Complete Message
ACV	Access Change Verification
AD3	Additional Data 3
ADL	AT&T Digital Link
ADL2	AT&T Digital Link 2
ADL4	AT&T Digital Link 4
ADL5	AT&T Digital Link 5
AIWS	AT&T International Wholesale Service
ALA	Adjunct Logical Address
ALN	AT&T Local Network
AMA	Automatic Message Accounting
ANC	AT&T Network Connections
ANI	Automatic Number Identification
ANI-TT	ANI Trigger Table
ANSI	American National Standards Institute
ANT	Alternate Number Transition
APS	Attached Processor System
ASN	AT&T Switched Network

ATP	AT&T Trigger Platform
BCD	Binary Coded Decimal
BCSN	Billing Call Sequence Number
BILLDATS	Billing Data Acquisition and Transfer System
BLDS	Business Long Distance Service
BMD	Business Market Division
BN	Billing Number
BWM	Broadcast Warning Message
CADCS	Call Attempt Data Collection Service
CAL	Customer Application Logic
CAUCS	Centralized Announcement Update Control System
CBIS	Cincinnati Billing Information System
CCIS	Common Channel Interoffice Signaling
CCS	Hundred-Call Seconds
CCT	Continuity Check Transceiver
CDDS II	Call Detail Data System II
CDN	Calling Directory Number
CdPN	Called Party Number Parameter
CDRP	Call Detail Recording Platform
CIC	Carrier Identification Code
CID	Carrier Identification
CIM	Call Irregularity Message
CLD	Consumer Long Distance
CLF	Clear Forward
CMC	Cellular Mobile Carrier
CMD	Consumer Market Division
CN	Charge Number
CNRDB	Common Network Routing Database
CPA	Common Platform Adjunct
CPE	Customer Premises Equipment
CPED	Call Processing Execution District
CPN	Calling Party Number
CPPA	Calling Party Pays Airtime
CPPS	Call Processing Process Support
CPR	Call Processing Number
C-PRI	Commercial PRI
CPUP	Call Processing Upchained
CRI	Carrier Routing Index
CS	Carrier Solutions

CSC	Circuit Selection Capability
CSCI	Circuit Selection Capability Indicator
CSCR	Circuit Selection Capabilities Routing
CSI	Carrier Selection Information
CSMC	Consumer Services Management Center
CSMS	CMD Service Management Center
CSN	Carrier Solutions Nodal
CSRO	Customer Specific Routing Option
DARICS	Data Acquisition Recording, Integrated Communications System
DAS	Digit Analysis Selector
DCI	Dual-serial Channel Interface
DDD	Direct Distance Dialing
DECOS	Domestic End-to-End Class of Service
DFS	Directory Function Server
DIF	Digital Interface Frame
DLN	Direct Link Node
DN	Dialed Number
DNTT	Dialed Number Trigger Table
DS1	Digital Signal 1
DSA	Direct Services Application
DSAS	Direct Signaling Assignment System
DSCH	Dual Serial Channel
DSD	Direct Services Dialing
DTMF	Dual Tone Multi-Frequency
DTO	Dedicated Trunk Sub-group Option
DWAN	Dedicated Wide Area Network
EA	Equal Access
EACC	Equal Access Circuit Code
EBAF	Extended Bellcore AMA Format
ECD	Equipment Configuration Database
ECOS	End-to-End Class of Service
EO	End Office
ERPI	Routing Pattern Identity
ESS	Electric Switching System
EUSEC	Enhanced USEC
FEN	Far End Network
FG-C	Feature Group C
FG-D	Feature Group D
FHC	Final Handling Code

FHT	Final Handling Treatment
FRF	Feature Request Form
FRS	Feature Requirement Specifications
FSD	Feature Specification Document
FVSR	Force Via Switch Routing
FVSRTT	FVSR Trigger Table
GETS	Government Emergency Telecommunications Service
GOP	Generic Operations Parameter
GSDN	Global Software Defined Network
GSDS	Global Switched Digital Service
GSS	GTN Support System
GTT	Global Title Translation
HAS	Hand-off AT&T Switch
HICAP	High Capacity
HOT	HICAP Originating Treatment
I/O	Input/Output
I800	International 800
IAM	Initial Address Message
IBSS	In-Band Supervisory Signaling
IBU	In-Band Unit
ICDR	International Call Detail Recording
ICLD	International Consumer Long Distance
ICTRC	International Call Trouble Receipt
IDB	INWATS Database
IDDD	International Direct Distance Dialing
IE	Information Element
II	Inter-exchange Identifier
ILD	International Long Distance
IP	Internet Protocol
IPGW	IP Gateway
IRAS	Integrated Routing Assignment System
ISAIC	Improved Service Announcement & Information Collection
ISAIC SCS	Improved Service Announcement and Information Collection Service Circuit System
ISC	Incoming Signaling Characteristics
ISDN	Integrated Services Digital Network
ISSET	Inbound Services Emergency Translation
ISUP	ISDN User Part

IT	Internet Telephony
ITAMAC	International Transit, Accounting, Maintenance and Analysis of Calls
ITE	Installation Test Equipment
ITFS	International Toll Free Service (formerly 1800)
ITN	Integrated Test Network
IT-T	International Telecommunications Union-Telecommunications
IWZ1	International World Zone 1
IXC	Inter-exchange Carrier
LATA	Local Access Transport Area
LATT	Loop Around Transceiver Test
LCC	Local Exchange Carrier Connecting
LD	Long Distance
LDS	Long Distance Service
LEC	Local Exchange Carrier
LERG	Local Exchange Routing Guide
LSP	Local Service Provider
LTD	Local/Toll Differentiation
LVL	Level
MAP	Mass Announcement Platform
MDN	Miscellaneous Distribution Number
MF	Multi-Frequency
MOC	Maintenance Operations Center
MPS	Message Processing System
MSN	Miscellaneous Scanner Number
NAI	Network Access Interrupt
NAMACC	National AMA Control Center
NANP	North American Numbering Plan
NAP	Network Adjunct Platform
NCC	National Control Center
NCP	Network Control Point
NCP&D	Network Capacity Planning & Delivery
NCS	Network Control Point
NEMOS	Network Management Operations System
NESAC	Network Electronic Systems Assistance Center
NFM	Network Fault Management (formerly TNM)
NI-2	National ISDN-2
NIS	Network Implementation Services

NOC	Network Operations Center
NOC-INM	Network Operations Center-International Network Management
NOE	Network Operations Enterprise
NPA	Numbering Plan Area
NPP	Network Provisioning Platform
NRA	Network Remote Access
NRM	Network Recording Management
NSA	Network Service Automator
NSD&M	Network Service Delivery & Maintenance
NSM	Network Services Maintenance
NSN	Network Switch Number
NSP	Network Services Provisioning
NVT	Network Verification Testing
NWM	Network Management
OAS	Originating AT&T Switch
OCC	Other Common Carrier
OCDD/RT	On-line Call Detail Data/Real Time
ODA	Office Data Assembler
ODAD	ODA Data
OLI	Originating Line Identifier
OLP	Off-Line Processor
OSC	Outgoing Signaling Characteristics
OSPS	Operator Service Position System
OTP	Operations Technical Plan
PAS	Public Announcement System
PBX	Private Branch Exchange
PC	Point Code
PCP	Positive Call Processing
PDN	Pseudo-Destination Number
PI	Precedence Index
PIC	Presubscribed Inter-exchange Carrier
PMO	Present Mode of Operation
POTS	Plain Old Telephone Service
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
PTC	Primary Toll Carrier
PTT	Post Telephone and Telegraph
PV	Performance Verification
PVC	Permanent Virtual Circuits

QDRS	Quantum Data and Routing System
QH	Quiet Hear
RAM	Random Access Memory
RAO	Revenue Accounting Office
RBC	Rate Based Control
RC	Recent Change
RC/V	Recent Change/Verify
RCAS	Recent Change Administration System
RCC	Radio Common Carrier
RICS	Recorded Information Collection System
RLC	Release Complete Message
RPI	Route Pattern Index
RSI	Route Selection Index
RTNR	Real-Time Network Routing
RUAS	Remote Utility Access System
SAN	Service Circuit System Announcement
SC	Structure Code
SCP	Software Change Package
SCP	Software Change Package
SCS	Service Circuit System
SCU	Service Circuit Unit
SD	Segmentation Directory
SDI	Switched Digital International
SDN	Software Defined Network
SDN NRA	Software Defined Network-Network Remote Access
SDS	Switched Digital Service
SDTT	Segmentation Directory Transition Type
SDX	Subsequent Digit Index
SI	Service Identity
SID	Station Identification (CPN)
SII	Service Identity Index
SMO	Segmentation Mode of Operation
SMS	Service Management System
SNAS	Signaling Network Administration System
SNET	Southern New England Telephone
SNOW-R	Service NOW-Routing
SNOW-T	Service NOW-Trunking
SOP-P	Signaling Operations Platform-Provisioning
SP	Service Processor

SPC	Switching and Permuting Circuit
SPU	Signal Processing Unit
SS7	Signaling System 7
SSN	Subsystem Number
STP	Trunk Sub-group
TAN	Trunk Appearance Number
TAS	Terminating AT&T
TCAP	Transaction Capabilities Application Part
TCC	Technology Control Center
TEC	Terminal Equipment Center
TG-4	Translation Guide 4ESS
TNM	Total Network Management
TOP	Task Oriented Practice
TOT	Type of Trunk
TPC	Transport Capability
TS	Time Slot
TSG	Trunk Subgroup
TSI	Time Slot Interchange
TSN	Trunk Scanner Number
TT	Transition Type
TTUSFI	Transport Tariff Usage Sensitive Feature Indicator
TV	True Voice
UIFN	Universal International Freephone Number (Format = 800+8-digits)
US	Utility System
USDS	Universal Subscriber Data Structure
USEC	Universal Services Echo Canceler
VCA	Vacant Code Announcement
VoIP	Voice Over Internet Protocol
VPA	Voice Path Assurance
VSSID	Voice Storage System Identity
VTNS	Virtual Telecommunications Network Service
VTOC	Volume Table of Contents
WATS	Wide Area Telephone Service
WEFOS	WATS Eight Hundred Family of Services
XTSI	Expanded Time Slot Interchange
Y2K	Year 2000

B Appendix B – Input/Output Manual Pages

Input/Output Manual Pages

The following lists include the input and output messages for the 4E24 Release 2 Generic. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is indicated.

4E24R2 Input Messages (IM-4B000-01)

Message ID	New/Mod/Del	Feature
alw:xtsi	Modified	4789
clr:tsibp	Modified	4789
copy:xtsi	Modified	4789
dgn:xtsi	Modified	4789
dump:tsimem	Modified	4789
dump:xtsi-ibu	New	4789
dump:xtsi-spu	Modified	4789
ex:xtsi	Modified	4789
inh:xtsi	Modified	4789
init:pmos-util	Modified	4789
load:tsimem	Modified	4789
load:xtsi-ibu	New	4789
load:xtsi-ireg	Modified	4789
op:tsibp	Modified	4789
rmv:xtsi	Modified	4789
rst:xtsi	Modified	4789
rst:xtsi-all	Modified	4789
set:tsibp	Modified	4789
upd:xtsi	Modified	4789
ver:vfunc	Modified	4789
ver:vfunc-xtsiib	Modified	4789

Input/Output Messages (cont'd)

4E24R2 Output Messages (OM-4B000-01)

Message ID	New/Mod/Del	Feature
clr:tsibp	Modified	4789
copy:xtsi	Modified	4789
dgn:xtsi-ill	Modified	4789
dgn:xtsi-not	Modified	4789
dgn:xtsi-pub	Modified	4789
dgn:xtsi-term	Modified	4789
dgn:xtsi-test	Modified	4789
dump:tsimem	Modified	4789
dump:xtsi-creg	Modified	4789
dump:xtsi-d3u	Modified	4789
dump:xtsi-ibu	New	4789
dump:xtsi-ireg	Modified	4789
dump:xtsi-spu	Modified	4789
ex:xtsi-addr	Modified	4789
ex:xtsi-ill	Modified	4789
ex:xtsi-loop	Modified	4789
ex:xtsi-not	Modified	4789
ex:xtsi-pub	Modified	4789
ex:xtsi-susp	Modified	4789
ex:xtsi-term	Modified	4789
ex:xtsi-test	Modified	4789
load:tsimem	Modified	4789
load:xtsi-ibu	New	4789
load:xtsi-ireg	Modified	4789
op:pmos	Modified	4789
op:sdsc	Modified	4789
op:tsibp	Modified	4789
rept:0	Modified	4789
rept:pmos-tskid	Modified	4789
rmv:xtsi	Modified	4789
rst:xtsi	Modified	4789

Input/Output Messages (cont'd)

4E24R2 Output Messages (OM-4B000-01) (cont'd)

rst:xtsi-schedul	Modified	4789
set:tsibp	Modified	4789
upd:xtsi	Modified	4789
ver:misc-suxtsi	Modified	4789
ver:misc-xtsid3u	Modified	4789
ver:subutp-xtsii	New	4789

Proprietary Input Messages

test:sd	Modified	5641
ver:misc-fht-cic	New	6896

Proprietary Output Messages

ver:misc-fht-cic	New	6896

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ID ALW:XTSI
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

This message is used to perform unpestering operations.

Format [1] is used to reset at the Central Control (CC) the All Seems Well (ASW) and parity pest for the specified Expanded Time Slot Interchange (**XTSI**).

Format [2] is used to reset **XTSI**, Base Level Maintenance (**BLM**), Control Bus and Image Administration (**CIA**), Autonomous Peripheral Unit Failure (**APUF**), or Autonomous Peripheral Unit Trouble (**APUT**) frame pests.

Format [3] is used to reset the Digital Signal Level 3 Unit (**D3U**) pest in the **XTSI** frame.

Format [4] is used to reset the Signal Processing Unit (**SPU**) pest in the **XTSI** frame.

Format [5] is used to reset the In-Band Unit (**IBU**) pest in the **XTSI** frame.

2. FORMAT

- [1] **ALW:XTSI a,KCODE!**
- [2] **ALW:XTSI a,{APUT|APUF|CIA|BLM}!**
- [3] **ALW:XTSI a,D3U b,SPEC!**
- [4] **ALW:XTSI a,SPU c,SPEC!**
- [5] **ALW:XTSI a,IBU 0,SPEC!**

3. EXPLANATION OF MESSAGE

- a **XTSI** member number (0-63).
- APUT** Autonomous Peripheral Unit Trouble.
- APUF** Autonomous Peripheral Unit Failure.
- CIA** CIASUM pest.
- BLM** Base Level Maintenance Pest.
- b **D3U** number (0-7).
- c **SPU** number (0-11).

SEE PROPRIETARY NOTICE ON COVER PAGE

4. SYSTEM RESPONSE

PF Printout Follows. The input message will be echoed when unpestering is done.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: ALW:TSI n, . . .NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
ERATPEST
XTSIPEST

Input Message
INH:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID CLR:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING
Because this message changes the memory or uses critical resources of
the hardware unit, this message should only be used when directed by
technical support.

1. PURPOSE

This command clears all breakpoints from a Expanded Time Slot Interchange (**XTSI**) frame, or from the frame controllers only, or from a Digital Signal Level 3 Unit (**D3U**) only, Signal Processing Unit (**SPU**) only, or In-Band Unit (**IBU**) only.

Format [1] is used to clear all breakpoints in a simplex **XTSI** controller or duplex **XTSI** controllers.

Format [2] is used to clear all breakpoints in a **D3U**.

Format [3] is used to clear all breakpoints in a **SPU**.

Format [4] is used to clear all breakpoints in a **IBU**.

Format [5] is used to clear all breakpoints in an **XTSI** frame (controllers, **D3U** and **SPUs**).

2. FORMAT

- [1] **CLR:TSIBP;XTSI a!**
- [2] **CLR:TSIBP;XTSI a,D3U b!**
- [3] **CLR:TSIBP;XTSI a,SPU c!**
- [4] **CLR:TSIBP;XTSI a,IBU 0!**
- [5] **CLR:TSIBP;XTSI a:ALL!**

3. EXPLANATION OF MESSAGE

- a **XTSI** member number in decimal (0-63). Only even numbered **XTSI** member numbers are allowed.
- b **D3U** number in decimal (0-7).
- c **SPU** number in decimal (0-11).
- ALL** Clear all breakpoints in the specified frame.

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4. SYSTEM RESPONSE

PF	Printout Follows. The breakpoints will be cleared in the specified unit(s). A CLR:TSIBP output message follows indicating the results of the request.

5. REFERENCES

PIDENT
XTSIBKPT

Input Message
OP:TSIBP
SET:TSIBP

Output Message
CLR:TSIBP
OP:TSIBP
REPT:TSIBP
SET:TSIBP

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ID COPY:XTSI
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

To copy specified file types from the 3B Attached Processor System (APS) disk to the flash memory for the specified Expanded Time Slot Interchange (**XTSI**). The file will be stored on the flash memory as the file type with the given version number.

2. FORMAT

COPY:XTSI a,[**CONTR** b,]c,**SVN** d,**DVN** e[;**UCL**]!

3. EXPLANATION OF MESSAGE

- a **XTSI** number.
- b Controller number of the **XTSI**. Can not specify **CONTR** when frame is duplex operational, even with **UCL**.
- c This two-keyword field specifies the type of the file to be copied from the 3B APS to flash memory of the **XTSI**. The following list shows the legal two-keyword combinations:
- IBU, DGN** — File containing diagnostic software for the In-Band Unit (**IBU**).
- IBU, OPR** — File containing software for the **IBU**.
- IBU, TST** — File containing test circuit software for the **IBU**.
- IBU, XCVR** — File containing service circuit software for the **IBU**.
- D3U, DGN** — File containing diagnostic software for the Digital Signal Level 3 (DS3) Unit (**D3U**).
- D3U, OPR** — File containing software for the **D3U**.
- SPU, DGN** — File containing diagnostic software for the Signal Processing Unit (**SPU**).
- SPU, OPR** — File containing software for the **SPU**.
- XTC, CSP** — File containing Signal Processor (SP) software for the **XTSI** controller.
- XTC, DGN** — File containing diagnostic software for the **XTSI** controller.
- XTC, FDT** — File containing file description table.
- XTC, OPR** — File containing software for the **XTSI** controller.

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- d Source File Version (**SVN**) stored in APS disk (0-1).
- e Destination File Version (**DVN**) stored in the flash memory (0-1).
- UCL** Unconditional. Without the **UCL** option, controller files are not copied to an **XTSI** controller in the growth state, duplex failed state, or out of service state; or the destination file version is currently marked active in translations. When the **UCL** option is specified, an attempt will be made to copy files under all of these conditions.

For subunits: files are always copied to the in-service controller of a simplex frame. **UCL** must be specified to copy to the Out Of Service (OOS) controller of a simplex frame. Subunit file copies, are not restricted when sent to the active file version **DVN**.

4. SYSTEM RESPONSE

- ?D Data field contains an error. The copy request has been denied. A required keyword argument is missing.
- ?E Syntax error exists in the message but cannot be resolved The copy request was rejected. The program was unable to parse the input message.
- ?I Identification field contains an error. The copy request has been denied. A required keyword is missing, or a keyword argument is out range, or an extra keyword or keyword argument has been specified.
- PF Printout Follows. The copy request has been accepted. An output message will follow to indicate the status of the copy request.
- RL Retry Later. The copy request has been denied. Retry later when the system is less busy.

5. REFERENCES

PIDENTs
SCSCFSCU
XTSI3BCP

Output Message
COPY:XTSI

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ID DGN:XTSI
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Diagnose the specified Expanded Time Slot Interchange (**XTSI**).

NOTE: The **UCL** and **TLP** keywords should not be used together.

2. FORMAT

DGN:XTSI a,{IPUB b|CONTR c|D3U d|SPU e|IBU 0}[;[RPT f][,RDT g]
[,RAW] [,UCL]][:[PUB h][,PH i][,GROWTH][,TLP]]!

3. EXPLANATION OF MESSAGE

a	Member number of the XTSI (0-63). Only even member numbers are valid for Expanded Time Slot Interchange (XTSI) frames.
b	XTSI bus circuitry to be diagnosed (0-1). Specifying Interface Peripheral Unit Bus (IPUB) will effect the bus circuitry diagnosis without removing a controller from service. Only the interface with in-service controllers is diagnosed.
c	Controller to be diagnosed (0-1).
d	Digital Signal Level 3 Unit (D3U) to be diagnosed (0-7).
e	Signal Processing Unit (SPU) to be diagnosed (0-11).
f	Number of times the diagnostic is repeated (1-255). Default = 1.
g	Redirect the output messages to the channel specified. Default is output on the input channel. See the User Guidelines of the <i>Input Message Document</i> for a list of channel names.
RAW	Print the diagnostic results of every phase. Default will only print the first five failures of any failing phase.
UCL	Unconditionally execute the diagnostic with no early termination.
h	Execute the diagnostic using the specified Peripheral Unit Bus (PUB) (0-1). The inputting of this variable must be to the active PUB . If it is not, the message aborts.
IBU	In-Band Unit.

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- i Execute only specified phase numbers (1,2,4,5,6,7,9, 12-19,23,25,27,29, 40,41,90 for **XTSI** frames **CONTR**, 99 for **IPUB**, 1-19,90-91 for **D3U**, 1-19,21 for **SPU**, 1-12,14-15 for **IBU**). May be a single decimal number, a range, or a list. Specification of the following phases will cause the indicated PIDENTs to be executed:

PHASE NUMBERS	PIDENT
CONTR 1,2,4,5,6,7,9, 12-19,23,25, 27,29,40,41,90	PUDGXT01-PUDGXT90
IPUB 99	PUDGXT99
D3U 1-19,90-91	PUDGDS01-PUDGDS91
SPU 1-19,21	PUDGXS01-PUDGXS21
IBU 1-12,14-15	PUDGIB01-PUDGIB15

GROWTH Diagnose all helper interface circuitry if frame equipage is in a state less than operational.

TLP Execute the trouble location raw data compression programs at the conclusion of the diagnostic to print the summary data message and to schedule the trouble location data base search programs to generate the faulty equipment message.

4. SYSTEM RESPONSE

?R, DPLX FAIL Insufficient system Resources are available to determine the validity of the message. Diagnostics are not available from the disk system. (Clear the Duplex failure or use SYSRTPAD/TPAD.)

PF Printout Follows. Followed by the DGN:XTSI-[unit] output message(s).

5. REFERENCES

PIDENTs

PUDGXT--, for XTSI controller pidents

PUDGDS--, for D3U pidents

PUDGXS--, for SPU pidents

PUDGIB--, for IBU pidents

Practice 234-180-220, *Audit System Programs Description*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

PA-4A002-01, *4ESSTM User's Manual*

Output Message

DGN:XTSI-[unit]

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WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID DUMP:TSIMEM
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING

1. PURPOSE

This command dumps (reads) the specified memory in either the Expanded Time Slot Interchange (**XTSI**) controller, Digital Signal Level 3 Unit (**D3U**), Signal Processing Unit (**SPU**) or In-Band Unit (**IBU**).

Format 1 is used to read memory of **XTSI** controllers.

Format 2 is used to read memory of a **D3U**.

Format 3 is used to read memory of a **SPU**.

Format 4 is used to read memory of a **IBU**.

Format 5 and 6 are used to read Time Slot Memory (TSM).

Format 7, 8 and 9 are used to read memory of a Controller Signal Processor (**CSP**) or an In-Band Unit (**IBU**).

2. FORMAT

- [1] **DUMP:TSIMEM;XTSI a[,CONTR b],{MRAM c|GRAM d|LRAM e|CRAM g}[,L h]!**
- [2] **DUMP:TSIMEM;XTSI a,D3U i,HADR j[,L h]!**
- [3] **DUMP:TSIMEM;XTSI a,SPU k,HADR j[,L h]!**
- [4] **DUMP:TSIMEM;XTSI a,IBU 0,HADR j[,L h]!**
- [5] **DUMP:TSIMEM;XTSI a,[CONTR b,]SPC l,PRTI0,LEVEL m,ADR n[,L h]!**
- [6] **DUMP:TSIMEM;XTSI a,[CONTR b,]SPC l,PRTI {1|2|3},ADR n[,L h]!**
- [7] **DUMP:TSIMEM;XTSI a,{ES|MS|TBITS} o[,L h]!**
- [8] **DUMP:TSIMEM;XTSI a,SPC l,PCIS p[,L h]!**
- [9] **DUMP:TSIMEM;XTSI a,IBU 0,{SD|SCAN|MTBITS} q[,L h]!**

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3. EXPLANATION OF MESSAGE

a	XTSI member number in decimal (0-63). Only even numbered XTSI member numbers are allowed (except where the Switching and Permuting Controller (SPC) keyword is specified).
b	Controller (0 or 1). Default is the active controller. Controller can be specified in a duplex frame when TSM type message is used, otherwise controller may not be specified if the frame is duplex or listen-only mode, or if this is read of Control-Bus Random Access Memory (CRAM) memory above H'10000000. If frame is duplex-failed, then controller must be specified.
c	XTSI controller Micro-Store Instruction Random Access Memory (MRAM) memory address in hexadecimal (0-FFFF).
d	XTSI controller Global Random Access Memory (GRAM) memory address in hexadecimal (0-3FFFF). Any address greater than 16 bits is specified in two 16-bit increments. For example, (3,FFFF) represents an address of 3FFFF.
e	XTSI controller Local Random Access Memory (LRAM) memory address in hexadecimal (0-FFFF).
g	XTSI CRAM memory address in hexadecimal (0-23FFFFFF). If value is greater than or equal to 10000000, then this would be an address for a Protection Switch Client (PSC). For PSCs, the command is rejected if the frame is duplex-failed. Using the CRAM keyword to address an Out Of Service (OOS) or unequipped PSC will cause an F-Level interrupt. Use Format [2] instead.
h	Number of "words" to read in decimal (1-128). Default = 1. The size of a word is variant with the memory type.
i	D3U number in decimal (0-7).
j	Address argument (0-401FFF) in D3U or (0-603C00) in SPU . Any address larger than 16 bits is specified in two 16-bit increments. Each address must also be preceded by the digit 0, 1 or 2. This indicates memory access type long, word or byte respectively. Each argument must be separated by a comma. For example (0,FF) represents an access type of "long" and an address of FF and (2,40,1FFF) represents an access type of "byte" and an address of 401FFF.
k	SPU number in decimal (0-11).
l	Switching and Permuting Controller (SPC) 0 or 1.
PRTI	Partition number (0-3).
m	A-link level number (0-7).
n	If LEVEL is used, octal range for 7 bit address (0-177) (decimal 127). If LEVEL is not used, octal range for 10 bits (0-1777).
ES	E-Store memory.

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MS	M-Store memory.
PCIS	Per channel inhibit state memory.
TBITS	Trunk bits.
o	Controller Signal Processor (CSP) trunk designation, controller, in octal (0-7777).
SD	Signal distribute point.
SCAN	Scan point.
MTBITS	Miscellaneous trunk bits.
p	IBU trunk designation in octal (1-1760).
q	Controller Signal Processor (CSP) trunk designation in octal (3000-3430).

4. SYSTEM RESPONSE

PF	Printout Follows. A request will be sent to the frame to read the specified memory. A DUMP:TSIMEM output message follows, indicating the results of the request.

5. REFERENCES

PIDENT
XTSIMEMU

Input Message
LOAD:TSIMEM

Output Messages
DUMP:TSIMEM
LOAD:TSIMEM

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ID DUMP:XTSI-IBU
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Dumps the maintenance data for the particular In-Band Unit (**IBU**) of an Expanded Time Slot Interchange (**XTSI**) frame.

2. FORMAT

DUMP:XTSI a,IBU 0,IREG!

3. EXPLANATION OF MESSAGE

a XTSI member number (0-63).

4. SYSTEM RESPONSE

PF, CODE 091 Printout Follows.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: DUMP:TSI n, ...NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Message
LOAD:XTSI-IBU

Output Messages
DUMP:XTSI-IBU
LOAD:XTSI-IBU

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ID DUMP:XTSI-SPU
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Dumps the maintenance data for the particular Signal Processing Unit (**SPU**) of an Expanded Time Slot Interchange (**XTSI**) frame.

2. FORMAT

DUMP:XTSI a,SPU b,IREG!

3. EXPLANATION OF MESSAGE

a **XTSI** member number (0-63).
b **SPU** number (0-11).

4. SYSTEM RESPONSE

PF, CODE 091 Printout Follows.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: DUMP:TSI n, ...NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Message
LOAD:XTSI-SPU

Output Messages
DUMP:XTSI-SPU
LOAD:XTSI-SPU

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ID EX:XTSI
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Exercises the specified Expanded Time Slot Interchange (**XTSI**) frame in an interactive diagnostic mode. In the **EX**: mode, all diagnostics are executed as if they were running in an Unconditional (**UCL**) mode, even though that parameter is not available as an input option. The same is true for the **RAW** function. Both **UCL** and **RAW** are described in the corresponding **DGN:XTSI** input message.

Format [1] is used to start the interactive diagnostic of the specified unit. The exercise will be active until terminated by a **STOP:MACLI** input message.

Format [2] is used to modify, that is, to add or delete, the options that apply during the diagnostic execution.

Format [3] is used to step the diagnostic execution.

Format [4] is used to loop within the diagnostic, advance to the specified address, or execute the specified phase or phases.

Format [5] is used to stop an infinite loop or continue execution of a phase currently suspended by Format [3] or [4].

2. FORMAT

- [1] **EX:XTSI** a{, **IPUB** b|, **CONTR** c|, **D3U** d| **SPU** e| **IBU** 0}; **START**[: [**PUB** f][, **GROWTH**]]!
- [2] **EX:XTSI** a[; [**RDT** g][, **DLT**]][: [**PAUSE** h][, **FFAIL**][, **SYNC** i][, **ENABLE** j]]!
- [3] **EX:XTSI** a; **STEP**[k][: **PH** l]!
- [4] **EX:XTSI** a[; **RPT** m][: [**PH** l][, **ADR** n]]!
- [5] **EX:XTSI** a!

3. EXPLANATION OF MESSAGE

- a **XTSI** frame member number to be diagnosed (0-63). Only even member numbers are valid for **XTSI** frames.
- b **XTSI** bus circuitry to be exercised (0 or 1).
- c Controller to be diagnosed (0 or 1).

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- d Digital Signal Level 3 Unit (**D3U**) to be diagnosed (0-7).
 - e Signal Processing Unit (**SPU**) to be diagnosed (0-11).
 - IBU 0** In-Band Unit (**IBU**) to be diagnosed.
 - f Helper Peripheral Unit Bus (**PUB**) member number to be used (0 or 1). This input is valid only if the **XTSI** is in GROWTH or SPECIAL GROWTH.
 - GROWTH** Diagnose the growth parts in addition to the operational parts.
 - g The channel to which the output messages are redirected. Default is output on the input channel.
 - DLT** Delete the action previously enabled. This applies to **FFAIL**, **PAUSE**, **SYNC**, **ENABLE**. The action to delete must be specified.
 - h The address at which the diagnostic execution is suspended. The address must be a valid segment point macro index word address specified in the diagnostic listing. If automatic segmenting is active, any index word address is valid; otherwise, the next index word address following the **SEGMENT** statement is valid. Execution may be resumed by inputting the **EX:** message with no optional parameters.
 - FFAIL** Suspend diagnostic execution after the first test failure has occurred. Execution is resumed by the **EX** command with no optional parameters specified.
- NOTE:** The diagnostic is suspended at the first legal segment point following the first test failure.
- i The address to be executed to generate a **SYNC** pulse. The address must be a macro index word address specified in the diagnostic listing. The **SYNC** pulse is physically available on bit 36 of the Peripheral Unit (PU) address bus.
 - j The test to be executed before enabling the functions loop, **SYNC**, advance or step.
 - k The number of segments the diagnostic execution is stepped. If no phase is currently active, a phase number must be specified. Default is one segment executed. If automatic segmenting is active, one segment equates to one **DIAL** statement.
 - l The specified phase numbers to be executed, which may be a single decimal number, a range (e.g., x-y), a list (e.g., x,y,z...), or a combination of range and list. A list or combination must be enclosed in parentheses. If this parameter is specified, execution will be from the start of the phase.
 - m The number of times the diagnostic is repeated (1-255). If the **ADR** parameter is specified with a range of addresses, the default value is infinity; otherwise, the default value is one.

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n The specified address range to be executed. The addresses must be a valid segment point macro index word addresses specified in the diagnostic listing. If automatic segmenting is active, any index word address is valid; otherwise, the next index word address following the SEGMENT statement is valid. May be a single octal address or a range of octal addresses. If a single address is given, execution will advance up to the specified address and then be suspended. If a range of addresses is specified, the diagnostic will loop from the last address to the first address.

NOTE: For looping, the execution will always be from the start of the phase to the last address, then loop back to the first address. If no phase is currently active, a phase number must be specified.

4. SYSTEM RESPONSE

?R, DPLX FAIL	Insufficient system Resources are available to determine the validity of the message. The diagnostics are not available from the disk system. (Clear the Duplex failure or use SYSRTPAD/TPAD.)
NG	No Good. Start message never sent or using channel other than the one used to start the diagnostic.
PF	Printout Follows. Followed by an EX:XTSI -PUB output message(s).
RL	Retry Later. Indicates the diagnostic is not in the interactive mode or is not ready for input.

5. REFERENCES

PIDENTs
DCONMAIN
MIRA
PUDGXT--, where -- represents all valid phase numbers
listed in PIDENT DCONTOLL for PREFIX=PUDGXT, UTYPE=1XLUTSI
PUDGDS--, where -- represents all valid phase numbers
listed in PIDENT DCONTOLL for PREFIX=PUDGDS, UTYPE=1XLUTSI
PUDGXS--, where -- represents all valid phase numbers
listed in PIDENT DCONTOLL for PREFIX=PUDGXS, UTYPE=1XLUTSI
PUDGIB--, where -- represents all valid phase numbers
listed in PIDENT DCONTOLL for PREFIX=PUDGIB, UTYPE=1XLUTSI

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

PA-4A002-01, *4ESSTM User's Manual*

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Input Messages

CLR:MACLI
DGN:XTSI
OP:MACLI
STOP:MACLI

Output Message

EX:XTSI-PUB

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WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID INH:XTSI
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PMTC
APPLICATION .. 4E
TYPE Input

WARNING
Port pesting will remove the talking path over that port but will not
remove the connecting trunks. This message form must not be used in
an operational office except as specified in growth procedures.

1. PURPOSE

This message performs pesting operations.

Format [1] is used to set at the Central Control (CC) the All Seems Well (ASW) and parity pest for the specified Expanded Time Slot Interchange (**XTSI**).

Format [2] is used to set **XTSI**, Autonomous Peripheral Unit Trouble (**APUT**), Autonomous Peripheral Unit Failure (**APUF**), Control Bus and Image Administration (**CIA**), or Base Level Maintenance (**BLM**) frame pests.

Format [3] is used to set the Digital Signal Level 3 Unit (**D3U**) pest in the **XTSI** frame.

Format [4] is used to set the Signal Processing Unit (**SPU**) pest in the **XTSI** frame.

Format [5] is used to set the In-Band Unit (**IBU**) pest in the **XTSI** frame.

2. FORMAT

- [1] **INH:XTSI a,KCODE!**
- [2] **INH:XTSI a,{APUT|APUF|CIA|BLM}!**
- [3] **INH:XTSI a,D3U b,SPEC!**
- [4] **INH:XTSI a,SPU c,SPEC!**
- [5] **INH:XTSI a,IBU 0,SPEC!**

3. EXPLANATION OF MESSAGE

a	XTSI member number (0-63).
APUF	Autonomous Peripheral Unit Failure.
APUT	Autonomous Peripheral Unit Trouble.
CIA	CIASUM pest.

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BLM	Base Level Maintenance pest.
b	D3U number (0-7).
c	SPU number (0-11).

4. SYSTEM RESPONSE

PF	Printout Follows. The input message will be echoed when the pesting is done.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: INH:TSI n, . . .NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
ERATPEST
XTSIPEST

Input Message
ALW:XTSI

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ID INIT:PMOS-UTIL
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Enables or disables specified utility functions.

Format [1] requests the Local Variable Stack (LVS) audit.

Format [2] requests the frame / Central Control (CC) bus routing trap.

Format [3] disables all Input / Output (I/O) controlled utility functions.

2. FORMAT

[1] **INIT:PMOS;UTIL,LVSAUD[:[DEPTH a][,TASKID b]]!**

[2] **INIT:PMOS;UTIL,FRMROUT!**

[3] **INIT:PMOS;UTIL,END!**

3. EXPLANATION OF MESSAGE

- a Percentage (0-100, in decimal) of stack usage. Default is 100 percent.
- b Peripheral Maintenance Operating System (**PMOS**) task, represented by an octal number in Table 1. Default is all tasks.

4. SYSTEM RESPONSE

OK Good. Request accepted and completed.

5. REFERENCES

PIDENTs
PMOSMAIN
PMOSPRIM
PMOSTBLE

Output Messages
REPT:PMOS-LVS
REPT:PMOS-TSKID
REPT:PMOS-UTIL

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Table 1
TASK IDENTIFICATION

<i>Value</i>	<i>Task Name</i>
0	PUFR
1	TNFR_ISOL
2	SYNC_ISOL
3	DIFR_ISOL
4	SCSFR_ISOL
5	FRDIMREQ
6	FRDILAUD
7	FRDILAMP
10	FRDIPCSC
11	XTSI_PSC_FRDIPCSC
12	FRDIPRE
13	FRDIPOST
14	FRDISWCH
15	TOPIC
16	FERA_FREQ
17	FERA_ROUTINE
20	FERA_DF_AUDIT
21	FERA_TST_RTN
22	FERA_DF_TIMEOUT
23	BOOTCNTL
24	DIF_BOOTSTRAP
25	SCS_BOOTSTRAP
26	DIF_PEST_UPDATE
27	SCS_PEST_UPDATE
30	DIFR_TIMED_AUDIT
31	SCS_TIMED_AUDIT
32	CLK_SWIP
33	RUN_ESTAB_CLK
34	AUTON_MESSDISP
35	MESSDISP_POLLING
36	PMOS_TTY
37	MEDIC_AUDIT
40	TIMED_ENTRY
41	DIF_PEST_APUFS
42	DIF_PST_CLEANUP
43	SCS_PST_CLEANUP
44	SCS_PEST_APUFS
45	DIF_UNPEST_BOVFL

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Table 1 (continued)
TASK IDENTIFICATION

<i>Value</i>	<i>Task Name</i>
46	SCS_UNPEST_BOVFL
47	DIFEPUMP
50	UTIL_AUDIT
51	PREDFN_OD_ALARMS
52	PARALLEL_DIF_POLLING
53	PARALLEL_SCS_POLLING
54	SCS_ANN_UPD_RESP_HNDLR
55	SCS_COPY_RESP_HNDLR
56	SCS_FORMAT_RESP_HNDLR
57	SCS_DISK_COPY
60	SCS_DISK_FORMAT
61	SCS_DISK_LOAD
62	SCS_DISK_DUMP
63	SCS_START_3B_COPY
64	COPY3B_SCS_FILES
65	SCS_CONTR_GEN_UPD
66	FERA_UNPEST_APUT
67	SCS_BP_MEM_UTIL
70	SCS_BP_RESP_HNDLR
71	XTSI_BOOTCNTL
72	XTSI_BOOTSTRAP
73	XTSI_PEST_UPDATE
74	PARALLEL_XTSI_POLLING
75	XTSI_DISK_COPY
76	XTSI_DISK_DUMP
77	XTSI_DISK_LOAD
100	XTSI_START_3B_COPY
101	COPY3B_XTSI_FILES
102	XTSI_START_GEN_UPD
103	XTSI_READ_CONTR_MEM_UTIL
104	XTSI_WRITE_CONTR_MEM_UTIL
105	XTSI_READ_D3U_MEM_UTIL
106	XTSI_WRITE_D3U_MEM_UTIL
107	XTSI_BP_UTIL
110	XTSI_ORD_LPBK
111	XTSI_AUDIT_LPBK
112	XTSI_DIAG_REQ
113	DIF_INITDG

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Table 1 (continued)
TASK IDENTIFICATION

<i>Value</i>	<i>Task Name</i>
114	XTSI_FILE_COPY
115	XTSI_FILE_DUMP
116	XTSI_FILE_LOAD
117	XTSI_PEST_APUFS
120	XTSI_PST_CLEANUP
121	Internal PMOS spare task ID (not available for use)
122-123	Spare TASK IDS available for future use
124	XTSI_SPU_MULTI_RRES
125-126	Spare TASK IDS available for future use
127	XTSI_UPDATE_PSC_PARMs
130	XTSI_PM_24HR_SYNC
131	XTSI_SU_ODA_AUD
132	XTSI_SCHED_SU_ODA_AUD
133	XTSI_UNPEST_APUT

SEE PROPRIETARY NOTICE ON COVER PAGE

WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID LOAD:TSIMEM
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING

1. PURPOSE

This command loads (writes) the specified memory into either the Expanded Time Slot Interchange (**XTSI**) controller, Digital Signal Level 3 Unit (**D3U**), Signal Processing Unit (**SPU**) or In-Band Unit (**IBU**).

Format 1 is used to write memory of **XTSI** controllers.

Format 2 is used to write memory of a **D3U**.

Format 3 is used to write memory of a **SPU**.

Format 4 is used to write memory for an **IBU**.

Format 5 and 6 are used to write Time Slot Memory (TSM).

Format 7, 8 and 9 are used to write memory of a Controller Signal Processor (CSP) or an In-Band Unit (**IBU**).

2. FORMAT

- [1] **LOAD:TSIMEM;XTSI a[,CONTR b],{MRAM c|GRAM d|LRAM e|CRAM g}**
:HDATA h[,HMSK i]!
- [2] **LOAD:TSIMEM;XTSI a,D3U j,HADR k:HDATA l[,HMSK m]!**
- [3] **LOAD:TSIMEM;XTSI a,SPU n,HADR k:HDATA l[,HMSK m]!**
- [4] **LOAD:TSIMEM;XTSI a,IBU 0,HADR k:HDATA l[,HMSK m]!**
- [5] **LOAD:TSIMEM;XTSI a,[CONTR b,]SPC o,PRTI 0,LEVEL p,ADR q:DATA r**
[,MASK1 s]!
- [6] **LOAD:TSIMEM;XTSI a,[CONTR b,]SPC o,PRTI 1|2|3,ADR q:DATA r**
[,MASK1 s]!
- [7] **LOAD:TSIMEM;XTSI a,{ES|MS|TBITS} t:DATA u!**
- [8] **LOAD:TSIMEM;XTSI a,SPC o,PCIS v:DATA u!**
- [9] **LOAD:TSIMEM;XTSI a,IBU 0,{SD|MTBITS} w:DATA u!**

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3. EXPLANATION OF MESSAGE

- a **XTSI** member number in decimal (0-63). Only even numbered **XTSI** member numbers are allowed (except where the keyword Switching and Permuting Controller (**SPC**) is specified).
- b Controller (0 or 1). Default is the active controller. Using TSM type message controller can be used in a duplex frame, otherwise controller may not be specified if the frame is duplex or listen-only mode, or if this is a read of Control-Bus Random Access Memory (**CRAM**) memory above H'10000000. If the frame is duplex-failed, then controller must be specified.
- c **XTSI** controller Micro-Instruction Random Access Memory (**MRAM**) memory address in hexadecimal (0 - FFFF).
- NOTE:** Controller program memory audit must be turned off before the controller micro-instruction Random Access Memory (RAM) memory is written to prevent interrupts. Contact the Technical Assistance Center for further information.
- d **XTSI** controller Global Random Access Memory (**GRAM**) memory address in hexadecimal (0 - 3FFFF). Any address greater than 16 bits is specified in two 16-bit increments. For example, (3,FFFF) represents an address of 3FFFF.
- e **XTSI** controller Local Random Access Memory (**LRAM**) memory address in hexadecimal (0 - FFFF).
- g **XTSI CRAM** memory address in hexadecimal (0 - 23FFFFFFF). If value is greater than or equal to 10000000, then this would be an address for a Protection Switch Client (PSC). For PSCs, the command is rejected if the frame is duplex-failed. Any address greater than 16 bits is specified in two 16-bit increments. For example, (23FF,FFFF) represents an address of 23FFFFFF.
- h Controller data to write in hexadecimal. **LRAM**, **GRAM**, and **CRAM** data is 32 bits and **MRAM** instruction is 64 bits. To represent more than 16 bits of data, the input data is specified in multiple 16-bit increments. For example, (1A1A,2B2B,3C3C,4FFF) represents the hex number 1A1A2B2B3C3C4FFF. Leading zeroes are not required.
- i 32-bit Mask in hexadecimal. Default mask is FFFFFFFF. A mask can not be specified for **MRAM**. Any mask larger than 16 bits of data is specified in two 16-bit increments. For example, (3,FFFF) represents a mask of 0003FFFF.
- j **D3U** number in decimal (0-7).
- k Address argument contains valid hexadecimal range (0 - 401FFF) in **D3U** or (0 - 603C00) in **SPU**. Any address larger than 16 bits is specified in two 16-bit increments. Each address must also be preceded by the digit 0, 1 or 2 to indicate memory access type long, word or byte respectively and separated by a comma. For example (0,FF) represents

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an access type of "long" and an address of FF and (2,40,1FFF) represents an access type of "byte" and an address of 401FFF.

l	D3U or SPU data to write in hexadecimal. Writes are done in 4-byte data increments. When representing more than 16 bits of data, the input data is specified in multiple 16-bit increments. For example, (1A1A,2B2B) represents the 32-bit hex number 1A1A2B2B. Leading zeroes are not required; if the leading digits are not specified, these digits will default to zero.
m	32-bit Mask in hexadecimal. Default mask is FFFFFFFF. Any mask larger than 16 bits of data is specified in two 16-bit increments. For example, (3,FFFF) represents a mask of 0003FFFF.
n	SPU number in decimal (0-11).
o	SPC 0 or 1.
PRTI	Partition (0-3).
p	A-link number (0-7) (required when PRTI 0 is specified).
q	ADR address of Time Slot Memory (TSM). Octal range (0-177) when PRTI 0 is specified. Octal range (0-1777) when PRTI 1, 2 or 3 is specified.
r	Data to be written. (Maximum 15 bits, or octal range 77777)
s	When using TSM message a 15 bit octal mask is used. Default mask is 77777.
ES	E-Store memory.
MS	M-Store memory.
PCIS	Per channel inhibit state memory.
TBITS	Trunk bits.
t	Controller Signal Processor (CSP) trunk designation, controller, in octal (0-7777).
SD	Signal distribute point.
MTBITS	Miscellaneous trunk bits.
u	Data to be written. (0-1 for ES , MS or PCIS . Octal 0-77 for TBITS or MTBITS .)
v	IBU trunk designation in octal (1-1760).
w	Controller Signal Processor (CSP) trunk designation in octal (3000-3430).

4. SYSTEM RESPONSE

PF	A request will be sent to the frame to write the specified word of memory. A LOAD:TSIMEM output message follows, indicating the results of the request.

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5. REFERENCES

PIDENT
XTSIMEMU

Input Messages
DUMP:TSIMEM

Output Message
DUMP:TSIMEM
LOAD:TSIMEM

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ID LOAD:XTSI-IBU
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Loads the Internal Registers (**IREG**) of the specified In-Band Unit (**IBU**), in a particular Expanded Time Slot Interchange (**XTSI**) frame.

2. FORMAT

LOAD:XTSI a,IBU b,IREG c:d[,MSK e]!

3. EXPLANATION OF MESSAGE

- a **XTSI** member number (0-63).
- b **IBU** number (0).
- c Internal register number:
- 0 — INVALID - **IBU** Software Status register (IBUSTATUS).
- 1 — INVALID - **IBU** Hardware Status register (IBUSTAT).
- 2 — INVALID - **IBU** Error Source register (IBUESR).
- 3 — IBUCTL - **IBU** control register bits 0-23.
- 4 — IBUEXR - **IBU** exercise register bits 0-23.
- d Data to be loaded into register.
- e Mask through which data is loaded. Default mask is all ones.

4. SYSTEM RESPONSE

PF, CODE 091 Printout Follows. Printout will conditionally follow.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: LOAD:TSI n, ...NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Message
DUMP:XTSI-IBU

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4ESS
IM-4B000-01

LOAD:XTSI IBU

Output Messages
DUMP:XTSI-IBU
LOAD:XTSI-IBU

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LOAD:XTSI-IBU-2

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ID LOAD:XTSI-IREG
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Loads the specified Expanded Time Slot Interchange (**XTSI**) Internal Register (**IREG**), or Critical Register (**CREG**).

Format [1] is used to load registers other than hardware status registers. Both controllers are updated.

Format [2] is used to load hardware status registers only. Register numbers must be 0 or 1. If the controller is not specified, both controllers are updated.

2. FORMAT

[1] **LOAD:XTSI** a,{**IREG|CREG**} b:c[,**MSK** d]!

[2] **LOAD:XTSI** a,[**CONTR** e,]{**IREG|CREG**} b:c[,**MSK** d]!

3. EXPLANATION OF MESSAGE

a **XTSI** member number (0-63).

IREG Internal Register.

CREG Critical Register.

b Register numbers in octal:

0 — STATR - Hardware status register bits 12-23.

1 — STATR - Hardware status register bits 0-11.

5 — Controller Error Source Register (CESR).

6 — Controller Programmable Error Source Trigger (PEST) register.

7 — Controller Control (CNTL) register.

24 — Maintenance Buffer Pointers (MBPTRs).

25 — Shadow Maintenance Buffer Pointer (SHDWMBPTR).

34 — Time Slot Interchange (**TSI**) Control (TSICTL) register.

40 — TSI Exercise Register 0 (TSIEXR0) register.

41 — TSI Exercise Register 1 (TSIEXR1) register.

45 — FBI Status And Control (FBICTL) register.

47 — Protection Switch Client (PSC) Error Pest (PSCPEST) register.

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- 51 — PSC Pulse Code Modulated Cutoff (PSCPCMCO) register.
- 52 — PSC Control Bus Cutoff (PSCCBCO) register.
- 64 — Controller Signal Processor (CSP) control register 0 (CSPCTL0).
- 65 — Controller Signal Processor (CSP) control register 1 (CSPCTL1).
- c Data to be loaded into register, in octal, up to 24 bits.
- d 24 bit mask through which data is loaded, expressed in octal. Default mask is all ones.
- e Controller number (0 or 1). Default is both controllers.

4. SYSTEM RESPONSE

PF, CODE 091 Printout Follows. Printout will conditionally follow.

NOTE: If the member number variable is a Time Slot Interchange (TSI), the echo message will be: LOAD:TSI n, . . .NOT STARTED - ILLEGAL MESSAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Message
DUMP:XTSI - IREG

Output Messages
DUMP:XTSI - IREG
LOAD:XTSI - IREG

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WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID OP:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING
Because this message changes the memory or uses critical resources of
the hardware unit, this message should only be used when directed by
technical support.

1. PURPOSE

This command lists the address and type of each breakpoint currently set in an Expanded Time Slot Interchange (**XTSI**) frame; in the frame controllers only; or in a Digital Signal Level 3 Unit (**D3U**), Signal Processing Unit (**SPU**) or In-Band Unit (**IBU**) only. This command also allows the user to request a summary list of which units in an **XTSI** frame contains one or more breakpoints.

Format [1] is used to list the breakpoints in a simplex **XTSI** controller or duplex **XTSI** controllers.

Format [2] is used to list the breakpoints in a **D3U**.

Format [3] is used to list the breakpoints in a **SPU**.

Format [4] is used to list the breakpoints in a **IBU**.

Format [5] is used to list all breakpoints in a frame or a summary of breakpoints in a frame.

2. FORMAT

- [1] **OP:TSIBP;XTSI a!**
- [2] **OP:TSIBP;XTSI a,D3U b!**
- [3] **OP:TSIBP;XTSI a,SPU c!**
- [4] **OP:TSIBP;XTSI a,IBU 0!**
- [5] **OP:TSIBP;XTSI a:{SUM|ALL}!**

3. EXPLANATION OF MESSAGE

- a **XTSI** member number in decimal (0-63). Only even numbered **XTSI** member numbers are allowed.
- b **D3U** number in decimal (0-7).

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C	SPU number in decimal (0-11).
SUM	Summary only. List any units in the frame (including the controller) that have one or more breakpoints for the specified XTSI member number.
ALL	Detailed report. Lists the address and type for each breakpoint in the controller and units for the given XTSI member number.

4. SYSTEM RESPONSE

PF	Printout Follows. The breakpoint information will be listed for the requested unit(s). An OP:TSIBP output message follows giving the results of the request.

5. REFERENCES

PIDENT
XTSIBKPT

Input Message
CLR:TSIBP
SET:TSIBP

Output Message
CLR:TSIBP
OP:TSIBP
REPT:TSIBP
SET:TSIBP

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ID RMV:XTSI
WORK CENTER.. MAC, MOC, NMOC, TEC,
 TOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Removes the specified Expanded Time Slot Interchange (**XTSI**) frame subunit from service.

2. FORMAT

RMV:XTSI a,{CONTR b|IPUB c|ALC d|D3U e|SPU f|IBU 0}!

3. EXPLANATION OF MESSAGE

a	Member number of XTSI to be removed (0-63). Companion member numbers (odd numbers) generate Input/Output (I/O) error text.
b	Controller to be removed (0-1).
c	Remove access to peripheral unit bus (0-1).
d	Remove A-link controller (0-1).
e	Remove Digital Signal 3 Unit (D3U) number (0-7).
f	Remove Signal Processing Unit (SPU) number (0-11).
IBU 0	Remove In-Band Unit (IBU) number (0).

4. SYSTEM RESPONSE

PF	Printout Follows. Followed by the RMV:XTSI output message.

5. REFERENCES

PIDENT
MAINIPUB
MCFWPEMO
MIRA
PSCTOPEX
PSCTOPMS
PSCTOPOP
PUCN01
TOPIC000
XTSTOPEX
XTSTOPMS
XTSTOPOP

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Practice 254-280-210, *Maintenance Control Program*

Input Message
RMV:XTSI

Output Messages
RMV:XTSI
RST:XTSI

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ID RST:XTSI
WORK CENTER.. MAC, MOC, NMOC, TEC,
TOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Restores the specified Expanded Time Slot Interchange (**XTSI**) frame subunit to service. If Unconditional (**UCL**) is specified, unit is restored without diagnosis independent of the state of the frame Power Control Switch (PCS). If **UCL** is not specified, the unit is diagnosed and is restored if All Tests Passed (ATP), and if PCS is normal.

2. FORMAT

RST:XTSI a,{**CONTR** b|**IPUB** c|**ALC** d|**D3U** e|**SPU** f|**IBU 0**}[:**TLP**|;**UCL**]!

3. EXPLANATION OF MESSAGE

a	Member number of XTSI to be restored (0-63). Companion member numbers (odd numbers) generate Input/Output (I/O) error text.
b	Controller to be restored (0-1).
c	Restore access to bus (0-1).
d	Restore A-link bus receiver (0-1).
e	Restore subunit D3U (0-7).
f	Restore subunit SPU (0-11).
IBU 0	Restore subunit IBU 0 .
TLP	The Trouble Location Procedure (TLP) parameter gives the user the capability of further aiding the location of possible trouble within the equipment. It is especially useful when the equipment appears to have passed the diagnostic and a restoral is attempted. The inputting of this parameter, with the attempted restoral, will then point in the direction of trouble if restoral should fail.
UCL	Unconditional restoral. Unit is restored without diagnosis, independently of the state of the frame PCS.

4. SYSTEM RESPONSE

?R,DPLX FAIL	Insufficient system resources are available to determine the validity of the message. Diagnostics are not available from the disk system. (Clear Duplex failure or use SYSRTPAD/TPAD.)
PF	Printout Follows. Followed by the RST:XTSI output message, plus DGN:XTSI-PUB results output message unless UCL is specified.

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5. REFERENCES

PIDENT
MAINIPUB
MIRA
PSCTOPEX
PSCTOPMS
PSCTOPOP
PUCN01
TOPIC000
XTSTOPEX
XTSTOPMS
XTSTOPOP

Practice 254-280-210, *Maintenance Control Program*

Input Message
RMV:XTSI

Output Messages
DGN:XTSI-PUB
RMV:XTSI
RST:XTSI

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ID RST:XTSI-ALL
WORK CENTER.. MAC, MOC, NMOC, TEC,
TOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Rapid restore all Out Of Service (OOS) subunits on the requested Expanded Time Slot Interchange (**XTSI**). With the following exceptions:

- a. Subunits manually removed via Teletypewriter (TTY).
- b. Subunits OOS and protection switched (not service-degraded).
- c. Subunits within a duplex failed **XTSI**
- d. Subunits unequipped or in the growth or special growth state

2. FORMAT

RST:XTSI a, {ALLD3U|ALLSPU|ALLPSC};UCL!

3. EXPLANATION OF MESSAGE

a	Member number of XTSI to be restored (0-63). Companion member numbers (odd numbers) generate Input/Output (I/O) error text.
ALLD3U	Subunits refer to all Digital Signal Level 3 Units (D3Us) only.
ALLSPU	Subunits refer to all Signal Processing Units (SPUs) only.
ALLPSC	Subunits refer to all D3Us, all SPUs, and the In-Band Unit (IBU).
UCL	Unconditional restore. Unit is restored without diagnosis, independently of the state of the frame Power Control Switch (PCS).

4. SYSTEM RESPONSE

PF	Printout Follows. Followed by the RST:XTSI output message, plus a service degraded report.
RL	Retry Later. Insufficient system resources are available.

5. REFERENCES

PIDENT
PSCTOPEX
PSCTOPMS
PSCTOPOP
TOPIC000

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4ESS
IM-4B000-01

RST:XTSI {ALLD3U|ALLSPU|ALLPSC}

Output Message
RST:XTSI-SCHEDUL

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WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID SET:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING
Because this message changes the memory or uses critical resources of
the hardware unit, this message should only be used when directed by
technical support.

1. PURPOSE

This command sets a breakpoint in the controller(s), a Digital Signal Level 3 Unit (**D3U**), a Signal Processing Unit (**SPU**), or an In-Band Unit (**IBU**) client of a Expanded Time Slot Interchange (**XTSI**) frame.

Formats [1], [2], and [3] are used to set a breakpoint in a simplex **XTSI** controller or duplex **XTSI** controllers.

Formats [4] and [5] are used to set a breakpoint in a **D3U**.

Formats [6] and [7] are used to set a breakpoint in a **SPU**.

Formats [8] and [9] are used to set a breakpoint in a **IBU**.

2. FORMAT

- [1] **SET:TSIBP;XTSI a,MRAM b,{FAST|NORM}!**
- [2] **SET:TSIBP;XTSI a,MRAM b,CUST;{GRAM c|LRAM d|CRAM e}[:L f]!**
- [3] **SET:TSIBP;XTSI a,MRAM b,CUST;{GRAM c|LRAM d|REG g}:INDIR,**
 {GRAM|LRAM|CRAM}[, L f]!
- [4] **SET:TSIBP;XTSI a,D3U h,MRAM i,{FAST|NORM}!**
- [5] **SET:TSIBP;XTSI a,D3U h,MRAM i,CUST;HADR j[:[INDIR][, L f]]!**
- [6] **SET:TSIBP;XTSI a,SPU k,MRAM i,{FAST|NORM}!**
- [7] **SET:TSIBP;XTSI a,SPU k,MRAM i,CUST;HADR j[:[INDIR][, L f]]!**
- [8] **SET:TSIBP;XTSI a,IBU 0,MRAM i,{FAST|NORM}!**
- [9] **SET:TSIBP;XTSI a,IBU 0,MRAM i,CUST;HADR j[:[INDIR][, L f]]!**

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3. EXPLANATION OF MESSAGE

a	XTSI member number in decimal (0-63). Only even numbered XTSI members are allowed.
b	XTSI controller micro-store instruction Random Access Memory (RAM) address in hexadecimal where the breakpoint will be placed. (0-FFFF).
FAST	Set a fast breakpoint.
NORM	Set a normal breakpoint.
CUST	Set a custom breakpoint.
c	XTSI controller Global RAM (GRAM) data address in hexadecimal. The valid range is (0 - (3, FFFF)). This address is the starting address of the GRAM region to copy to the custom breakpoint user data save area. If INDIR is specified, the GRAM address specified contains the starting address of a memory region to copy to the custom breakpoint user data save area.
d	XTSI controller Local RAM (LRAM) data address in hexadecimal. The valid range is (0-FFFF). This address is the starting address of the LRAM region to copy to the custom breakpoint user data save area. If INDIR is specified, the LRAM address specified contains the starting address of a memory region to copy to the custom breakpoint user data save area.
e	XTSI controller Control Bus RAM (CRAM) data address in hexadecimal. The valid range is (0 - (23FF, FFFF)). This address is the starting address of the CRAM region to copy to the custom breakpoint user data save area.
f	Number of "words" of data, beginning with the starting address, to copy to the custom breakpoint user data save area. The number is specified in decimal. The valid range is (1-63). The default is 1. For XTSI controller, D3U , SPU and IBU a word is 32-bits.
g	XTSI controller register number in hexadecimal. The valid range is (1 - F) (registers R1 through R15), 11 (stack pointer), 12 (frame pointer), 28 (global address register 0), and 29 (global address register 1). The register specified by the user contains the starting address of a RAM memory region to copy to the custom breakpoint user-data save area. Registers 1 to F, 11 and 12 point to LRAM locations; and registers 28 and 29 point to GRAM locations. A register requires the INDIR option.
INDIR	An indirect address was specified for the starting address of the memory region to copy to the custom breakpoint user-data save area. The default is to treat the address specified as a direct address except for REG where indirect addressing is required.
GRAM	Indicates that the address contained in GRAM , LRAM or in a register points to the starting address of a GRAM region to copy.

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LRAM	Indicates that the address contained in GRAM , LRAM or in a register points to the starting address of a LRAM region to copy.
GRAM	Indicates that the address contained in GRAM , LRAM or in a register points to the starting address of a GRAM region to copy.
h	D3U number in decimal (0-7).
i	D3U , SPU , or IBU MRAM address in hexadecimal where the breakpoint will be placed. The valid range is (10,0000-17,FFFC) for D3U and SPU . The valid range is (0-0007,FFFC) for IBU .
j	D3U , SPU , or IBU data address in hexadecimal. The valid range is (10,0000-40,1FFF) for D3U and SPU . The valid range is (0-0007,FFFC) for IBU . This address is the starting address of the RAM memory region save area to copy the custom breakpoint user-data. If INDIR is specified, the address specified contains the starting address of the D3U , SPU , or IBU RAM memory region to copy.
k	SPU number in decimal (0-11).

4. SYSTEM RESPONSE

PF	Printout Follows. A breakpoint will be set in the frame controller(s) or a subunit as specified. A SET:TSIBP output message follows, indicating the results of the request.

5. REFERENCES

PIDENT
XTSIBKPT

Input Messages
CLR:TSIBP
OP:TSIBP

Output Messages
CLR:TSIBP
OP:TSIBP
REPT:TSIBP
SET:TSIBP

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WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID UPD:XTSI
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
CLASS PUMTC
APPLICATION .. 4E
TYPE Input

WARNING
The UCL option is not recommended for normal usage. Use only as
directed when there is a problem making the frame Duplex.

1. PURPOSE

This update message replaces the software in an Expanded Time Slot Interchange (**XTSI**) controller or its subunits with another software version, then makes the controller or its subunits active. When the initial system configuration is Duplex (both controllers in-service) both controllers will be updated with the new software version. This message would normally be used as part of a system-wide generic retrofit or an **XTSI** software upgrade.

Format [1] is used to update **XTSI** controllers with a specific program version from the flash memory on the in-service Standby controller of **XTSI**. The Standby **XTSI** controller will be updated, then made Active (there will be a controller activity switch). The software version obtained from the flash memory is **XTSI** Controller (**XTC**) operational software. The configuration state of **XTSI** frame must be Duplex.

Format [2] is used to update the **XTSI** controller with a specific program version from the flash memory on a controller of **XTSI**. The software version obtained from the flash memory is **XTC** operational software. The configuration state of **XTSI** frame can be Duplex or Simplex (one controller in-service; other controller Out-Of-Service [OOS]).

- If the **XTSI** is a Simplex, the **XTC** operational software file will be obtained from the flash memory on the Out of Service controller. The **UCL** option for simplex state is not for the OOS controller due to hardware failure. It may be used when a generic software can not bring up a frame to duplex state.
- If the **XTSI** is a Duplex, the **XTC** operational software file will be obtained from the flash memory on the in-service Standby controller.

Format [3] is used to update an **XTSI** subunit, Digital Signal Level 3 Unit (**D3U**), with a specific program version from the flash memory on an in-service Active controller of **XTSI**. The program file obtained from the flash memory is **D3U** operational software. The configuration state of **XTSI** frame can be Simplex or Duplex and the **D3U** must have its spare **D3U** unit available (i.e. not out-of-service). If the **D3U** Protection Switch (PS) spare unit (**D3U 6** or **D3U 7**), it must not be switched in and protecting a **D3U** client.

Format [4] is used to update an **XTSI** subunit, Signal Processing Unit (**SPU**), with a specific program version from the flash memory on an in-service Active controller of **XTSI**. The program file obtained from the flash memory is **SPU** operational software. The configuration state of **XTSI** frame can be Simplex or Duplex and the **SPU** must have its

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spare **SPU** unit available (i.e. not out-of-service). If the **SPU** Protection Switch (PS) spare unit (**SPU 10** or **SPU 11**), it must not be switched in and protecting a **SPU** client.

Format [5] is used to update an **XTSI** subunit, In-Band Unit (**IBU**), with a specific program version from the flash memory on an in-service Active controller of **XTSI**. The program file obtained from the flash memory is **IBU** operational software. The configuration state of **XTSI** frame can be Simplex or Duplex.

2. FORMAT

- [1] **UPD:XTSI a,XTC,SVN c!**
- [2] **UPD:XTSI a,XTC,SVN c;UCL!**
- [3] **UPD:XTSI a,D3U b,SVN c!**
- [4] **UPD:XTSI a,SPU d,SVN c!**
- [5] **UPD:XTSI a,IBU 0,SVN c!**

3. EXPLANATION OF MESSAGE

- a **XTSI** member number (0-63).
- b **D3U** number (0-7).
- c Is the Source File Version (**SVN**) number on the flash memory (0-1). Only version numbers 0 and 1 are valid field assignments.
- UCL** Unconditional.
- d **SPU** number (0-11).

4. SYSTEM RESPONSE

- ?D Data field contains an error. The update request has been denied because a required keyword argument is missing.
- ?E Syntax Error exists in the message but cannot be resolved to the proper field. The update request was rejected because the program was unable to parse the input message.
- ?I Identification field contains an error. The update request has been denied because either a required keyword is missing, a keyword argument is out-of-range, or extra keywords or keyword arguments were specified.
- PF Printout Follows. The update request has been accepted. Output messages will follow to indicate the status of the controller update.
- RL Retry Later. The update request has been denied because there are too many tasks in progress.

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5. REFERENCES

PIDENT
XTSGNUPD

Output Message
UPD:XTSI

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ID VER:VFUNC
WORK CENTER.. MAC, MOC
GENERIC 4E22 Rel. 2 and later
CLASS VER
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Requests the verification of miscellaneous data and specific information based upon the input **VFUNC** keyword.

2. FORMAT

- [1] **VER:VFUNC SUXTSI[:FD1 XTSIMEMN,DT1 a]!**
- [2] **VER:VFUNC XTSID3U[:FD1 XTSIMEMN,DT1 a][,FD2 D3UN,DT2 b]!**

3. EXPLANATION OF MESSAGE

SUXTSI	Sub-unit Expanded Time Slot Interchange (XTSI) type data.
a	XTSI member number (2-62 even numbers only).
XTSID3U	XTSI Digital Signal Level 3 (DS3) unit application.
b	DS3 number (0-7). Six is the spare Digital Signal Level 3 Unit (D3U) number for D3U numbers 0, 1 and 2. Seven is the spare D3U number for D3U numbers 3, 4 and 5.

4. SYSTEM RESPONSE

NA	Not Accepted.
PF	Printout Follows.

5. REFERENCES

PIDENTs
IOCPIMC4
VRFYCNTL
VRFYINPT
VRFYMISC
VRFYOUT

Output Messages
VER:MISC-OCTCP
VER:MISC-SUXTSI
VER:MISC-XTSID3U
VER:STAT-XTSIAB
VER:VFUNC-XTSISP

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ID VER:VFUNC-XTSIIB
WORK CENTER.. MAC, MOC
GENERIC 4E24 and later
CLASS VER
APPLICATION .. 4E
TYPE Input

1. PURPOSE

Requests the verification of miscellaneous data and specific information for the Expanded Time Slot Interchange In-Band Unit (**XTSIIBU**).

2. FORMAT

VER:VFUNC XTSIIBU:FD1 XTSIMEMN,DT1 a!

3. EXPLANATION OF MESSAGE

a Expanded Time Slot Interchange (XTSI) member number (2-62 even numbers only).

4. SYSTEM RESPONSE

NA Not Accepted.
PF Printout Follows.

5. REFERENCES

PIDENTs
IOCPIMC4
VRFYCNTL
VRFYINPT
VRFYMISC
VRFYOUT

Output Message
VER:MISC-XTSIIBU

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ID CLR:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] CLR:TSIBP XTSI a COMPLETE
- [2] CLR:TSIBP XTSI a b
- [3] CLR:TSIBP XTSI a D3U c COMPLETE
- [4] CLR:TSIBP XTSI a D3U c d
- [5] CLR:TSIBP XTSI a SPU e COMPLETE
- [6] CLR:TSIBP XTSI a SPU e d
- [7] CLR:TSIBP XTSI a IBU 0 COMPLETED
- [8] CLR:TSIBP XTSI a IBU 0 d
- [9] CLR:TSIBP XTSI a ALL!
CONTR COMPLETE
D3U COMPLETE
SPU COMPLETE
- [10] CLR:TSIBP XTSI a ALL!
CONTR COMPLETE
D3U c d
- [11] CLR:TSIBP XTSI a ALL!
CONTR COMPLETE
D3U COMPLETE
SPU e d
- [12] CLR:TSIBP XTSI a ALL!
CONTR b

2. REASON FOR OUTPUT

This message prints in response to a CLR:TSIBP input message.

Formats [1-2] is output if the input request specified that all breakpoints of a Expanded Time Slot Interchange (XTSI) simplex controller or duplex controllers be cleared.

Formats [3-4] is output if the input request specified that all breakpoints of a Digital Signal Level 3 Unit (D3U) be cleared.

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Formats [5-6] is output if the input request specified that all breakpoints of a Signal Processing Unit (SPU) be cleared.

Formats [7-8] is output if the input request specified that all breakpoints of a In-Band Unit (IBU) be cleared.

Formats [9-12] is output if the input request specified that all breakpoints of an XTSI frame (controllers, D3Us, SPU and IBU) be cleared.

3. VARIABLE FIELD DEFINITIONS

- a Expanded Time Slot Interchange (XTSI) member number in decimal.
- b Controller request status code:
- ABORTED - FRAME ERROR Request for the given XTSI was aborted because of an error returned from the frame. Contact the Technical Assistance Center for further information.
- COMPLETE All breakpoints have been removed from the controller.
- DENIED - INV TSI TYPE OR UNEQ Request denied because only an XTSI, not TSI, can be specified, or the frame is unequipped, in growth, or special growth state.
- DENIED - ODD TSI MEMBER Request denied because only the even member number can be specified.
- DENIED - TSI DUPF Request denied because the frame is duplex failed.
- DENIED - TSI LOM Request denied because the frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.
- c D3U number in decimal (0-7).
- d D3U, SPU or IBU request status code:
- ABORTED - FRAME ERROR Request for the given D3U, SPU or IBU was aborted because of an error returned from XTSI frame. Contact the Technical Assistance Center for further information.
- ABORTED - MACRO ERROR Request was aborted because the given D3U, SPU or IBU failed in processing the clear command. Contact the Technical Assistance Center for further information.
- ABORTED - MACRO REJECTED Request for the given D3U, SPU or IBU was aborted because the XTSI frame rejected the clear command. Contact the Technical Assistance Center for further information.

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ABORTED - MACRO TIMEOUT Request for the given D3U, SPU or IBU was aborted because the XTSI frame did not reply to the clear command within the allotted time limit. Contact the Technical Assistance Center for further information.

COMPLETE All breakpoints have been removed from the D3U, SPU or IBU.

DENIED - INV TSI TYPE OR UNEQ Request denied because either a TSI, not XTSI, was specified, the frame or the D3U, SPU or IBU was unequipped, in growth, or special growth state.

DENIED - ODD TSI MEMBER Request denied because only the even member number can be specified.

DENIED - SUBUNIT IS OOS Request for the given D3U, SPU or IBU was denied because the D3U, SPU or IBU is out of service.

DENIED - TSI DUFF Request denied because the frame is duplex failed.

DENIED - TSI LOM Request denied because the frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.

e SPU number in decimal (0-11).

4. REFERENCES

PIDENT
XTSIBKPT

Input Messages

CLR:TSIBP
OP:TSIBP
SET:TSIBP

Output Messages

OP:TSIBP
REPT:TSIBP
SET:TSIBP

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ID COPY:XTSI
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

COPY:XTSI a, [CONTR b,] c, SVN d, DVN e[;UCL]
f

2. REASON FOR OUTPUT

Printed in response to a COPY:XTSI input request to copy a file from the Attached Processor System (APS) to the flash memory(s) of an Expanded Time Slot Interchange (XTSI) frame.

3. VARIABLE FIELD DEFINITIONS

- a XTSI member number.
- b XTSI controller number.
- c Two-keyword field specifies the type of the file copied from the 3B APS to flash memory of the XTSI. The list shows the legal two-keyword combinations:
- IBU, DGN — File containing diagnostic software for the In-Band Unit (IBU).
- IBU, OPR — File containing software for the IBU.
- IBU, TEST — File containing test circuit software for the IBU.
- IBU, XCVR — File containing service circuit software for the IBU.
- D3U, DGN — File containing diagnostic software for the Digital Signal Level 3 (DS3) Unit (D3U).
- D3U, OPR — File containing software for the D3U.
- SPU, DGN — File containing diagnostic software for the Signal Processing Unit (SPU).
- SPU, OPR — File containing software for the SPU.
- XTC, CSP — File containing Signal Processor (SP) software for the XTSI controller.
- XTC, DGN — File containing diagnostic software for the XTSI controller.
- XTC, FDT — File containing file description table.
- XTC, OPR — File containing software for the XTSI controller.
- d Source file version store in the APS disk.

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- e Destination file version stored in the flash memory of the XTSI.
- f Disposition of the request:
- ABORTED UNABLE TO SCHEDULE PMOS TASK — The file copy is controlled by the Peripheral Maintenance Operating System (PMOS). Two separate PMOS tasks are required. The program was unable to schedule one of the PMOS tasks.
- DENIED - INV TSI TYPE OR UNEQ — The input TSI is not an Expanded Time Slot Interchange (XTSI) type of frame or is not equipped.
- DENIED CONTR FILE IS ACTIVE — The destination file version is currently marked active in translations.
- FAILED CHECKSUM CHECK EXPECTED:w ACTUAL:v — Failed to copy due to the checksum failure that was found. The checksum shown on the file header is a value of w, and the checksum calculated by the XTSI frame firmware is a value of v.
- FAILED CHECKSUM CHECK ON CONTR EXPECTED:w ACTUAL:v — Failed to copy to the controller y due to the checksum failure that was found. The checksum shown on the file header is a value of w, and the checksum calculated by the XTSI frame firmware is a value of v.
- FAILED ERROR FOUND IN FILE — During the copying of the file, flash memory file corruption was detected by the XTSI frame firmware.
- FAILED ERROR FOUND IN FILE ON CONTR y — During the copying of the file to controller y, flash memory file corruption was detected by the XTSI frame firmware.
- FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR — Unable to copy the complete file to the flash memory of both controllers of the XTSI frame due to system error. Note that only the last error type was shown for failing to send file to both controllers.
- FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR (ERR CODE: x) — Unable to copy the complete file to flash memory on both controllers of the Expanded Time Slot Interchange (XTSI) frame due to error detected by the XTSI frame firmware. Note that only the last error type was shown for failing to send file to both controllers.
- FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR (FRAME REJECT) — Unable to copy the complete file to flash memory on both controllers of the XTSI frame due to frame rejection. Note that only the last error type was shown for failing to send file to both controllers.

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FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR
(TIMEROUT) — Unable to copy the complete file to flash memory on both controllers of the XTSI frame due to timeout while waiting for a response from the XTSI frame firmware. Note that only the last error type was shown for failing to send file to both controllers.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b — Unable to copy the complete file to the requested flash memory on the controller Y of the XTSI frame due to system error. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(ERR CODE: x)— Unable to copy the complete file to the flash memory on the controller Y of the XTSI frame due to error detected by XTSI frame firmware. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(FRAME REJECT) — Unable to copy the complete file to the requested flash memory on the controller Y of the XTSI frame due to frame rejection. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(TIMEOUT) — Unable to copy the complete file to the requested flash memory on the controller Y of the XTSI frame due to timeout while waiting response from the XTSI frame firmware. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR — Unable to erase the flash memory files on both controllers of the XTSI frame due to system error. Note that only the last error type was shown for failing to send file to both controllers.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(ERR CODE: x) — Unable to erase the flash memory files on both controllers of the XTSI frame due to error detected by the XTSI frame firmware. Note that only the last error type was shown for failing to send file to both controllers.

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FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(FRAME REJECT) — Unable to erase the flash memory files on both controllers of the XTSI frame due to frame reject. Note that only the last error type was shown for failing to send file to both controllers.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(TIMEOUT) — Unable to erase the flash memory files on both controllers of the XTSI frame due to timeout while waiting for a response from the XTSI frame firmware. Note that only the last error type was shown for failing to send file to both controllers.

FAILED TO ERASE FLASH MEM FILE ON CONTR b — Unable to erase the flash memory files on the controller Y of the XTSI frame due to system error. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(ERR CODE: x) — Unable to erase the flash memory files on the controller Y of the XTSI frame due to error detected by XTSI frame firmware. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(FRAME REJECT) — Unable to erase the flash memory files on the controller Y of the XTSI frame due to frame rejection. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(TIMEOUT) — Unable to erase the flash memory files on the controller Y of the XTSI frame due to timeout while waiting for a response from the XTSI frame firmware. Note that if the attempt was to copy file to both controllers of the XTSI frame, the file copy task for the mate controller Y was also terminated with the incomplete 3B data file on the flash memory.

FAILED TO SEND FILE VER QUERY — Failed to send the file verification query macro to the XTSI frame.

FAILED TO SEND FILE VER QUERY (FRAME REJECT) — Failed to send the file verification query macro to the XTSI frame due to a frame rejection.

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FAILED TO SEND FILE VER QUERY (TIMEOUT) — Failed to send the file verification query macro to the XTSI frame due to a timeout while waiting a response from the XTSI frame firmware.

FAILED TO SEND FILE VER QUERY ON CONTR y — Failed to send the file verification query macro to the XTSI frame on the controller y.

FAILED TO SEND FILE VER QUERY ON CONTR y (FRAME REJECT) — Failed to send the file verification query macro to the XTSI frame on the controller y due to a frame rejection.

FAILED TO SEND FILE VER QUERY ON CONTR y (TIMEOUT) — Failed to send the file verification query macro to the XTSI frame on the controller y due to a timeout while waiting a response from the XTSI frame firmware.

FAILED UNABLE TO OPEN FILE ON APS — The APS File Manager was unable to open the file on the APS disk. The file type may not be a legal file type for the APS disk.

FAILED UNABLE TO READ FILE FROM APS — An excessive number of read failures occurred while reading the file from the APS disk.

FAILED WRONG FILE TYPE FOUND ON APS — The file type in the file header does not match the file type in the input message.

STOPPED DUPLEX CONTROLLERS — Option with a specific controller can not work with duplex environment.

STOPPED GROWTH TSI — The XTSI frame(s) in the growth or special growth state.

STOPPED NO ACTIVE CONTROLLER — Both controllers in the XTSI are currently marked OOS.

STOPPED UNEQ TSI — The specified XTSI frame is unequipped.

TASK COMPLETED — The file has been copied to all requested XTSI frames and the copy job has completed.

UNKNOWN SYSTEM ERROR — A internal system error occurred.

4. ACTION TO BE TAKEN

If the disposition of the remove request is:

ABORTED UNABLE TO SCHEDULE PMOS TASK — Re-enter the input message when there is less activity in the office.

DENIED - INV TSI TYPE OR UNEQ — Re-enter the input message with a new XTSI number.

DENIED CONTR FILE IS ACTIVE — Use other destination file version or use UCL option to re-enter the input message.

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FAILED CHECKSUM CHECK EXPECTED:w ACTUAL:v — Re-enter the input message or use the other frame. If the error persists, check the file header on the Attached Processor System (APS) or use the other source file version on the APS.

FAILED CHECKSUM CHECK ON CONTR EXPECTED:v — Re-enter the input message after the error is fixed or use the other frame. If the error persists, check the file header on the APS or use the other source file version on the APS.

FAILED ERROR FOUND IN FILE — Use the other frame or re-enter the input message for the file just being copied may correct the previous file corruption on the flash memory.

FAILED ERROR FOUND IN FILE ON CONTR y — Use the other frame or re-enter the input message for the file just being copied may correct the previous file corruption on the flash memory.

FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR
(ERR CODE: x) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR
(FRAME REJECT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON BOTH CONTR
(TIMEOUT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(ERR CODE: x) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(FRAME REJECT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO COPY FILE TO FLASH MEM ON CONTR b
(TIMEOUT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(ERR CODE: x) — Re-enter the input message after error is fixed or use the other frame.

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FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(FRAME REJECT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON BOTH CONTR
(TIMEOUT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON CONTR b — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(ERR CODE: x) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(FRAME REJECT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO ERASE FLASH MEM FILE ON CONTR b
(TIMEOUT) — Re-enter the input message after error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY — Re-enter the input message after the error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY (FRAME REJECT) — Re-enter the input message after the error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY (TIMEOUT) — Re-enter the input message after the error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY ON CONTR y — Re-enter the input message after the error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY ON CONTR y (FRAME REJECT) —
Re-enter the input message after the error is fixed or use the other frame.

FAILED TO SEND FILE VER QUERY ON CONTR y (TIMEOUT) — Re-enter the input message after the error is fixed or use the other frame.

FAILED UNABLE TO OPEN FILE ON APS — Verify whether the file exists on the APS, if the file is not on the APS, install the necessary file(s) on the APS disk then re-enter the input message. The file type may not be a legal file type for the APS disk, check the input message for legal inputs.

FAILED UNABLE TO READ FILE FROM APS — Check the APS for excessive disk activity or recovery actions. If necessary replace the file on the APS disk.

FAILED WRONG FILE TYPE FOUND ON APS — Replace the file on the APS and then re-enter the input message.

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STOPPED DUPLEX CONTROLLERS — Re-enter the input message without specifying controller number

STOPPED GROWTH TSI — Re-enter the input message and include the UCL option.

STOPPED NO ACTIVE CONTROLLER — Re-enter the input message and include the UCL option.

STOPPED UNEQ TSI — Correct the XTSI frame number and then re-enter the input message.

TASK COMPLETED — Information only and no action required.

UNKNOWN SYSTEM ERROR — Re-enter the input message.

5. REFERENCES

PIDENTs
XTSI3BCP

Input Message
COPY:XTSI

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ID DGN:XTSI-ILL
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

DGN:XTSI a,b c:d e ILLEGAL PHASE

2. REASON FOR OUTPUT

To print whenever one or more illegal diagnostic phases have been requested on a partial diagnostic request for an Expanded Time Slot Interchange (XTSI). The illegal phase will not be executed; however, all valid phases will be run.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the XTSI being diagnosed.
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.

4. ACTION TO BE TAKEN

Check the DGN:XTSI input message for the list of valid phase numbers.

5. REFERENCES

PIDENT
DCONTOLL
PUDGXT__, for CONTR subunit.
PUDGDS__, for D3U subunit.
PUDGXS__, for SPU subunit.
PUDGIB__, for IBU subunit.

Input Message
DGN:XTSI

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ID DGN:XTSI-NOT
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

DGN:XTSI a,b c:d e NOT STARTED - f

2. REASON FOR OUTPUT

To print whenever the diagnostic request cannot be started for an Expanded Time Slot Interchange (XTSI). This is usually when the unit for which the diagnostic was requested cannot be removed from service.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the XTSI being diagnosed.
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type.
e	The helper member number.
f	The reason the diagnostic was not started.

4. ACTION TO BE TAKEN

If the specified unit cannot be removed from service because there is no spare, restore a spare unit to service.

5. REFERENCES

PIDENT
MCFWPEMO
PUDGXT__, for CONTR subunit.
PUDGDS__, for D3U subunit.
PUDGXS__, for SPU subunit.
PUDGIB__, for IBU subunit.

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ID DGN:XTSI-PUB
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

DGN:XTSI a b c:PUB d e f [g]

2. REASON FOR OUTPUT

To specify both the diagnostic results and the termination mode for an Expanded Time Slot Interchange (XTSI). This message is printed at the conclusion of the diagnostic execution.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the XTSI frame under diagnosis.										
b	The type of subunit for which the diagnostic was requested.										
c	The number of the subunit under diagnosis.										
d	The helper Peripheral Unit Bus (PUB) that was requested.										
e	The termination mode for the diagnostic: <table border="0"><tr><td>ABORTED</td><td>— The diagnostic was abnormally stopped due to an interrupt, error in execution, or due to a STOP:MACLI input request.</td></tr><tr><td>COMPLETED</td><td>— The diagnostic completed normally.</td></tr><tr><td>STOPPED</td><td>— The diagnostic was terminated under program control since further testing would not improve diagnostic resolution.</td></tr></table>	ABORTED	— The diagnostic was abnormally stopped due to an interrupt, error in execution, or due to a STOP:MACLI input request.	COMPLETED	— The diagnostic completed normally.	STOPPED	— The diagnostic was terminated under program control since further testing would not improve diagnostic resolution.				
ABORTED	— The diagnostic was abnormally stopped due to an interrupt, error in execution, or due to a STOP:MACLI input request.										
COMPLETED	— The diagnostic completed normally.										
STOPPED	— The diagnostic was terminated under program control since further testing would not improve diagnostic resolution.										
f	The results of the diagnostic: <table border="0"><tr><td>ATP</td><td>— All tests passed.</td></tr><tr><td>CATP</td><td>— All tests passed; however, some tests were skipped due to the unavailability of a system resource which was needed to perform the test.</td></tr><tr><td>NTR</td><td>— No tests were executed.</td></tr><tr><td>STF</td><td>— Some tests failed.</td></tr><tr><td>STF-B0F</td><td>— The number of failed tests has filled the buffer. Before any more tests are run, the system prints out the contents of the buffer and then clears it.</td></tr></table>	ATP	— All tests passed.	CATP	— All tests passed; however, some tests were skipped due to the unavailability of a system resource which was needed to perform the test.	NTR	— No tests were executed.	STF	— Some tests failed.	STF-B0F	— The number of failed tests has filled the buffer. Before any more tests are run, the system prints out the contents of the buffer and then clears it.
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NTR	— No tests were executed.										
STF	— Some tests failed.										
STF-B0F	— The number of failed tests has filled the buffer. Before any more tests are run, the system prints out the contents of the buffer and then clears it.										

SEE PROPRIETARY NOTICE ON COVER PAGE

g

An optional field that will appear only if the results are not All Tests Passed (ATP). If CATP or NTR, this field identifies the reason that the tests were skipped. The reasons are identified by their bit positions in the 16-digit octal number that is printed. For example, if g is (40000000 00001000), then tests were skipped for reasons 9 and 47.

The reasons for XTSI controllers and Digital Signal Level 3 Units (D3Us), Signal Processing Units (SPUs) or an In-Band Unit (IBU) are as follows:

BIT	REASONS FOR TESTS SKIPPED
0	Peripheral Unit Bus (PUB) 0 out-of-service
1	PUB 1 out-of-service
2	Primary Signaling Processor (SP) pulse points out-of-service
3	Secondary SP pulse points out-of-service
4	Mate unit out-of-service
5	Power control switch in Request Out-Of-Service (ROS) position
6	Central Controller (CC) 0 Out Of Service
7	CC 1 Out Of Service
8	Power monitor tests skipped on manual ROS test (diagnostic requested from power control switch)
9	Member Interrogate (MI) has other units responding
10	Group Interrogate (GI) has other units responding
11	PUB not duplex
12	Autonomous Peripheral Unit Failure (APUF) CATP flag
13	Autonomous Peripheral Unit Trouble (APUT) CATP flag
14	Network blockage encountered
15	Time Slot Interchange Frame (TSIF) in growth
17	Some other frame responding to Poll High Priority (PHP) polling
18	Some other frame responding to Poll Low Priority (PLP) polling
19	Some other frame responding to Poll Digit (PDG) polling
20	Some other frame responding to Poll Seizure (PSZ) polling
22	Controller 0 Out Of Service
23	Controller 1 Out Of Service
24	SP scan / distribute points out-of-service
25	SP bus out-of-service
26	Some Protection Switch Client (PSC) is protection switched
27	Controller not duplex
28	One or both controller power feeds are not available
30	Some PSC port is pested

SEE PROPRIETARY NOTICE ON COVER PAGE

BIT	REASONS FOR TESTS SKIPPED (continued)
31	Network clock 0 Out Of Service
32	Network clock 1 Out Of Service
33	Time Multiplexed Switch (TMS) is Out Of Service
34	A-Link Controller (ALC) is powered down
35	Controller 0 is powered down
36	Controller 1 is powered down
37	Some PSC Power Control Switch is in ROS Position
38	Some PSC Port is not running operational load
39	Digital Signal Level 3 Unit (D3U), Signal Processing Unit (SPU) or In-Band Unit (IBU) not in growth or special growth
40	D3U or SPU not protection switched
41	IBU Out-Of-Service
42	IBU Power control switch in Request Out-Of-Service (ROS) position
43	IBU is not running operational load
44	IBU port is pested

If subunit type is IPUB:

BIT	REASONS FOR TESTS SKIPPED
6	Central Controller (CC) 0 out-of-service
7	CC 1 out-of-service
12	Helper controller 0 out-of-service
13	Helper controller 1 out-of-service
26	Interface Peripheral Unit Bus (IPUB) out-of-service
27	DTFRIGAL return failed

If STF, this field gives the number of failing phases, number of failing tests, trouble number. For example, (2,9,00101545) indicates 2 phases failed, 9 tests failed, and a trouble number of 00101545.

4. ACTION TO BE TAKEN

If the results are CATP, restore the indicated system resource to service so that all tests may be executed. If STF, repair the unit as quickly as possible. Otherwise, no action is needed.

Diagnostics may also be requested via the main frame. When they are, power monitor tests are omitted. This omission causes bit 8 in the CATP field to be set. If power monitor tests are desired, the diagnostic must be requested via the Teletypewriter (TTY).

Any problems indicated by CATP bits should be cleared before running the diagnostic again.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENTs

PUDGXT__, for CONTR subunit.

PUDGXT99, for IPUB subunit.

PUDGDS__, for D3U subunit.

PUDGXS__, for SPU subunit.

PUDGIB__, for IBU subunit.

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Messages

DGN:XTSI

STOP:MACLI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DGN:XTSI-TERM
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

DGN:XTSI a,b c:d e TERMINATED AT PH f ADR g AFTER TEST h [FORCED]

2. REASON FOR OUTPUT

To print whenever the diagnostic terminates early for an Expanded Time Slot Interchange (XTSI). This early termination of execution will only occur if some tests have failed and further execution will degrade fault resolution or cause system problems.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the XTSI being diagnosed.
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.
f	The diagnostic phase in which the termination occurred.
g	The address in the diagnostic phase (or subroutine) at which the termination occurred.
h	The last test executed before the termination occurred.
FORCED	This optional field will be printed only if the termination occurred and Unconditional (UCL) was specified on the DGN:XTSI input message. The use of terminating in this way is restricted to cases where further diagnostic execution will cause system problems.

4. ACTION TO BE TAKEN

Repair the faulty frame. If further diagnostic execution is desired, specify UCL on the DGN:XTSI input message. This will inhibit all early termination except those that are forced.

5. REFERENCES

PIDENTs
PUDGXT__, for CONTR subunit.
PUDGXT99, for IPUB subunit.
PUDGDS__, for D3U subunit.
PUDGXS__, for SPU subunit.
PUDGIB__, for IBU subunit.

SEE PROPRIETARY NOTICE ON COVER PAGE

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Message
DGN:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DGN:XTSI-TEST
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] DGN:XTSI a,b c:d e PH f g [h]
[TEST MISMATCH SUPPLEMENTARY DATA
i j j j j j j j k k k k k k k l l l l l l l m m m m m m m n n n n n n n o o o o o o o
p p p p p p p q q q q q q q r r r r r r r]
- [2] DGN:XTSI a, CONTR s PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i j j j j j j j 00t t t t t u u u u v v v v v v v v v v v v v w w w w w w w x y z a 1 . a 1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [3] DGN:XTSI a, D3U j1 PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i j j j j j j j 00t t t t t u u u u v v v v v v v v v v v v v w w w w w w w x y z a 1 . a 1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [4] DGN:XTSI a, SPU k1 PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i j j j j j j j 00t t t t t u u u u v v v v v v v v v v v v v w w w w w w w x y z a 1 . a 1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [5] DGN:XTSI a, IBU 0 PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i j j j j j j j 00t t t t t u u u u v v v v v v v v v v v v v w w w w w w w x y z a 1 . a 1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]

2. REASON FOR OUTPUT

To print out diagnostic results on a phase basis for an Expanded Time Slot Interchange (XTSI). This occurs in the case of a partial diagnosis, a test failure, or whenever RAW was requested on the input message.

Format [1] is the general format.

Format [2] is the Controller (CONTR) resident format.

Format [3] is the Digital Signal Level 3 Unit (D3U) resident format.

Format [4] is the Signal Processing Unit (SPU) resident format.

SEE PROPRIETARY NOTICE ON COVER PAGE

Format [5] is the In-Band Unit (IBU) resident format.

3. VARIABLE FIELD DEFINITIONS

- a Member number of the XTSI being diagnosed.
- b Subunit type being diagnosed.
- c Submember number of the subunit being diagnosed.
- d Helper unit type, if specified.
- e Helper member number, if specified.
- f Diagnostic phase number for which the results are reported.
- g Results of the diagnostic:
 - ATP — All tests passed.
 - CATP — All tests passed; however, some tests were skipped because of the unavailability of a system resource which was needed to perform the test.
 - NTR — No tests were executed.
 - STF — Some tests failed.
 - STF-BOF — Some tests failed and the raw data buffer overflowed. Phase has not been completed.
- h An optional field that will appear only if the results were not All Tests Passed (ATP).

If CATP or NTR, this field identifies the reason that the tests were skipped in this phase. The reasons are identified by their bit position in the 16-digit octal number that is printed. For example, if h is (00000001 00001000) then tests were skipped for reasons 9 and 24. The reasons are listed in Table 1.

If subunit type is BUS, see DGN:PUB output message for CATP reasons.

If STF, this field gives the number of test failures, in addition to the reasons that tests were skipped. For example, if h is (7,00000001 00001000), seven tests failed, plus tests were skipped for reasons 9 and 24.

SEE PROPRIETARY NOTICE ON COVER PAGE

The reasons for XTSI controllers and Digital Signal Level 3 Units (D3Us), Signal Processing Units (SPUs) or In-Band Unit (IBU) are as follows:

BIT	REASONS FOR TESTS SKIPPED
0	Peripheral Unit Bus (PUB) 0 out-of-service
1	PUB 1 out-of-service
2	Primary Signaling Processor (SP) pulse points out-of-service
3	Secondary SP pulse points out-of-service
4	Mate unit out-of-service
5	Power control switch in Request Out-Of-Service (ROS) position
6	Central Controller (CC) 0 Out Of Service
7	CC 1 Out Of Service
8	Power monitor tests skipped on manual ROS test (diagnostic requested from power control switch)
9	Member Interrogate (MI) has other units responding
10	Group Interrogate (GI) has other units responding
11	PUB not duplex
12	Autonomous Peripheral Unit Failure (APUF) CATP flag
13	Autonomous Peripheral Unit Trouble (APUT) CATP flag
14	Network blockage encountered
15	Time Slot Interchange Frame (TSIF) in growth
17	Some other frame responding to Poll High Priority (PHP) polling
18	Some other frame responding to Poll Low Priority (PLP) polling
19	Some other frame responding to Poll Digit (PDG) polling
20	Some other frame responding to Poll Seizure (PSZ) polling
22	Controller 0 Out Of Service
23	Controller 1 Out Of Service
24	SP scan / distribute points out-of-service
25	SP bus out-of-service
26	Some Protection Switch Client (PSC) is protection switched
27	Controller not duplex
28	One or both controller power feeds are not available
30	Some PSC port is pested
31	Network clock 0 Out Of Service
32	Network clock 1 Out Of Service
33	Time Multiplexed Switch (TMS) is Out Of Service
34	A-Link Controller (ALC) is powered down
35	Controller 0 is powered down
36	Controller 1 is powered down
37	Some PSC Power Control Switch is in ROS Position
38	Some PSC Port is not running operational load
39	Digital Signal Level 3 Unit (D3U), Signal Processing Unit (SPU) or In-Band Unit (IBU) not in growth or special growth

SEE PROPRIETARY NOTICE ON COVER PAGE

BIT	REASONS FOR TESTS SKIPPED (continued)
40	D3U or SPU not protection switched
41	IBU Out-Of-Service
42	IBU Power control switch in Request Out-Of-Service (ROS) position
43	IBU is not running operational load
44	IBU port is pested

If subunit type is IPUB:

BIT	REASONS FOR TESTS SKIPPED
6	Central Controller (CC) 0 out-of-service
7	CC 1 out-of-service
12	Helper controller 0 out-of-service
13	Helper controller 1 out-of-service
26	Interface Peripheral Unit Bus (IPUB) out-of-service
27	DTFRIGAL return failed

If STF-BOF, the number of test failures is the number of test failures up to the point of buffer overflow.

The following appear only if the diagnostic was STF :

i	Test number of the failing test.
j	Bits which were in error, that is, a 1 in a bit position indicates that the response from the unit did not match the expected response in that bit.
k	RAW response from the unit or firmware diagnostic RAW response.
l, m	Information concerning the test being executed. Details are specified in the diagnostic listing.
n	Address in the phase (or subroutine) of the test that failed.
o	Bits 14-0 contain information for the TLP programs. Bits 23-21 contain the count of the number of words of supplementary data that follows. Bits 20-18 contain the count of the number of words of DOLOOP data that follows. Bits 17-15 contain the count of the number of words of subroutine data that follows.
p	Supplementary data words. Repeated x times, where x is bits 23-21 of variable o. This data supplies information about the test being executed. The last supplementary data word specified is printed first.
q	DOLOOP data words. Repeated y times, where y is bits 20-18 of variable o. This data is the value of the DOLOOP variables at the time of the test failure. The value of the innermost DOLOOP is printed first.

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r	Subroutine data words. Repeated z times, where z is bits 17-15 of variable o. This data is the address of the callsubs which led up to this point in the diagnostic. The address of the last callsub is printed first.
s	Controller number (0 or 1).
t	The least significant 16 bits represent the actual octal data from the half word of LR57, where a mismatch with expected data occurred. The expected data must be derived from the actual and mismatched data fields.
u	Peripheral Unit (PU) address bus bits of the bus order sent to the subunit (12 bits).
v	PU write bus bits of the order sent to the subunit (36 bits). The upper 7 bits are the opcode and the remaining 29 bits are the data for the order. For subunit PUMACRO orders this includes the PUMACRO macro ID, a data expected flag (write only vs. a write/read order), a sub-opcode, and the test group number.
w	DIAL address of the instruction that failed.
x	Number of words of supplementary data.
y	Number of words of do-loop data. Not defined by subunit code.
z	Number of words of subroutine data. Not defined by subunit code.
a1	Trouble Location Procedure (TLP) data. Not defined by subunit code.
b1	Indicates in which half word of the subunit 32 bit word the mismatched data occurred. (0 least significant, 1 most significant)
c1	Subunit microprogram address of the previous function called, i.e., the first function on the stack or the function that called DGFAIL.
d1	Subunit microprogram address of the second function on the stack , i.e., the address of a subroutine call which then called DGFAIL.
e1	The 16 bit field of supplementary data written to the least significant half word of LR58. NOTE: The upper 8 bits of this and the following octal words will always be zero, i.e., only the lower 16 bits are used.
f1	The 16 bit field of supplementary data written to the most significant half word of LR59. NOTE: A 32 data word in LR59 is split between the lower 16 bits of two 24 bit supplementary data words.
g1	The 16 bit field of supplementary data written to the least significant half word of LR59.

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h1	The 16 bit field of supplementary data written to the most significant half word of LR60.
i1	The 16 bit field of supplementary data written to the least significant half word of LR60.
j1	Digital Signal Level 3 Unit (D3U) number.
k1	Signal Processing Unit (SPU) number.

4. ACTION TO BE TAKEN

If the results are CATP, restore the indicated system resource to service so that all tests may be executed. If STF, repair the unit as quickly as possible. Otherwise, no action is needed.

5. REFERENCES

PIDENTs

PUDGXT__, for CONTR subunit.

PUDGXT99, for IPUB subunit.

PUDGDS__, for D3U subunit.

PUDGXS__, for SPU subunit.

PUDGIB__, for IBU subunit.

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Message

DGN:XTSI

Output Message

DGN:PUB

SEE PROPRIETARY NOTICE ON COVER PAGE

WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID DUMP:TSIMEM
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

WARNING

1. FORMAT

- [1] DUMP:TSIMEM XTSI a [CONTR b] MRAM c L d COMPLETED
cccc eeeeeeeeeeeeeeeee
.
.
.
- [2] DUMP:TSIMEM XTSI a [CONTR b] {GRAM|LRAM|CRAM} f L d COMPLETED
fffff gggggggg
.
.
.
- [3] DUMP:TSIMEM XTSI a [CONTR b] MRAM c L d h
- [4] DUMP:TSIMEM XTSI a [CONTR b] {GRAM|LRAM|CRAM} f L d h
- [5] DUMP:TSIMEM XTSI a SPC i PRTI j [LEVEL k] ADR l L d COMPLETED
llllll mmmmmmm
.
.
.
- [6] DUMP:TSIMEM XTSI a [CONTR b] SPC i PRTI j [LEVEL k] ADR l L d h
- [7] DUMP:TSIMEM XTSI a D3U n HADR o L d COMPLETED
pppppp qqqqqqqq
- [8] DUMP:TSIMEM XTSI a D3U n HADR o L d r
- [9] DUMP:TSIMEM XTSI a SPU s HADR o L d COMPLETED
pppppp qqqqqqqq
- [10] DUMP:TSIMEM XTSI a SPU s HADR o L d r
- [11] DUMP:TSIMEM XTSI a IBU 0 HADR o L d COMPLETED
- [12] DUMP:TSIMEM XTSI a IBU 0 HADR o L d r

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- [13] DUMP:TSIMEM XTSI a [CONTR b] {ES|MS|TBITS} t L d COMPLETED
tttt gg
.
.
.
- [14] DUMP:TSIMEM XTSI a [CONTR b] {ES|MS|PCIS|TBITS} t L d h
- [15] DUMP:TSIMEM XTSI a [CONTR b] SPC i PCIS t L d COMPLETED
tttt gg
.
.
.
- [16] DUMP:TSIMEM XTSI a [CONTR b] SPC i PCIS t L d h
- [17] DUMP:TSIMEM XTSI a IBU 0 {SD|SCAN|MTBITS} u L d COMPLETED
uuuu gg
.
.
.
- [18] DUMP:TSIMEM XTSI a IBU 0 {SD|SCAN|MTBITS} u L d r

2. REASON FOR OUTPUT

This message prints in response to a DUMP:TSIMEM input message.

Formats [1-4] are output if the input request specified a read of Expanded Time Slot Interchange (XTSI) controller memory.

Formats [5-6] are output if the input request specified a read (dump) of Time Slot Memory (TSM). More than one output message may be printed depending on the number of words of memory read.

Formats [7-8] are output if the input request specified a read (dump) of Digital Signal Level 3 Unit (D3U) memory.

Formats [9-10] are output if the input request specified a read (dump) of Signal Processing Unit (SPU) memory.

Formats [11-12] are output if the input request specified a read (dump) of In-Band Unit (IBU) memory.

Formats [13-18] are output if the input request specified a read (dump) of the Controller Signal Processor (CSP) memory.

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3. VARIABLE FIELD DEFINITIONS

a	XTSI member number in decimal.
b	Controller.
c	XTSI controller Micro-Instruction Random Access Memory (MRAM) memory address in hexadecimal (0-FFFF).
d	Number of words read in decimal. In the D3U case, the number of 4-byte increments read in decimal.
e	Controller micro-instruction (64 bits) in hexadecimal. Repeated as necessary, 4 per line.
f	Controller address read in hexadecimal.
g	Controller memory read in hexadecimal.
h	Controller request fail code: DENIED - CONTR DUP — Request denied because the frame is duplex and a controller was specified. DENIED - CONTR DUP FAIL — Request denied because a Protection Switch Client (PSC) is not allowed with controller duplex failed. DENIED - CONTR LOM — Request denied because the frame controller is in listen-only mode and a controller was specified. Retry later, as this condition should be cleared quickly. DENIED - ODD MEMBER — Request denied because the XTSI specified was an odd member number. DENIED - TSI DUPF — Request denied because the frame is duplex failed. DENIED - TSI UNEQ — Request denied because the frame is unequipped.
i	Switching And Permuting Controller (SPC) (0-1).
j	Partition (PRTI) (0-3).
k	A-link level number (0-7).
l	TSM address in octal.
m	TSM memory contents in octal. Repeated as necessary, 4 per line.
n	D3U number in decimal.
o	D3U, SPU or IBU memory address output in hexadecimal. Address is also preceded by the digit 0, 1 or 2 to indicate memory access type long, word or byte respectively. For example "0 FF" represents an access type of "long" and an address of FF and "2 401FFF" represents an access type of "byte" and an address of 401FFF.
p	D3U, SPU or IBU address read in hexadecimal.

SEE PROPRIETARY NOTICE ON COVER PAGE

q	D3U, SPU or IBU memory read in hexadecimal.
r	D3U, SPU or IBU request fail code: ABORTED - BAD ADDRESS — Address is out-of-range. ABORTED - INTERNAL CONFIG ERROR — Request for the given D3U, SPU or IBU was aborted due to problems configuring an Out-Of-Service (OOS) XTSI on a good bus. Contact the Technical Assistance Center for further information. ABORTED - INTERNAL FRAME ERROR — Request for the given D3U, SPU or IBU failed because of an unknown error code returned when processing the read command. Contact the Technical Assistance Center for further information. ABORTED - INTERNAL MACRO ERROR — If message dispenser returns any other error code. Contact the Technical Assistance Center for further information. ABORTED - MACRO REJECTED — Request for the given D3U, SPU or IBU failed because the XTSI frame returned a macro failure. Contact the Technical Assistance Center for further information. ABORTED - MACRO TIMEOUT — Request for the given D3U, SPU or IBU failed because the XTSI frame did not reply to the read command. Contact the Technical Assistance Center for further information. ABORTED - NON-ADDRESSABLE BYTE Request for the given D3U, SPU or IBU was aborted because address is not on a word boundary. ABORTED - READ FAILED — This request failed due to a read failure. Contact the Technical Assistance Center for further information. ABORTED - UNUSED-ADDRESS Request for the given D3U, SPU or IBU was aborted because of an invalid access type or because this address is currently unused by the software. DENIED NOT AN EQUIP XTSI DENIED - ODD XTSI MEMBER
s	SPU number in decimal.
ES	E-Store memory.
MS	M-Store memory.
PCIS	Per channel inhibit state memory.
TBITS	Trunk bits.
t	Controller Signal Processor (CSP) trunk designation, controller, in octal (0-7777).

SEE PROPRIETARY NOTICE ON COVER PAGE

SD	Signal distribute point.
SCAN	Scan point.
MTBITS	Miscellaneous trunk bits.
u	Controller Signal Processor (CSP) trunk designation in octal (3000-3430).

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
XTSIMEMU

Input Messages
DUMP:TSIMEM
LOAD:TSIMEM

Output Message
LOAD:TSIMEM

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DUMP:XTSI-CREG
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

XTSI CRITICAL REGISTER DUMP:
DUMP:XTSI a, CREG!

CSTATUS	STATR	MADATA	FSTATUS0	FSTATUS1	CESR	0.....0
PEST	CNTL	EXCNTLSTATL	EXCNTLSTATH	XESR	GESR	0.....0
GCNTL	GADDR0	GADDR1	EXINTR	CIAESCL	EXSANTIM	0.....0
EXSTKBNDL	EXSTKBNDH	MBPTR	SHDWMBPTR	CIARADDRL	CIARADDRH	0.....0
CIADATAL	CIADATAH	PSSNS	XTFERSUM	TSICTL	TSITSC	0.....0
TSISTAT	TSITSEL	TSIEXR0	TSIEXR1	TSIESR0	TSIESR1	0.....0
CSPETSC	FBICTL	PSCSUM	PSCPEST	PSCPSE	PSCPCMCO	0.....0
PSCCBC0	ALFESR0	ALFESR1	TRPFER0	TRPFER1	ALNKER0	0.....0
ALNKER1	CSPEsr0	CSPEsr1	CSPSTAT	CSPCTL0	CSPCTL1	0.....0
CSPTCERR	PSCEQUIP	PSCINSRV	0.....0	0.....0	0.....0	0.....0
MEMN	XLATE	7.....7	7.....7	7.....7	7.....7	7.....7
CSTATUS	STATR	MADATA	FSTATUS0	FSTATUS1	CESR	0.....0
PEST	CNTL	EXCNTLSTATL	EXCNTLSTATH	EXESR	GESR	0.....0
GCNTL	GADDR0	GADDR1	EXINTR	CIAESCL	EXSANTIM	0.....0
EXSTKBNDL	EXSTKBNDH	MBPTR	SHDWMBPTR	CIARADDRL	CIARADDRH	0.....0
CIADATAL	CIADATAH	PSSNS	XTFERSUM	TSICTL	TSITSC	0.....0
TSISTAT	TSITSEL	TSIEXR0	TSIEXR1	TSIESR0	TSIESR1	0.....0
CSPETSC	FBICTL	PSCSUM	PSCPEST	PSCPSE	PSCPCMCO	0.....0
PSCCBC0	ALFESR0	ALFESR1	TRPFER0	TRPFER1	ALNKER0	0.....0
ALNKER1	CSPEsr0	CSPEsr1	CSPSTAT	CSPCTL0	CSPCTL1	0.....0
CSPTCERR	PSCEQUIP	PSCINSRV	0.....0	0.....0	0.....0	0.....0

2. REASON FOR OUTPUT

To print the Critical Registers (CREG) for the specified Expanded Time Slot Interchange (XTSI).

NOTE: The dots in the message represent repeated characters. For example, 7...7 is actually 77777777. The top half of the dump is from controller 0; the lower half is from controller 1.

3. VARIABLE FIELD DEFINITIONS

a XTSI member number (0-63).

4. ACTION TO BE TAKEN

None.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Practice 234-010-107, *Maintenance Reference Handbook* - Description of XTSI internal registers. (critical registers are a subset of the internal registers)

Input Messages
DUMP:XTSI - IREG
LOAD:XTSI - IREG

Output Messages
DUMP:XTSI - IREG
LOAD:XTSI - IREG

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DUMP:XTSI-D3U
WORK CENTER.. MOC, TEC
GENERIC 4E24 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

XTSI INTERNAL REGISTER DUMP:
DUMP:XTSI a,D3U b,IREG!

c...c	d...d	e...e	f...f	g...g	h...h	i...i	j...j
k...k	l...l	m...m	n...n	o...o	p...p	q...q	0...0
r...r	s...s	t...t	u...u				

2. REASON FOR OUTPUT

To print the Internal Registers (IREG), of the specified Digital Signal Level 3 Unit (D3U), for a particular Expanded Time Slot Interchange (XTSI) frame.

NOTE: The triple dots in the message represent six characters. For example, d...d is actually dddddddd.

3. VARIABLE FIELD DEFINITIONS

a	XTSI member number (0-63).
b	D3U unit number (0-7).
c	D3U Software Status (D3USTATUS).
d	D3U Hardware Status (D3USTAT).
e	D3U Error Source Register (D3UESR).
f	D3U Controller (D3UCTL).
g	D3U Exercise Register (D3UEXR).
h	XL4USTARTTS - Group Equipage
i	XL4USFVD3US - Spare software version and hardware version.
j	XL4UVD3Ux - D3U software version, hardware version, and In-Band enabled state.
k	XL4UDU_EQDG01 - Equipage of Digroup 1-4
l	XL4UDU_EQDG05 - Equipage of Digroup 5-8
m	XL4UDU_EQDG09 - Equipage of Digroup 9-12
n	XL4UDU_EQDG13 - Equipage of Digroup 13-16
o	XL4UDU_EQDG17 - Equipage of Digroup 17-20

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p	XL4UDU_EQDG21 - Equipage of Digroup 21-24
q	XL4UDU_EQDG25 - Equipage of Digroup 25-28
r	Least significant 24 bits of firmware version number.
s	Most significant 8 bits of firmware version number.
t	Least significant 24 bits of software version number.
u	Most significant 8 bits of software version number.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Practice 234-010-107, *Maintenance Reference Handbook* - Description of XTSI internal registers. (critical registers are a subset of the internal registers)

Input Messages
DUMP:XTSI-D3U
LOAD:XTSI-D3U

Output Message
LOAD:XTSI-D3U

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DUMP:XTSI-IBU
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

XTSI INTERNAL REGISTER DUMP:
DUMP:XTSI a, IBU b, IREG!

c...c d...d e...e f...f g...g h...h i...i j...j
k...k l...l

2. REASON FOR OUTPUT

To print the Internal Registers (IREG), of the specified In-Band Unit (IBU), for a particular Expanded Time Slot Interchange (XTSI) frame.

NOTE: The triple dots in the message represent six characters. For example, d...d is actually dddddddd.

3. VARIABLE FIELD DEFINITIONS

a	XTSI member number (0-63).
b	IBU unit number (0).
c	IBU Software Status (IBUSTATUS).
d	IBU Hardware Status (IBUSTAT).
e	IBU Error Source Register (IBUESR).
f	IBU Controller (IBUCTL).
g	IBU Exercise Register (IBUEXR).
h	XL4UHVIBU - IBU type of signaling, type of miscellaneous service circuits, software version, hardware version and equipage.
i	Least significant 24 bits of firmware version number.
j	Most significant 8 bits of firmware version number.
k	Least significant 24 bits of software version number.
l	Most significant 8 bits of software version number.

4. ACTION TO BE TAKEN

None.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Practice 234-010-107, *Maintenance Reference Handbook* - Description of XTSI internal registers. (critical registers are a subset of the internal registers)

Input Messages
DUMP:XTSI - IBU
LOAD:XTSI - IBU

Output Message
LOAD:XTSI - IBU

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DUMP:XTSI-IREG
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

XTSI INTERNAL REGISTER DUMP:
DUMP:XTSI a, IREG!

CSTATUS	STATR	MADATA	FSTATUS0	FSTATUS1	CESR	0.....0
PEST	CNTL	EXCNTLSTATL	EXCNTLSTATH	XESR	GESR	0.....0
GCNTL	GADDR0	GADDR1	EXINTR	CIAESCL	EXSANTIM	0.....0
EXSTKBNDL	EXSTKBNDH	MBPTR	SHDWMBPTR	CIARADDRL	CIARADDRH	0.....0
CIADATAL	CIADATAH	PSSNS	XTFERSUM	TSICTL	TSITSC	0.....0
TSISTAT	TSITSEL	TSIEXR0	TSIEXR1	TSIESR0	TSIESR1	0.....0
CSPETSC	FBICTL	PSCSUM	PSCPEST	PSCPSE	PSCPCMCO	0.....0
PSCCBC0	ALFESR0	ALFESR1	TRPFER0	TRPFER1	ALNKER0	0.....0
ALNKER1	CSPEsr0	CSPEsr1	CSPSTAT	CSPCTL0	CSPCTL1	0.....0
CSPTCERR	PSCEQUIP	PSCINSRV	GRSVRCODE	GRSVCAUSE	GRSVMISC1	0.....0
GRSVMISC2	GRSVSP	GRSVSTK	GRSVFP	GRSVPC	GRSVLOAD	0.....0
GRSVCHKSUM	CTLEQUIP	0.....0	0.....0	0.....0	0.....0	0.....0
MEMN	XLATE	7.....7	7.....7	7.....7	7.....7	7.....7
CSTATUS	STATR	MADATA	FSTATUS0	FSTATUS1	CESR	0.....0
PEST	CNTL	EXCNTLSTATL	EXCNTLSTATH	EXESR	GESR	0.....0
GCNTL	GADDR0	GADDR1	EXINTR	CIAESCL	EXSANTIM	0.....0
EXSTKBNDL	EXSTKBNDH	MBPTR	SHDWMBPTR	CIARADDRL	CIARADDRH	0.....0
CIADATAL	CIADATAH	PSSNS	XTFERSUM	TSICTL	TSITSC	0.....0
TSISTAT	TSITSEL	TSIEXR0	TSIEXR1	TSIESR0	TSIESR1	0.....0
CSPETSC	FBICTL	PSCSUM	PSCPEST	PSCPSE	PSCPCMCO	0.....0
PSCCBC0	ALFESR0	ALFESR1	TRPFER0	TRPFER1	ALNKER0	0.....0
ALNKER1	CSPEsr0	CSPEsr1	CSPSTAT	CSPCTL0	CSPCTL1	0.....0
CSPTCERR	PSCEQUIP	PSCINSRV	GRSVRCODE	GRSVCAUSE	GRSVMISC1	0.....0
GRSVMISC2	GRSVSP	GRSVSTK	GRSVFP	GRSVPC	GRSVLOAD	0.....0
GRSVCHKSUM	CTLEQUIP	0.....0	0.....0	0.....0	0.....0	0.....0

2. REASON FOR OUTPUT

To print the Internal Registers (IREG) for the specified Expanded Time Slot Interchange (XTSI).

NOTE: The dots in the message represent repeated characters. For example, 7...7 is actually 77777777. The top half of the dump is from controller 0; the lower half is from controller 1.

3. VARIABLE FIELD DEFINITIONS

a XTSI member number (0-63).

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4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Practice 234-010-107, *Maintenance Reference Handbook* - Description of XTSI internal registers. (critical registers are a subset of the internal registers)

Input Messages

DUMP:XTSI - IREG
LOAD:XTSI - IREG

Output Messages

DUMP:XTSI - CREG
LOAD:XTSI - IREG

SEE PROPRIETARY NOTICE ON COVER PAGE

ID DUMP:XTSI-SPU
WORK CENTER.. MOC, TEC
GENERIC 4E24 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

XTSI INTERNAL REGISTER DUMP:
DUMP:XTSI a, SPU b, IREG!

c...c d...d e...e f...f g...g h...h i...i j...j
k...k l...l m...m n...n o...o p...p

2. REASON FOR OUTPUT

To print the Internal Registers (IREG), of the specified Signal Processing Unit (SPU), for a particular Expanded Time Slot Interchange (XTSI) frame.

NOTE: The triple dots in the message represent six characters. For example, d...d is actually dddddddd.

3. VARIABLE FIELD DEFINITIONS

a	XTSI member number (0-63).
b	SPU unit number (0-11).
c	SPU Software Status (SPUSTATUS).
d	SPU Hardware Status (SPUSTAT).
e	SPU Error Source Register (SPUESR).
f	SPU Controller (SPUCTL).
g	SPU Exercise Register (SPUEXR).
h	XL4USPSUES - Spare: Equipage, Hardware and Software versions.
i	XL4USFVSPS - SPU: Equipage, Hardware and Software versions.
j	RESERVED
k	RESERVED
l	RESERVED
m	Least significant 24 bits of firmware version number.
n	Most significant 8 bits of firmware version number.
o	Least significant 24 bits of software version number.
p	Most significant 8 bits of software version number.

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4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Practice 234-010-107, *Maintenance Reference Handbook* - Description of XTSI internal registers. (critical registers are a subset of the internal registers)

Input Messages
DUMP:XTSI-SPU
LOAD:XTSI-SPU

Output Message
LOAD:XTSI-SPU

SEE PROPRIETARY NOTICE ON COVER PAGE

ID EX:XTSI-ADDR
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a,b c:d e ILLEGAL ADDRESS f

2. REASON FOR OUTPUT

To indicate that an illegal address was used for an interactive diagnostic function on an Expanded Time Slot Interchange (XTSI).

3. VARIABLE FIELD DEFINITIONS

a	The member number of the unit being diagnosed (0-63).
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.
f	The type of illegal address:
ADVANCE	— The address advanced to contains an illegal address.
DOLLOOPS	— The loop of code contains an illegal address.
INVALID MUST COMPLETE PHASE IN PROGRESS	— A pause was inserted in one phase and an attempt was made to start another phase before the pause was removed from the first phase.
LOOP END	— The second address specified is illegal.
LOOP START	— The first address specified is illegal.
SUBROUTINES	— The subroutine contains an illegal address.

4. ACTION TO BE TAKEN

If INVALID . . . PROGRESS, remove the pause from the first phase and retry the diagnostic.

In all other cases correct the address and retry the diagnostic.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENTs

PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

SEE PROPRIETARY NOTICE ON COVER PAGE

ID EX:XTSI-ILL
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a,b c:d e ILLEGAL PHASE

2. REASON FOR OUTPUT

To print whenever one or more illegal diagnostic phases have been requested. The illegal phase will not be executed; however, all valid phases will be run.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the unit being diagnosed (0-63).
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.

4. ACTION TO BE TAKEN

Check the *Input Message Document* for the list of valid phase numbers.

5. REFERENCES

PIDENTs
DCONTOLL
PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

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ID EX:XTSI-LOOP
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a,b c:d e LOOPING {COMPLETED|STARTED}

2. REASON FOR OUTPUT

To indicate that the interactive diagnostic on an Expanded Time Slot Interchange (XTSI) has either started looping through the specified code, or has completed the looping function.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the unit being diagnosed (0-63).
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.
COMPLETE	Looping has terminated.
STARTED	Looping has begun.

4. ACTION TO BE TAKEN

If desired, stop an infinite loop using the input command: EX:XTSI a!

5. REFERENCES

PIDENTs
PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Message
EX:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID EX:XTSI-NOT
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a,b c:d e NOT STARTED - f

2. REASON FOR OUTPUT

To print whenever the interactive diagnostic request cannot be started. This is usually when the unit for which the diagnostic was requested cannot be removed from service.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the unit being diagnosed (0-63).
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type.
e	The helper member number.
f	The reason the diagnostic was not started.

4. ACTION TO BE TAKEN

If the specified unit cannot be removed from service because there is no spare, restore a spare unit to service.

5. REFERENCES

PIDENTs
MCFWPEMO
PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

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ID EX:XTSI-PUB
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a b c:PUB d e f [g]

2. REASON FOR OUTPUT

To specify both the diagnostics results and the termination mode. This message is printed at the conclusion of the interactive diagnostic execution.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the Expanded Time Slot Interchange (XTSI) frame under diagnosis (0-63).
b	The type of subunit for which the diagnostic was requested.
c	The number of the subunit under diagnosis.
d	The helper Peripheral Unit Bus (PUB) that was requested.
e	The termination mode for the diagnostic: ABORTED — The diagnostic was abnormally stopped due to an interrupt, error in execution, or due to a STOP:MACLI or STOP:EX input request. COMPLETED — The diagnostic completed normally. STOPPED — The diagnostic was terminated under program control since further testing would not improve diagnostic resolution.
f	The results of the diagnostic: ATP — All tests passed. CATP — All tests passed; however, some tests were skipped due to the unavailability of a system resource which was needed to perform the test. NTR — No tests were executed. STF — Some tests failed. STF-BOF — The number of failed tests has filled the buffer. Before any more tests are run the system prints out the contents of the buffer and then clears it.

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g An optional field that will appear only if the results are not ATP. If CATP or NTR, this field identifies the reason that the tests were skipped. The reasons are identified by their bit position in the 16-digit octal number that is printed. For example, if g is (40000000 00001000), then tests were skipped for reasons 9 and 47.

The reasons for XTSI controllers and Digital Signal Level 3 Units (D3Us), Signal Processing Unit (SPU) or In-Band Unit (IBU) are as follows:

BIT	REASONS FOR TESTS SKIPPED
0	Peripheral Unit Bus (PUB) 0 out-of-service
1	PUB 1 out-of-service
2	Primary Signaling Processor (SP) pulse points out-of-service
3	Secondary SP pulse points out-of-service
4	Mate unit out-of-service
5	Power control switch in Request Out-Of-Service (ROS) position
6	Central Controller (CC) 0 Out Of Service
7	CC 1 Out Of Service
8	Power monitor tests skipped on manual ROS test (diagnostic requested from power control switch)
9	Member Interrogate (MI) has other units responding
10	Group Interrogate (GI) has other units responding
11	PUB not duplex
12	Autonomous Peripheral Unit Failure (APUF) CATP flag
13	Autonomous Peripheral Unit Trouble (APUT) CATP flag
14	Network blockage encountered
15	Time Slot Interchange Frame (TSIF) in growth
17	Some other frame responding to Poll High Priority (PHP) polling
18	Some other frame responding to Poll Low Priority (PLP) polling
19	Some other frame responding to Poll Digit (PDG) polling
20	Some other frame responding to Poll Seizure (PSZ) polling
22	Controller 0 Out Of Service
23	Controller 1 Out Of Service
24	SP scan / distribute points out-of-service
25	SP bus out-of-service
26	Some Protection Switch Client (PSC) is protection switched
27	Controller not duplex
28	One or both controller power feeds are not available
30	Some PSC port is pested

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BIT	REASONS FOR TESTS SKIPPED (continued)
31	Network clock 0 Out Of Service
32	Network clock 1 Out Of Service
33	Time Multiplexed Switch (TMS) is Out Of Service
34	A-Link Controller (ALC) is powered down
35	Controller 0 is powered down
36	Controller 1 is powered down
37	Some PSC Power Control Switch is in Request Out Of Service (ROS) position
38	Some PSC Port is not running operational load
39	Digital Signal Level 3 Units (D3Us) Signal Processing Units (SPUs) or In-Band Unit (IBU) not in growth or special growth
40	D3U or SPU not protection switched
41	IBU Out-Of-Service
42	IBU Power control switch in Request Out-Of-Service (ROS) position
43	IBU is not running operational load
44	IBU port is pested

If subunit type is IPUB:

BIT	REASONS FOR TESTS SKIPPED
6	Central Controller (CC) 0 out-of-service
7	CC 1 out-of-service
12	Helper controller 0 out-of-service
13	Helper controller 1 out-of-service
26	Interface Peripheral Unit Bus (IPUB) out-of-service
27	DTFRIGAL return failed

If STF, this field gives the number of failing phases, number of failing tests, and trouble number. For example, (2,9,00101545) indicates 2 phases failed, 9 tests failed, and a trouble number of 00101545.

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4. ACTION TO BE TAKEN

If the results are CATP, restore the indicated system resource to service so that all tests may be executed. If STF, repair the unit as quickly as possible. Otherwise, no action is needed. Diagnostics may also be requested via the main frame. When they are, power monitor tests are omitted. This omission causes bit 8 in the CATP field to be set. If power monitor tests are desired, the diagnostic must be requested via the Teletypewriter (TTY).

5. REFERENCES

PIDENTs

PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Messages

EX:XTSI
STOP:EX
STOP:MACLI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID EX:XTSI-SUSP
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] EX:XTSI a,b c:d e SUSPENDED
- [2] EX:XTSI a,b c:d e SUSPENDED AT PH f ADR g [i]
- [3] EX:XTSI a,b c:d e SUSPENDED AT PH f ADR g AFTER TEST h [i]
- [4] EX:XTSI a,b c:d e SUSPENDED ILLEGAL INPUT

2. REASON FOR OUTPUT

To print whenever interactive diagnostic execution is suspended. Each of the formats identifies a specific type of suspension:

Format [1] is printed if there was no phase active.

Format [2] is printed if the suspension occurred at the address specified by the input message.

Format [3] is printed if the suspension occurred at the point immediately following a test.

Format [4] is printed if the diagnostic was suspended because the input was illegal.

3. VARIABLE FIELD DEFINITIONS

- a The member number of the unit being diagnosed (0-63).
- b The subunit type being diagnosed.
- c The submember number of the subunit being diagnosed.
- d The helper unit type, if specified.
- e The helper member number, if specified.
- f The diagnostic phase in which the diagnostic suspended. If no phase was active, then this phase does not occur.
- g The address in the diagnostic phase at which the suspension occurred.
- h The last test executed before the suspension occurred.
- i The reason the suspension occurred:
 - ADVANCE — The diagnostic has been executed up to the specified address

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FIRST FAILURE — The diagnostic has been suspended because the first failure has been encountered

PAUSE — The diagnostic has been paused at the specified address

STEP — The requested number of steps have been completed

NOTE: If there is no phase active, this field will not be specified.

4. ACTION TO BE TAKEN

Specify another EX:XTSI input message. If no further interactive diagnostic executed is desired, specify a STOP:MACLI or STOP:EX input message.

5. REFERENCES

PIDENTs

PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Messages

EX:XTSI
STOP:EX
STOP:MACLI

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ID EX:XTSI-TERM
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

EX:XTSI a,b c:d e TERMINATED AT PH f ADR g AFTER TEST h [FORCED]

2. REASON FOR OUTPUT

To print whenever the interactive diagnostic terminates early. This early termination of execution will only occur if some tests have failed and further execution will degrade fault resolution or cause system problems.

3. VARIABLE FIELD DEFINITIONS

a	The member number of the unit being diagnosed (0-63).
b	The subunit type being diagnosed.
c	The submember number of the subunit being diagnosed.
d	The helper unit type, if specified.
e	The helper member number, if specified.
f	The diagnostic phase in which the termination occurred.
g	The address in the diagnostic phase (or subroutine) at which the termination occurred.
h	The last test executed before the termination occurred.
FORCED	The termination is unconditional. Termination in this way is restricted to cases where further diagnostic execution will cause system problems.

4. ACTION TO BE TAKEN

Repair the faulty frame.

5. REFERENCES

PIDENTs
PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

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Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

SEE PROPRIETARY NOTICE ON COVER PAGE

ID EX:XTSI-TEST
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] EX:XTSI a,b c:d e PH f g [h]
[TEST MISMATCH SUPPLEMENTARY DATA
i jjjjjjjj kkkkkkkk llllllll mmmmmmmm nnnnnnnn ooooooooo
pppppppp qqqqqqqq rrrrrrrr]
- [2] EX:XTSI a, CONTR s PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i jjjjjjjj 00tttttt uuuuvvvv vvvvvvvv wwwwww xyza1.a1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [3] EX:XTSI a, D3U j1, PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i jjjjjjjj 00tttttt uuuuvvvv vvvvvvvv wwwwww xyza1.a1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [4] EX:XTSI a, SPU k1, PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i jjjjjjjj 00tttttt uuuuvvvv vvvvvvvv wwwwww xyza1.a1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]
- [5] EX:XTSI a, IBU 0, PH f g [h] MSG STARTED
[TEST MISMATCH SUPPLEMENTARY DATA
i jjjjjjjj 00tttttt uuuuvvvv vvvvvvvv wwwwww xyza1.a1
0b1c1.c1 00d1..d1 00e1..e1 00f1..f1 00g1..g1
00h1..h1 00i1..i1]

2. REASON FOR OUTPUT

To report the interactive diagnostic results on a phase basis. This occurs in the case of a particular diagnosis, or a test failure.

Format [1] is the general format.

Format [2] is the Controller (CONTR) resident format.

Format [3] is the Digital Signal Level 3 Unit (D3U) resident format.

Format [4] is the Signal Processing Unit (SPU) resident format.

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Format [5] is the In-Band Unit (IBU) resident format.

3. VARIABLE FIELD DEFINITIONS

- a The member number of the unit being diagnosed (0-63).
- b The subunit type being diagnosed.
- c The submember number of the subunit being diagnosed.
- d The helper unit type, if specified.
- e The helper member number, if specified.
- f The diagnostic phase number for which the results are reported.
- g The results of the diagnostic:
 - ATP — All tests passed.
 - CATP — All tests passed; however, some tests were skipped due to the unavailability of a system resource which was needed to perform the test.
 - NTR — No tests were executed.
 - STF — Some tests failed.
 - STF-BOF — Some tests failed and the raw data buffer overflowed. The phase has not been completed.
- h An optional field that will appear only if the results were not ATP. If CATP and NTR, this field identifies the reason that the tests were skipped in this phase. The reasons are identified by their bit position in the 16-digit octal number that is printed. For example, if h is (40000000 00001000), then tests were skipped for reasons 9 and 47.

The reasons for XTSI controllers and D3Us, SPU's or IBU are as follows:

BIT	REASONS FOR TESTS SKIPPED
0	Peripheral Unit Bus (PUB) 0 out-of-service
1	PUB 1 out-of-service
2	Primary Signaling Processor (SP) pulse points out-of-service
3	Secondary SP pulse points out-of-service
4	Mate unit out-of-service
5	Power control switch in Request Out-Of-Service (ROS) position
6	Central Controller (CC) 0 Out Of Service
7	CC 1 Out Of Service

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BIT	REASONS FOR TESTS SKIPPED (continued)
8	Power monitor tests skipped on manual ROS test (diagnostic requested from power control switch)
9	Member Interrogate (MI) has other units responding
10	Group Interrogate (GI) has other units responding
11	PUB not duplex
12	Autonomous Peripheral Unit Failure (APUF) CATP flag
13	Autonomous Peripheral Unit Trouble (APUT) CATP flag
14	Network blockage encountered
15	Time Slot Interchange Frame (TSIF) in growth
17	Some other frame responding to Poll High Priority (PHP) polling
18	Some other frame responding to Poll Low Priority (PLP) polling
19	Some other frame responding to Poll Digit (PDG) polling
20	Some other frame responding to Poll Seizure (PSZ) polling
22	Controller 0 Out Of Service
23	Controller 1 Out Of Service
24	SP scan / distribute points out-of-service
25	SP bus out-of-service
26	Some Protection Switch Client (PSC) is protection switched
27	Controller not duplex
28	One or both controller power feeds are not available
30	Some PSC port is pested
31	Network clock 0 Out Of Service
32	Network clock 1 Out Of Service
33	Time Multiplexed Switch (TMS) is Out Of Service
34	A-Link Controller (ALC) is powered down
35	Controller 0 is powered down
36	Controller 1 is powered down
37	Some PSC Power Control Switch is in Request Out Of Service (ROS) position
38	Some PSC Port is not running operational load
39	Digital Signal Level 3 Unit (D3U) Signal Processing Unit (SPU) or In-Band Unit (IBU) not in growth or special growth
40	D3U or SPU not protection switched
41	IBU Out-Of-Service
42	IBU Power control switch in Request Out-Of-Service (ROS) position
43	IBU is not running operational load
44	IBU port is pested

SEE PROPRIETARY NOTICE ON COVER PAGE

If subunit type is IPUB:

BIT	REASONS FOR TESTS SKIPPED
6	Central Controller (CC) 0 out-of-service
7	CC 1 out-of-service
12	Helper controller 0 out-of-service
13	Helper controller 1 out-of-service
26	Interface Peripheral Unit Bus (IPUB) out-of-service
27	DTFRIGAL return failed

If STF, this field gives the number of test failures, in addition to the reasons that tests were skipped. For example, if h is (7,40000000 00001000), seven tests failed, plus tests were skipped for reasons 9 and 47.

If STF-BOF, the number of test failures is the number of test failures up to the point of buffer overflow.

The following appear only if the diagnostic was STF.

i	The test number of the failing test.
j	The bits which were in error; that is, a 1 in a bit position indicates that the response from the unit did not match the expected response in that bit.
k	RAW response from the unit.
l, m	Information concerning the test being executed. Details of are specified in the diagnostic listing.
n	The address in the phase (or subroutine) of the test that failed.
o	Bits 14-0 contain information for the Trouble Location Procedure (TLP) programs. Bits 23-21 contain the count of the number of words of supplementary data that follows. Bits 20-18 contain the count of the number of words of DOLLOOP data that follows. Bits 17-15 contain the count of the number of words of subroutine data that follows.
p	Supplementary data words. Repeated x times, where x is bits 23-21 of variable o. This data supplies information about the test being executed. The last supplementary data word specified is printed first.
q	DOLLOOP data words. Repeated y times, where y is bits 20-18 or variable o. This data is the value of the DOLLOOP variables at the time of the test failure. The value of the innermost DOLLOOP is printed first.
r	Subroutine data words. Repeated z times, where z is bits 17-15 of variable o. This data is the address of the callsubs which led up to this point in the diagnostic. The address of the last callsub is printed first.
s	Controller number (0 or 1).

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t	The least significant 16 bits represent the actual octal data from the half word of LR57, where a mismatch with expected data occurred. The expected data must be derived from the actual and mismatched data fields.
u	PU address bus bits of the bus order sent to the subunit (12 bits).
v	PU write bus bits of the order sent to the subunit (36 bits). The upper 7 bits are the opcode and the remaining 29 bits are the data for the order. For subunit PUMACRO orders this includes the PUMACRO macro ID, a data expected flag (write only vs. a write/read order), a sub-opcode, and the test group number.
w	DIAL address of the instruction that failed.
x	Number of words of supplementary data.
y	Number of words of do-loop data. Not defined by subunit code.
z	Number of words of subroutine data. Not defined by subunit code.
a1	Trouble Location Procedure (TLP) data. Not defined by subunit code.
b1	Indicates in which half word of the subunit 32 bit word the mismatched data occurred. (0 least significant, 1 most significant)
c1	Subunit microprogram address of the previous function called, i.e., the first function on the stack or the function that called DGFAIL.
d1	Subunit microprogram address of the second function on the stack , i.e., the address of a subroutine call which then called DGFAIL.
e1	The 16 bit field of supplementary data written to the least significant half word of LR58.
	NOTE: The upper 8 bits of this and the following octal words will always be zero, i.e., only the lower 16 bits are used.
f1	The 16 bit field of supplementary data written to the most significant half word of LR59.
	NOTE: A 32 bit data word in LR59 is split between the lower 16 bits of two 24 bit supplementary data words.
g1	The 16 bit field of supplementary data written to the least significant half word of LR59.
h1	The 16 bit field of supplementary data written to the most significant half word of LR60.
i1	The 16 bit field of supplementary data written to the least significant half word of LR60.
j1	Digital Signal Level 3 Unit (D3U) number.
k1	Signal Processing Unit (SPU) number.

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4. ACTION TO BE TAKEN

If the results are CATP, restore the indicated system resource to service so that all tests may be executed. If STF, the unit should be repaired as quickly as possible. Otherwise, no action is needed. Diagnostics may also be requested via the main frame. When they are, power monitor tests are omitted. This omission causes bit 8 in the CATP field to be set. If power monitor tests are desired, the diagnostic must be requested via the Teletypewriter (TTY).

5. REFERENCES

PIDENTs

PUDGDS--, if D3U is specified as the subunit
PUDGIB--, if IBU is specified as the subunit
PUDGXS--, if SPU is specified as the subunit
PUDGXT--, if CONTR is specified as the subunit
PUDGXT99, if IPUB is specified as the subunit

Practice 234-180-020, *Diagnostic Language - DIAL*

Practice 234-180-260, *4ESSTM Peripheral Diagnostic Program - Description*

Input Message
EX:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

WARNING
INAPPROPRIATE USE OF THIS
MESSAGE MAY INTERRUPT OR
DEGRADE SERVICE. READ PURPOSE
CAREFULLY.

ID LOAD:TSIMEM
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

WARNING

1. FORMAT

- [1] LOAD:TSIMEM XTSI a [CONTR b] {CRAM|GRAM|LRAM|MRAM} c ...
HDATA d HMSK e COMPLETED
- [2] LOAD:TSIMEM XTSI a [CONTR b] {CRAM|GRAM|LRAM|MRAM} c ...
HDATA d HMSK e f
- [3] LOAD:TSIMEM XTSI a D3U g HADR h HDATA i HMSK e COMPLETED
- [4] LOAD:TSIMEM XTSI a D3U g HADR h HDATA i HMSK e j
- [5] LOAD:TSIMEM XTSI a SPU k HADR h HDATA i HMSK e COMPLETED
- [6] LOAD:TSIMEM XTSI a SPU k HADR h HDATA i HMSK e j
- [7] LOAD:TSIMEM XTSI a IBU 0 HADR h HDATA i HMSK e COMPLETED
- [8] LOAD:TSIMEM XTSI a IBU 0 HADR h HDATA i HMSK e j
- [9] LOAD:TSIMEM XTSI a [CONTR b] SPC l PRTI m [LEVEL n] ADR o:...
DATA p MASK1 q COMPLETED
- [10] LOAD:TSIMEM XTSI a [CONTR b] SPC l PRTI m [LEVEL n] ADR o:...
DATA p MASK1 q f
- [11] LOAD:TSIMEM XTSI a [CONTR b] {ES|MS|TBITS} r DATA s COMPLETED
- [12] LOAD:TSIMEM XTSI a [CONTR b] {ES|MS|TBITS} r DATA s f
- [13] LOAD:TSIMEM XTSI a [CONTR b] SPC l PCIS r DATA s COMPLETED
- [14] LOAD:TSIMEM XTSI a [CONTR b] SPC l PCIS r DATA s f
- [15] LOAD:TSIMEM XTSI a IBU 0 {SD|MTBITS} t DATA u COMPLETED
- [16] LOAD:TSIMEM XTSI a IBU 0 {SD|MTBITS} t DATA u j

2. REASON FOR OUTPUT

This message prints in response to a LOAD:TSIMEM input message.

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Formats [1-2] are output if the input request specified a write of Expanded Time Slot Interchange (XTSI) controller memory.

Formats [3-4] are output if the input request specified a write of a Digital Signal Level 3 Unit (D3U) memory.

Formats [5-6] are output if the input request specified a write of a Signal Processing Unit (SPU) memory.

Formats [7-8] are output if the input request specified a write of a In-Band Unit (IBU) memory.

Formats [9-10] are output if the input request specified a write of a Time Slot Memory (TSM).

Formats [11-14] are output if the input request specified a write of the Controller Signal Processor (CSP) memory.

3. VARIABLE FIELD DEFINITIONS

a	XTSI member number in decimal.
b	Controller.
c	Controller address written in hexadecimal.
d	Controller data written in hexadecimal.
e	32-bit mask in hexadecimal.
f	Controller request fail code: DENIED - CONTR DUP — Request denied because the frame is duplex and a controller was specified. This will result in an interrupt from the frame. DENIED - CONTR DUP FAIL — Request denied because a Protection Switch Client (PSC) is not allowed with controller duplex failed. DENIED - CONTR LOM — Request denied because the a frame controller is in listen-only mode and a controller was specified. Retry later, as this condition should be cleared quickly. DENIED - ODD MEMBER — Request denied because the XTSI specified was an odd member number. DENIED - TSI UNEQ — Request denied because the frame is unequipped.
g	D3U number in decimal.

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h	D3U, SPU or IBU memory address output in hexadecimal. Address is also preceded by the digit 0, 1 or 2 to indicate memory access type long, word or byte respectively. For example "0 FF" represents an access type of "long" and an address of FF and "2 401FFF" represents an access type of "byte" and an address of 401FFF.
i	D3U, SPU or IBU data written in hexadecimal.
j	D3U, SPU or IBU request fail code: ABORTED - MACRO REJECTED Request for the given D3U, SPU or IBU was aborted because the XTSI frame rejected the write command. Contact the Technical Assistance Center for further information. ABORTED - MACRO TIMEOUT Request for the given D3U, SPU or IBU was aborted because the XTSI frame did not reply to the write command. Contact the Technical Assistance Center for further information. ABORTED - NON-ADDRESSABLE BYTE Request for the given D3U or SPU was aborted because address is not on a word boundary. ABORTED - UNUSED-ADDRESS Request for the given D3U, SPU or IBU was aborted because of an invalid access type or because this address is currently unused by the software. DENIED - D3U UNEQ Request for the given D3U, SPU or IBU was denied because the D3U, SPU or IBU is unequipped. FAILED - INTERNAL ERROR Request for the given D3U, SPU or IBU failed because of an unexpected software error when processing the write command. Contact the Technical Assistance Center for further information. STOPPED - MACRO FAILED Request for the given D3U, SPU or IBU was stopped because the D3U, SPU or IBU failed in processing the write command. Contact the Technical Assistance Center for further information.
k	SPU number in decimal.
l	Switching And Permuting Controller (SPC) (0-1).
m	Partition (PRTI) (0-3).
n	A-link level number (0-7) (when PRTI 0 is specified).
o	Address of Time Slot Memory (TSM).
p	Data to be written.
q	MASK1 15 bit mask.
ES	E-Store memory.
MS	M-Store memory.

SEE PROPRIETARY NOTICE ON COVER PAGE

PCIS	Per channel inhibit state memory.
TBITS	Trunk bits.
r	Data to be written.
s	Controller Signal Processor (CSP) trunk designation, controller, in octal (0-7777).
SD	Signal distribute point.
MTBITS	Miscellaneous trunk bits.
t	Controller Signal Processor (CSP) trunk designation in octal (3000-3430).

4. ACTION TO BE TAKEN

Read the data stored in the controller or the D3U, SPU or IBU using the DUMP:TSIMEM command as directed by the Technical Assistance Center.

5. REFERENCES

PIDENTs
XTSIMEMU

Input Messages
DUMP:TSIMEM
LOAD:TSIMEM

Output Message
DUMP:TSIMEM

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Message
DUMP:XTSI-IBU
LOAD:XTSI-IBU

Output Message
DUMP:XTSI-IBU

SEE PROPRIETARY NOTICE ON COVER PAGE

ID LOAD:XTSI-IREG
WORK CENTER.. MOC, TEC
GENERIC 4E21 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

LOAD:XTSI a,{IREG|CREG} b:c[,MSK d]!e

2. REASON FOR OUTPUT

To report the loading of the specified Expanded Time Slot Interchange (XTSI) Internal Register (IREG) or Critical Register (CREG).

3. VARIABLE FIELD DEFINITIONS

a XTSI member number (0 - 63).

b Register Numbers in octal:

0 — Hardware Status Register (STATR) bits 12-23.

NOTE: Controller can be specified in the input command for the hardware register only. Example: LOAD:XTSI a[,CONTR f] {IREG|CREG} b:c[,MSK d]!e

1 — Hardware Status Register (STATR) bits 0-11.

NOTE: Controller can be specified in the input command for the hardware register only. Example: LOAD:XTSI a[,CONTR f]{IREG|CREG} b:c[,MSK d]!e

5 — Controller Error Source Register (CESR).

6 — Controller pest register.

7 — Controller Control (CNTL) register.

24 — Maintenance Buffer Pointers (MBPTR).

25 — Shadow Maintenance Buffer Pointer (SHDWMBPTR).

34 — Time Slot Interchange (TSI) Control (TSICTL) register.

40 — TSI Exercise Register 0 (TSIEXR0).

41 — TSI Exercise Register 1 (TSIEXR1).

45 — FBI Status And Control (FBICTL) register.

47 — Protection Switch Client (PSC) Error Pest (PSCPEST) register.

51 — PSC Pulse Code Modulated (PCM) Cutoff (PSCPCMCO) register.

52 — PSC Control Bus Cutoff (PSCCBCO) register.

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- 55 — A-Link Formatter Exercise Register 0 (ALFEXR0).
56 — A-Link Formatter Exercise Register 1 (ALFEXR1).
- c 24 bit data to be loaded into register, in octal.
- d 24 bit mask through which data is loaded, in octal. Default mask is all ones.
- e Dumped data:
COMPLETED
NOT STARTED - CONTROLLER NOT IN SERVICE
NOT STARTED - ILLEGAL MESSAGE
NOT STARTED - INVALID INPUT FOR UNIT TYPE OR
FUNCTION SPECIFIED
NOT STARTED - INVALID MEMBER, CONTROLLER, SUBUNIT,
ADDRESS, OR RANGE SPECIFIED
NOT STARTED - UNIT OR SUBUNIT UNEQUIPPED
- f CONTR NUMBER, CONTR FIELD CAN ONLY BE SPECIFIED WHEN
b=0 OR b=1.

4. ACTION TO BE TAKEN

Correct message.

5. REFERENCES

PIDENT
PULP

Practice 234-180-280, *Peripheral Utility Program (PULP) - Description*

Input Messages

DUMP:XTSI - IREG
LOAD:XTSI - IREG

Output Message

DUMP:XTSI - IREG

SEE PROPRIETARY NOTICE ON COVER PAGE

ID OP:PMOS
WORK CENTER.. MOC, TEC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] OP:PMOS; {TCB|TRC|CHAIN}
- [2] OP:PMOS; TCB a
TASK CONTROL CLOCK
TCB NUMBER TASK ID TASK NAME TASK UTMN
b c {d|e} f
. . .
. . .
. . .
- [3] OP:PMOS; TRC a
TIMED ROUTINE COORDINATOR
TRC NUMBER TASK ID TASK NAME TASK UTMN
g c {d|e} f
. . .
. . .
. . .
- [4] OP:PMOS; CHAIN a
TASKS IN CHAIN
TCB NUMBER TASK ID TASK NAME PARENT TASK CHILD TASK
b c {d|e} h i
. . .
. . .
. . .

2. REASON FOR OUTPUT

Dumps the task-related information from the Task Control Block (TCB) or the Timed Routine Coordinator (TRC). It also outputs information on linked tasks. Each message line contains the TCB number, task Identification (ID), task name, task Unit Type And Member Number (UTMN), task held by number, or task holds number. Fifteen lines are printed out at one time. The stage of the output is indicated by the a value.

NOTE: Only one type of information is received per output message, that is, only the TCB, TRC, or CHAIN information block(s) prints out in one message.

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3. VARIABLE FIELD DEFINITIONS

a	Output indicator: MSG COMPLETED — Message completed. Printed at the last block of a multiple-block message or printed at the block of a single-block message. MSG IP — Message in progress. Printed at the second block through the second to last block of a multiple block message. MSG STARTED — Message started. Printed at the first block of a multiple-block message.
b	TCB number in octal form.
d	Task ID value in octal form. Refer to Table 1 for definition of task ID.
e	Task ID name.
f	Task unit type and member number in octal form.
g	TRC number in octal form.
h	TCB number of the parent task (the task that it is linked from).
i	TCB number of the child task (the task that it is linked to).

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
PMOSIOHN
PMOSMAIN

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TABLE 1

DEFINITIONS OF TASK ID		
Number	Task ID	Definition
0	PUFR	Peripheral unit fault recovery.
1	TNFR_ISOL	Cost reduced Time Slot Interchange (TSI) fault isolation task ID.
2	SYNC_ISOL	Clock Synchronous (SYNC) unit fault isolation task ID.
3	DIFR_ISOL	Digital Interface Frame (DIF) / Digital Interface Frame-Export 1 (DIF-E1) frame fault isolation task ID.
4	SCSFR_ISOL	Service Circuit System (SCS) frame fault isolation task ID.
5	FRDIMREQ	Frame Request And Diagnostic Interface (FRDI) manual request task ID.
6	FRDILAUD	FRDI lamp audit interface.
7	FRDILAMP	FRDI lamp control task ID.
10	FRDIPCSC	FRDI power control switch task ID.
11	XTSI_PSC_FRDIPCSC	Expanded Time Slot Interchange (XTSI) Power Control Switch task ID
12	FRDIPRE	FRDI pre-diagnostic task ID.
13	FRDIPOST	FRDI post diagnostic task ID.
14	FRDISWCH	FRDI switch task ID.
15	TOPIC	Toll Peripheral Configuration Program (TOPIC) control task ID.
16	FERA_FREQ	Failure Error Analysis (FERA) FREQ task ID.
17	FERA_ROUTINE	FERA routine task analysis task ID.
20*	FERA_DF_AUDIT	FERA data file audit task ID.
21*	FERA_TST_RTN	FERA timed states task ID.
22*	FERA_DF_TIMEOUT	FERA data file timeout task ID.
23	BOOTCNTL	Bootstrap control task ID.
24	DIF_BOOTSTRAP	DIF or DIF-E1 bootstrap task ID.
25	SCS_BOOTSTRAP	Service Circuit System (SCS) bootstrap task ID.
26	DIF_PEST_UPDATE	Digital Interface Frame (DIF) pest update task ID.
27	SCS_PEST_UPDATE	SCS pest update task ID.
30*	DIFR_TIMED_AUDIT	DIF timed audit task ID.
31*	SCS_TIMED_AUDIT	SCS timed audit task ID.

NOTE: An asterisk (*) beside a task ID indicates a timed entry that the Peripheral Maintenance Operating System (PMOS) timed routine coordinator has scheduled to run routinely.

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TABLE 1 (continued)

DEFINITIONS OF TASK ID		
Number	Task ID	Definition
32	CLK_SWIP	Establish clock switch in progress task ID. (Applies only to DIF frames.)
33	RUN_ESTAB_CLK	Run establish clock task ID. (Applies only to DIF frames.)
34*	AUTON_MESSDISP	Autonomous message dispenser task ID.
35	MESSDISP_POLLING	Directed macro polling message dispenser task ID.
36	PMOS_TTY	Peripheral Maintenance Operating System (PMOS) Teletypewriter (TTY) input and output message task ID.
37	MEDIC_AUDIT	Message dispenser audit task ID.
40	TIMED_ENTRY	PMOS timed routine coordinator task ID.
41	DIF_PEST_APUFS	Task ID for pesting all Autonomous Peripheral Unit Failure (APUF) in all DIF frames.
42	DIF_PST_CLEANUP	Task ID for cleaning up pests in all DIF frames.
43	SCS_PST_CLEANUP	Task ID for cleaning up pests in all SCS frames.
44	SCS_PEST_APUFS	Task ID for pesting APUFs in all SCS frames.
45	DIF_UNPEST_BOVFL	Task ID for unpestering DIF buffer overflow.
46	SCS_UNPEST_BOVFL	Task ID for unpestering SCS buffer overflow.
47	DIFEPUMP	Task ID for pumping the DIF frames from 3B disk.
50*	UTIL_AUDIT	PMOS utilities audit task ID.
51	PREDFN_OD_ALARMS	FRDI pre-defined office-dependent alarm audit task ID.

NOTE: An asterisk (*) beside a task ID indicates a timed entry that the Peripheral Maintenance Operating System (PMOS) timed routine coordinator has scheduled to run routinely.

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TABLE 1 (continued)

DEFINITIONS OF TASK ID		
Number	Task ID	Definition
52	PARALLEL_DIF_POLLING	Task ID for parallel polling all Maintenance Buffer (MB) responses from DIF frames that resulted from sending a single macro.
53	PARALLEL_SCS_POLLING	Task ID for parallel polling all MB responses from SCS frames that resulted from sending a single macro.
54	SCS_ANN_UPD_RESP_HNDLR	Task ID of the SCS announcement update autonomous message dispenser response handler.
55	SCS_COPY_RESP_HNDLR	Task ID of the SCS disk copy utility autonomous message dispenser response handler.
56	SCS_FORMAT_RESP_HNDLR	Task ID for the SCS disk format utility autonomous message dispenser response handler.
57	SCS_DISK_COPY	Task ID for the SCS disk format utility Input / Output (I/O) interface.
60	SCS_DISK_FORMAT	Task ID for the SCS disk copy utility I/O interface.
61	SCS_DISK_LOAD	Task ID for the SCS disk load utility I/O interface.
62	SCS_DISK_DUMP	Task ID for the SCS disk load utility I/O interface.
63	SCS_START_3B_COPY	Task ID for the SCS start disk copy from 3B disk.
64	COPY3B_SCS_FILES	Task ID for the SCS copy from a 3B disk file to SCU disks.
65	SCS_CONTR_GEN_UPD	Task ID for the SCS controller generic update.
66	FERA_UNPEST_APUT	Task ID for unpestering Autonomous Peripheral Unit Trouble (APUT) in DIF and SCS frames.
67	SCS_BP_MEM_UTIL	Task ID for the SCS breakpoint and memory utility.

NOTE: An asterisk (*) beside a task ID indicates a timed entry that the Peripheral Maintenance Operating System (PMOS) timed routine coordinator has scheduled to run routinely.

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TABLE 1 (continued)

DEFINITIONS OF TASK ID		
Number	Task ID	Definition
70	SCS_BP_RESP_HNDLR	Task ID for the SCS breakpoint autonomous message dispenser response handler.
71	XTSI_BOOTCNTL	Task ID for XTSI bootstrap control.
72	XTSI_BOOTSTRAP	XTSI bootstrap task ID.
73	XTSI_PEST_UPDATE	XTSI pest update task ID.
74	PARALLEL_XTSI_POLLING	Task ID for parallel polling all MB responses from XTSI frames that resulted from sending a single macro.
75	XTSI_DISK_COPY	Task ID for XTSI disk copy I/O utility interface.
76	XTSI_DISK_DUMP	Task ID for XTSI disk dump I/O utility interface.
77	XTSI_DISK_LOAD	Task ID for XTSI disk load I/O utility interface.
100	XTSI_START_3B_COPY	Task ID for the XTSI start copy from the 3B disk.
101	COPY3B_XTSI_FILES	Task ID for the XTSI copy from a 3B disk file to flash memory.
102	XTSI_START_GEN_UPD	Task ID for XTSI start generic update.
103	XTSI_READ_CONTR_MEM_UTIL	Task ID for XTSI read controller memory I/O utility.
104	XTSI_WRITE_CONTR_MEM_UTIL	Task ID for XTSI write controller memory I/O utility.
105	XTSI_READ_PSC_MEM_UTIL	Task ID for XTSI read (PSC) (D3U, SPU, IBU subunit) memory I/O utility.
106	XTSI_WRITE_PSC_MEM_UTIL	Task ID for XTSI write PSC (D3U, SPU, IBU subunit) memory I/O utility.
107	XTSI_BP_UTIL	Task ID for XTSI breakpoints utility.
110	XTSI_ORD_LPBK	Task ID for XTSI DS1/DS3 loopback utility.
111*	XTSI_AUDIT_LPBK	Task ID for XTSI timed audit loopback.
112	XTSI_DIAG_REQ	Task ID for XTSI diagnostic request.
113	DIF_INITDG	Task ID for initializing digroups on a DIF.

NOTE: An asterisk (*) beside a task ID indicates a timed entry that the Peripheral Maintenance Operating System (PMOS) timed routine coordinator has scheduled to run routinely.

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TABLE 1 (continued)

DEFINITIONS OF TASK ID		
Number	Task ID	Definition
114	XTSI_FILE_COPY	Task ID for XTSI file copy.
115	XTSI_FILE_DUMP	Task ID for XTSI file dump.
116	XTSI_FILE_LOAD	Task ID for XTSI file load.
117	XTSI_PEST_APUFS	Task ID for updating APUF pests for all XTSI frames.
120	XTSI_PST_CLEANUP	Task ID for the cleanup of APUF pests for all XTSIs.
121	Internal PMOS task ID (not available for use)	Task ID designated as a spare task by the PMOS task table program.
122	Spare TASK ID	Spare PMOS task ID slot available for future use.
123	Spare TASK ID	Spare PMOS task ID slot available for future use.
124	XTSI_SPU_MULTI_RRES	TASK ID for multiple re-restore of SPUs (updating configuration data)
125	Spare TASK ID	Spare PMOS task ID slot available for future use.
126	Spare TASK ID	Spare PMOS task ID slot available for future use.
127	XTSI_UPDATE_PSC_PARMS	XTSI update PSC parameters request task ID
130	XTSI_PM_24HR_SYNC	XTSI PM 24HR synchronize request task ID
131	XTSI_SU_ODA_AUD	XTSI subunit Office Data Administration (ODA) audit task ID
132*	XTSI_SCHED_SU_ODA_AUD	XTSI schedule subunit ODA audit task ID
133	XTSI_UNPEST_APUT	Task ID for unpesteing APUT in XTSI frames.

NOTE: An asterisk (*) beside a task ID indicates a timed entry that the Peripheral Maintenance Operating System (PMOS) timed routine coordinator has scheduled to run routinely.

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ID OP:SDC
WORK CENTER.. MOC, TEC, TOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

[1] OP:SDC (DIF/XTSI SERVICE DEGRADING SUMMARY)
[a]
[DIF b c% (d/e DIU[S]) [--[f]g DUPLEX FAILED]
.
.
[XTSI h i% (j/k D3U[S]) [--XTSI DUPLEX FAILED]]
.
.
[XTSI h l% (m/n SPU[S]) [--XTSI DUPLEX FAILED]]
.
.
TOTAL = o% OFFICE DIUS SERVICE DEGRADED (p OUT OF q)
PLUS r% OFFICE D3US SERVICE DEGRADED (s OUT OF t)
AND u% OFFICE SPUS SERVICE DEGRADED (v OUT OF w)]

[2] OP:SDC (SERVICE DEGRADING CONDITIONS)
[a]
[x y z a1
.
.
.]

2. REASON FOR OUTPUT

To output the service degrading failures that could affect 120 or more trunks. It is printed hourly and can be requested manually via the OP:SDC input message or via the "SERVICE DEGRADING FAILURE" key at the Master Control Complex (MCC).

Format [1] prints a summary of the number of Digital Interface Units (DIUs) for each Digital Interface Frame (DIF). It also prints a summary of the number of Digital Signal Level 3 Units (D3Us) and Signal Processing Units (SPUs) for each Expanded Time Slot Interchange (XTSI) frame.

Format [2] has a list of each service degraded unit including a detailed list of each troubled unit on a DIF and/or a XTSI.

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NOTE: Other DIFs not listed may also be in duplex failed due to associated hardware being out-of-service, i.e., Time Slot Interchanges (TSIs).

3. VARIABLE FIELD DEFINITIONS

a	Status: BUFFER OVERFLOW — If more units are service degrading than can be printed. NONE — If no service degrading conditions exist.
b	Member number of the DIF.
c	Percentage of DIUs for a given DIF in a service degraded condition.
d	Number of DIUs for a given DIF in a service degraded condition.
e	Total number of DIUs for a given DIF.
f	Number of DIF subunits.
g	Additional associated equipment causing DIU service degrading conditions.
DUPLEX FAILED	If number of subunits is equal to ALL the operational subunits on a given DIF/XTSI.
h	Member number of the XTSI.
i	Percentage of D3Us for a given XTSI in a service degraded condition.
j	Number of D3Us for a given XTSI in a service degraded condition.
k	Total number of D3Us for a given XTSI.
l	Percentage of SPUs for a given XTSI in a service degraded condition.
m	Number of SPUs for a given XTSI in a service degraded condition.
n	Total number of SPUs for a given XTSI.
o	Percentage of DIUs in a service degraded condition for a given office.
p	Total DIU(s) in service degrading condition.
q	Total number of DIUs for a given office.
r	Percentage of D3Us in a service degraded condition for a given office.
s	Total D3U(s) in service degrading condition.
t	Total number of D3Us for a given office.
u	Percentage of SPUs in a service degraded condition for a given office.
v	Total SPU(s) in service degrading condition.

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w	Total number of SPUs for a given office.
x	Type of unit being reported as service degrading.
y	Member number of unit being reported.
z	The type of subunit being reported as service degrading.
a1	The submember number of the subunit being reported as service degrading.

4. ACTION TO BE TAKEN

Since a loss of call handling capacity has occurred, repair listed units and restore to service as soon as possible.

5. REFERENCES

PIDENT
PUCNAUDS
SDEGRPRT

Input Message
OP:SDC

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ID OP:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] OP:TSIBP XTSI a COMPLETE
NONE
- [2] OP:TSIBP XTSI a COMPLETE
CONTR b c
[d]
- [3] OP:TSIBP XTSI a e
- [4] OP:TSIBP XTSI a D3U f COMPLETE
NONE
- [5] OP:TSIBP XTSI a D3U f COMPLETE
b c
- [6] OP:TSIBP XTSI a D3U f g
- [7] OP:TSIBP XTSI a D3U f d
- [8] OP:TSIBP XTSI a SPU h COMPLETE
NONE
- [9] OP:TSIBP XTSI a SPU h COMPLETE
b c
- [10] OP:TSIBP XTSI a SPU h g
- [11] OP:TSIBP XTSI a SPU h d
- [12] OP:TSIBP XTSI a IBU 0 COMPLETE
NONE
- [13] OP:TSIBP XTSI a IBU 0 COMPLETE
b c
- [14] OP:TSIBP XTSI a IBU 0 g
- [15] OP:TSIBP XTSI a IBU 0 d
- [16] OP:TSIBP XTSI a ALL COMPLETE
NONE

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- [17] OP:TSIBP XTSI a ALL COMPLETE
[CONTR b c]
[CONTR d]
[CONTR e]
[D3U f b c] [SPU h b c] [IBU 0 b c]
[D3U f d] [SPU h d] [IBU 0 d]
[D3U f g] [SPU h g] [IBU 0 g]
- [18] OP:TSIBP XTSI a ALL e
- [19] OP:TSIBP XTSI a SUM COMPLETE
NONE
- [20] OP:TSIBP XTSI a SUM COMPLETE
[CONTR]
[D3U f]
[SPU h]
[IBU 0]
- [21] OP:TSIBP XTSI a SUM e

2. REASON FOR OUTPUT

This message prints in response to an OP:TSIBP input message.

Formats [1-3] is output if the input request specified that all breakpoints of a Expanded Time Slot Interchange (XTSI) simplex controller or duplex controllers be listed.

Formats [4-11] is output if the input request specified that all breakpoints of a Digital Signal Level 3 Unit (D3U) be listed.

Formats [8-11] is output if the input request specified that all breakpoints of a Signal Processing Unit (SPU) be listed.

Formats [12-15] is output if the input request specified that all breakpoints of a In-Band Unit (IBU) be listed.

Formats [16-18] is output if the input request specified that all breakpoints of an XTSI frame (controllers and D3Us) be listed.

Formats [1-18] give the instruction Random Access Memory (RAM) address and type for each breakpoint listed.

Formats [19-21] are output if the input request specified a summary breakpoint listing only. The summary only lists those units (including the controller) that have one or more breakpoints. May result in more than one output message depending on the amount of data to be printed.

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3. VARIABLE FIELD DEFINITIONS

- a XTSI member number in decimal.
- b The address of the breakpoint in hexadecimal.
- c Breakpoint type:
CUSTOM
FAST
NORMAL
- d Summary data fail code:
FAILED - INCONSISTENT DATA The controller summary data word is inconsistent with the breakpoint data from the hardware (controller, D3U, SPU or IBU). The summary data word indicates the unit has a breakpoint and no breakpoint data was reported by the unit. Because of the data inconsistency, the breakpoints listed are suspect. Contact the Technical Assistance Center for further information.
- e Controller request code:
ABORTED - FRAME ERROR —Request for the given XTSI was aborted because of an error returned from the frame. Contact the Technical Assistance Center for further information.
COMPLETE —All breakpoints have been removed from the controller.
DENIED - INV TSI TYPE OR UNEQ —Request denied because only an XTSI can be specified, or the frame is unequipped, in growth, or special growth state.
DENIED - ODD TSI MEMBER —Request denied because only the even member number can be specified.
DENIED - TSI DUPF —Request denied because the frame is duplex failed.
DENIED - TSI LOM —Request denied because the a frame controller is in Listen Only Mode (LOM). Retry later, as this condition should be cleared quickly.
- f D3U number in decimal.
- g D3U, SPU or IBU request status code:
ABORTED - MACRO ERROR —Request was aborted because the given D3U, SPU or IBU failed in processing the list command. Contact the Technical Assistance Center for further information.

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ABORTED - MACRO REJECTED — Request for the given D3U, SPU or IBU was aborted because the XTSI frame rejected the list command. Contact the Technical Assistance Center for further information.

ABORTED - MACRO TIMEOUT — Request for the given D3U, SPU or IBU was aborted because the XTSI frame did not reply to the list command within the allotted time limit. Contact the Technical Assistance Center for further information.

ABORTED - FRAME ERROR — Request for the given D3U, SPU or IBU was aborted because of an error returned from XTSI frame. Contact the Technical Assistance Center for further information.

COMPLETE — All breakpoints have been removed from the D3U, SPU or IBU.

DENIED - INV TSI TYPE OR UNEQ — Request denied because an XTSI was not specified, the frame or the D3U, SPU or IBU was unequipped, in growth, or special growth state.

DENIED - ODD TSI MEMBER — Request denied because only the even member number can be specified.

DENIED - SUBUNIT IS OOS — Request for the given D3U, SPU or IBU was denied because the D3U, SPU or IBU is out of service.

DENIED - TSI LOM — Request denied because the a frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.

DENIED - TSI DUPF — Request denied because the frame is duplex failed.

h SPU number in decimal.

4. REFERENCES

PIDENT
XTSIBKPT

Input Message
CLR: TSIBP
OP: TSIBP
SET: TSIBP

Output Message
CLR: TSIBP
REPT: TSIBP
SET: TSIBP

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ID REPT:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E,1A-APS,1B
TYPE Output

REPT:0 - User Index

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4ESS
OM-4B000-01

REPT:

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REPT:0-4

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March 1999

1. FORMAT

```

REPT: a  bbbbbbbb MFNUM=cccccccc MICON=dddddddd e
LV=ffff D0=gggggggg D1=hhhhhhhh D2=iiiiiii D3=jjjjjjjj
k
llll m [n o p q r s t u]
. . . . .
. . . . .
. . . . .
llll m [n o p q r s t u]
DATA: v
. .
. .
. .
DATA: v

```

2. REASON FOR OUTPUT

To report the occurrence of an interrupt or other action requiring intervention by maintenance recovery. An interrupt or interject is determined by circuits built into each frame and CC. These circuits recognize a problem and report it to the CC over a private communication path. There are two types of REPT messages: full and abbreviated. The full REPT message not only reports the level of difficulty but specific trouble occurrences via the action lines and data blocks. The abbreviated REPT message prints only one line of information concerning the interrupt with a full REPT message to follow. The abbreviated messages are listed in the Table of Contents and are found at the end of this message.

3. VARIABLE FIELD DEFINITIONS

The full REPT message can be broken down into four parts: information block, action line, entry action line, and data block. A REPT message has one interrupt information block, zero or more action lines, zero or more summary action lines, and zero or more data blocks. (A sample REPT message is shown in Figure 1.) In the REPT message, the information block, the action line and the entry action line are defined in the following paragraphs. The data blocks are listed alphabetically, according to the first word following DATA:.

- a Level or type of interrupt or interject. See TABLE A for the list of possible values.
- b Program address where processing was interrupted. If the interrupt was initiated by a maintenance interrupt (levels A-F and K), the contents of the current address register are printed. For all other levels (i.e., INTERJECT, BASE LEVEL, and ERROR STOP), the contents of the stack register are printed.
- c Maintenance file number (MFNUM) in octal. It identifies the interrupt in a particular sequence of maintenance actions, starting from the point of interruption to resumption of call processing. The same MFNUM can be found in several nonsequential messages if these messages are reporting on the same interrupt. For example, if the sequence of a maintenance interject program was interrupted by a D-LEVEL and a B-LEVEL, the sequence would be identified by a single MFNUM value.

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d

This value is used to retrieve the data stored by error analysis for that particular sequence of actions.

Maintenance interrupt control (MICON) word (MI1CONT). It indicates actions taken by the maintenance restart program (MARP):

Bit	MARP Control Action Taken
00	MARP return to reference point
01	MARP return by rolling back to intermediate level
02	MARP return by rolling ahead to intermediate level
03	Audit in progress flag
04	In restart flag
05	CCs have been switched
06	A pump of CS(s) has been performed
07	A pump of PS(s) has been performed
08	No back-up area has been zeroed
09	A phase (indicated in MI1PHASEPT) has been requested
10	A pulse source B-level has occurred
11	An out-of-range pulse source B-level
12	An out-of-range call store D-level
13	An out-of-range program store E-level
14	An out-of-range peripheral F-level
15	Request hash sum of area indicated in MI1HASHADRS
16	A MTCE phase record is to be formed by ERAP
17	A software error has occurred
18	An invalid interrupt has occurred
19	A call store was copied with minimal errors
20	A call store duplex failure occurred
21-22	Application work flags
23	Print audit message

e

Status of the message partition:

- COMPLETED — (Message completed). This message has only one part.
- MSG STARTED — (Message started). This message is part of a partitioned interrupt and eventually will be followed by zero or more MSG IP parts and one MSG COMPL part.

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MSG IP — (Message in progress). This message is part of a partitioned interrupt and eventually will be followed by a MSG COMPL part. An interrupt may have zero or more MSG IP parts.

MSG COMPL — (Message completed). This message is the final part of a partitioned interrupt.

f An octal number identifying the maintenance interrupt levels that have occurred from the first interrupt to the resumption of processing. Each bit set indicates a particular level of interrupt.

Bit	Level of Interrupt
00	A-level interrupt
01	B-level interrupt
02	C-level interrupt
03	D-level interrupt
04	E-level interrupt
05	F-level interrupt
06	Error stop
07	K-level interrupt
08	Interject
09	Base level maintenance

g Source data word (D0) collected. Each bit within this octal number indicates a block of data that has been collected and will be saved by error analysis.

Bit	Source data collected
00	PCRV tests run and hash sum results
01	MAC control memory
02	D-level software failure results
03	CSFR identification data
04	CSFR test results
05	Common auxiliary unit data
06	Supplementary auxiliary unit data
07	Unique file store or API data
08	CCFR interrupt data
09	B-level standby CC registers
10	Internal DUS registers and test results

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- 11 PSFR identification data
- 12 PSFR test results
- 13 E-level software failure results
- 14 C-level interrupt bin (active CC)
- 15 C-level interrupt bin (standby CC)
- 16 Active CC fail data
- 17 Standby CC fail data
- 18 File store error correction data
- 19 I/O status and internal data
- 20 I/O operational failure data
- 21 Call store progression table
- 22 Program store progression table
- 23 Contents of stack

h Fault recognition data (D1). Each bit within this octal number indicates a block of data that has been collected by fault recognition and saved by error analysis.

Bit	Meaning
00	Supplementary error data
01-04	Unused
05	EST last-look store memory
06	EST critical registers
07-11	Unused
12	Digroup terminal critical registers
13	VIF critical register
14	CCIS critical registers
15	Invalid interrupt internal registers
16	H-level CC registers
17	J-level CC registers
18	Network clock data
19	TMS critical registers
20	TSI critical registers
21	SP internal registers

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	22	Peripheral fault recognition results
	23	Error analysis (ERAT) recent history table
i		Fault recognition data (D2). Each bit within this octal number indicates a block of data that has been collected by fault recognition and saved by error analysis.
	Bit	Meaning
	00	Peripheral system data
	01	Interrupt source data
	02	Fault recognition isolation data
	03	Error analysis (ERAT) strategy data
	04	Auxiliary data
	05	Digital interface frame (DIF) critical registers
	06	Unused
	07	Service circuit system (SCS) critical registers
	08	Unused
	09	SCLK critical registers (SCLK)
	10-23	Unused
j		Source data collected (D3). Each bit within this octal number indicates a block of data that has been collected and will be saved by error analysis.
	Bit	Meaning
	00	Unique MUP data
	01	MUP internal raw data
	02	Common IFB recovery data
	03	Unique SSD data
	04	XPWR internal data
	05	Active IFBC stack
	06	Standby IFBC stack
	07	Active CC execution pipeline history
	08	Standby CC execution pipeline history
	09	Active CC bus node data part 1
	10	Active CC bus node data part 2
	11	Active CC bus node data part 3

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	12	Active CC bus node data part 4
	13	Standby CC bus node data part 1
	14	Standby CC bus node data part 2
	15	Standby CC bus node data part 3
	16	Standby CC bus node data part 4
	17	
	18	IFB bootstrap failure data
	19	Invalid G-Level data
	20	XA window information
k		Entry action line. Test phase that lists the type of interrupt, unit type, and member number of the unit (optional item).
l		PIDENT that is the source of action taken.
	Originator	Full PIDENT Name
	APFR	Attached processor fault recognition
	AUFR	1B Processor auxiliary unit fault recognition
	BBFR	Babbling bus fault recovery
	CCFR	Central Control fault recognition
	CCIS	Common channel interoffice signaling fault recovery
	CLFR	Clock fault recovery
	CSFR	Call store fault recognition
	DIFR	DIF fault recovery
	DTFR	Digroup terminal fault recognition
	DUFR	Data unit fault recognition
	ERAP	1B processor error analysis
	ERAT	Error analysis program - toll
	ESFR	EST error recovery
	FERA	Restructured error analysis program - toll
	FSFR	File store fault recognition
	IOCP	Input/output control program
	IFFR	Interface bus fault recovery
	LINK	
	MARP	1B processor maintenance restart program

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	MCAI	Master control complex A-level interrupt program
	MCCM	Master control complex main program
	MCFR	MCC and utility processor fault recovery
	NCFR	Network clock fault recognition
	PBFR	Peripheral unit bus fault recognition
	PCRVR	Processor configuration recovery program
	PFLR	1B Processor F-level fault recovery program
	PSFR	Program store fault recovery
	SCFR	System clock fault recognition
	SCSF	Service circuit system fault recovery
	PUCF	PUC fault recovery
	SCFR	System clock fault recognition
	SDFR	Scan and signal distributor fault recovery
	SIRE	System interrupt recovery program
	SPFR	Signal processor fault
	TNFR	Time division switching network fault recognition
	TOPC	Toll peripheral configuration program
	VCFR	Voiceband interface controller fault recovery
	WPAD	Write protect administration program
	XPWR	Miscellaneous power fault recovery
m		Description of the action taken. Refer to TABLE B for some of possible values, but it is only a partial listing.
n		Unit type involved in the action (optional item).
o		Member number of the unit type (optional item displayed if n is printed).
p		Subunit type of the unit type that was involved (optional item).
q		Member number of the subunit type. (Optional item displayed if p is printed.)
r		Unit type that has been selected to help in diagnosing the involved unit type (optional item).
s		Member number of the helper unit type (optional item).
t		Subunit type of the helper unit type (optional item).
u		Member number of the helper subunit type (optional item).

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v

Data block. Each data block is a dump of data in the report. If this information is generated by the report, one or more data blocks are printed. The first data block pertains to the interrupt level (variable a). Any other data blocks printed in this message represent data collected by the fault recognition programs. Refer to the Table of Contents for a listing of data blocks and their page numbers. See TABLE C for a listing of commonly used prefixes for data block words. See TABLE D for a list of commonly used abbreviations of registers and locations used in data blocks.

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INTERRUPT INFORMATION BLOCK	REPT: INTERJECT 15315501 MFNUM=00000371 MICON=00000002 MSG IP LV=0400 D0=00000000 D1=00000000 D2=00000057 D3=00000000
ENTRY ACTION LINE	INTERJECT FROM DIF 21
ACTION LINE	DIFR RESOLVED ERROR DIF 21 DIU 15 DIFR RECOMMENDED FORCE REMOVAL DIF 21 DIU 15 DIFR RECOMMENDED DIAGNOSTICS DIF 21 DIU 15 DIFR RECOMMENDED CLEANUP DIF 21 FERA FORCE REMOVED DIF 21 DIU 15 FERA SCHED DGN DIF 21 DIU 15 FERA SCHED CLEANUP OF DIF 21
DATA BLOCKS	DATA: INTERJECT 06020000 DATA: PERIPHERAL SYSTEM DATA 23026716 60010006 00000006 00000000 00000000 00000032 50010063 00000032 00010063 03600001 03600001 03600001 03600001 DATA: INTERRUPT SOURCE DATA 00000040 07615711 01252000 00000001 10000000 DATA: FAULT RECOGNITION ISOLATION DATA 00000031 00000000 00000241 00000000 00000003 00000000 DATA: ERROR ANALYSIS STRATEGY DATA 00002025 60231017 00500302 00004642 00002025 31003101 00000000 00030000 00003241 01000000 00000000 01000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 12134636 12347302 12345756 14332334 00000371 00000064 00100000 00000000 00001604

Figure 1 Sample of REPT:0 Output Message.

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TABLE A
INTERRUPT LEVELS AND INTERJECTS

Variable a	Cause
A-LEVEL	Manual request for reconfiguration or program request.
B-LEVEL	Hardware or software problem of system sanity.
C-LEVEL	Hardware problem in a central control (CC) frame.
D-LEVEL	Hardware problem in a call store (CS) or auxiliary unit (AU). Software problem found by CS or AU fault recognition programs.
E-LEVEL	Hardware problem in program store (PS). Software problem found by PS fault recognition program.
F-LEVEL	Hardware problem with peripheral unit bus (PUB) frames.
K-LEVEL	Software problem caused by a program unit using too much CC time. Normally, each program unit is allowed 3 ms. to execute. A K-level interrupt occurs after 10 ms. has elapsed without the interject timer being reset.
BASE LEVEL MAINT	Usual maintenance operation - lowest level.
ERROR STOP	Software problem generated by a program that has transferred to an invalid address.
INTERRUPT	Invalid interrupt condition or any invalid hardware state. For all cases except Invalid G-Level, only the interrupt information block (see Figure 1) is printed. This message does not require any action to be taken.
INTERJECT	Deferred (up to 10 ms.) maintenance action on the frame. Hardware problem in auxiliary unit or autonomous peripheral unit.

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TABLE B
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
1B FILE ACCESS DUPLEX FAILED	1B processor has software duplex failed the 1B file on the 3B computer.
3B REQUESTS DUPLEX FAIL OF 1B FILE	3B detected non-recoverable software problem with 1B file. Requested 1B processor to software duplex fail the 1B file.
ABORTED CONFIGURATION OF	A configuration was requested by error analysis.
ABORTED REMOVED OF	A remove requested by error analysis was aborted.
ABORTED RESTORE OF	A restore requested by error analysis was aborted.
ABORTED SWITCH ON	A switch function requested by error analysis was aborted.
ATTEMPTED ISOLATION	Indicates first unit fault recovery (FR) thought was at fault.
BOOTSTRAP	The unit(s) indicated was bootstrapped to obtain a working system.
BOTH OOS REMOVED	The last in service was removed, and now both units are out-of-service.
CNI BUFFER INITIALIZATION REQUEST	A request has been made to initialize the CNI message buffer pointers.
CONFIGURED	A change in configuration isolated the fault from the operating system, no unit was removed from service. The unique fault recovery task routine in APFR has configured the indicated API.
CONFIGURE DENIED	Attempted reconfiguration denied by error analysis.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
COPIED HARD TO SOFT	Error analysis requests an update of the software status from the hardware status.
COPIED SOFT TO HARD	Error analysis requests an update of the hardware from the software status.
DETECTED A GROWTH UNIT	Unit was in growth or special growth.
DETECTED AN UNEQUIPPED UNIT	Unit was not equipped.
DETECTED CNI OUTGOING BUFFER OVERFLOW	The CNI outgoing buffer overflowed. Messages bound for the CNI Ring were rejected.
DETECTED CNI STREAM TROUBLE	A fault has been detected in the CNI message stream.
DIAGNOSTICS NOT REQUESTED	If a program store (PS) or a call store (CS) number is given, then the error count for that store is excessive and diagnostics on that store have not been requested. If no member number is given, then the interrupt with bootstrap count is excessive and no diagnostics have been requested on any stores, buses, or on the central control (CC). Also, see the REPT:EXCS-BOOT output message for more information about this condition. That message may indicate the need for further investigation into the cause of the problem.
DUPLEX FAILED	Error analysis requests a duplex fail.
DUPLEX FAILED	APS unit failed.
FNCTSUBS DETECTED MESSAGE TROUBLE	Function SUBS messages are not completing in allotted time.
FORCE REMOVED	Error analysis requests a force remove.
FRBLM	Base level maintenance on UTMN.
FRINJ	Interject from UTMN.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
GROWTH UNIT	Fault occurred on a growth unit.
INCONCLUSIVE	No reason for the error which caused the fault recovery system to be entered could be found.
INITIALIZED COMMUNICATION BUFFERS	The APS communication buffers have been initialized on the 1B and 3B computers.
INH SCSLAN	Inhibit SCS frame - LAN communication.
INHIBIT CC INT.	The only means by which the failure could be prevented from further disturbing normal processing was to inhibit the associated internal source in the CC.
INT. INHIBITED	The only means by which the failure could be prevented from further disturbing normal processing was to inhibit failure detection at the unit from which the error was received.
INT. INHIBITED DENIED	Attempted interrupt inhibit denied by error analysis.
INTERNAL ERROR	Invalid data was found.
LIM DETECTED SOFTWARE RECOVERY REQUEST	The link integrity monitor (LIM) received a software recovery request from the 3B computer.
LIM ERROR: BAD STATUS	The link integrity monitor (LIM) has determined that the status for the APS is incorrect. No active API was found or both APIs were active; refer to BLM error word in data block.
LINK INTEGRITY MONITOR TROUBLE	The LIM has found a problem on the 1B or 3B computer; refer to BLM error word in data block.
LINK INTEGRITY TROUBLE	APS communication link was found to be faulty.
MATRIX INHIBIT	The fault detection capability in each signal processor's controllers for the simplex matrix was inhibited.
MESSAGE HANDLER ERROR	The message handler has found an error; refer to data block.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
NO ACTION	No action taken.
NO ERROR FOUND	No error found.
PESTED	Error analysis requests a pest function.
PROTECTED AREA FAILURE	A program error in which a store-secure was directed to a nonsecure address or a store instruction was directed to a secure address.
RECOMMENDED CLEANUP	Fault recovery requested a cleanup.
RECOMMENDED COPY HARDWARE TO SOFTWARE	Fault recovery requested the software status to be updated from the hardware status.
RECOMMENDED COPY SOFTWARE TO HARDWARE	Fault recovery requested the hardware status to be updated using the software status.
RECOMMENDED DIAGNOSTICS	Fault recovery requested a diagnostic
RECOMMENDED DGN WITH OPTIONAL PHASE	Fault recovery requested a diagnostic with optional phases.
RECOMMENDED DUPLEX FAIL	Fault recovery requested a unit to be duplex failed.
RECOMMENDED FORCE REMOVAL	Fault recovery requested a force removal.
RECOMMENDED NO ACTION	No action performed.
RECOMMENDED NORMAL REMOVAL	Fault recovery asked for a remove.
RECOMMENDED PERIPHERAL UNIT STATUS AUDIT	Fault recovery requested a peripheral unit to be scheduled.
RECOMMENDED PEST UPDATE	Fault recovery requested a pest update.
RECOMMENDED PESTING	Fault recovery requested a pesting function.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
RECOMMENDED REMOVAL LOM	Fault recovery requested a remove to listen-only mode.
RECOMMENDED REMOVE SUBJECT REMOVE MATE	Fault recovery requested both subunits to be removed.
RECOMMENDED REMOVE SUBJECT RESTORE MATE NOT UPDATED	Fault recovery requested the specified SUTMN to be removed and the mate to be restored.
RECOMMENDED REMOVE SUBJECT RESTORE MATE UPDATED	Fault recovery requested the hardware status be updated using the software status.
RECOMMENDED RESTORE	Fault recovery requested the subject be restored.
RECOMMENDED RESTORE NO UPDATE	Fault recovery requested a restore with no memory updates.
RECOMMENDED RESTORE SUBJECT REMOVE MATE LOM	Fault recovery wants the specified SUTMN to be restored and its mate removed to the listen-only mode.
RECOMMENDED RESTORE WITH UPDATE	Fault recovery requested a restore with memory updates.
RECOMMENDED RETRY ON	Fault recovery requests a retry.
RECOMMENDED SWITCH	Fault recovery requested a switch.
RECOMMENDED ZAP AND ZERO START MATE	Fault recovery requested a zap and zero start function.
REMOVED	Error analysis requests a remove or unit was removed.
REMOVED LOM	Error analysis requests a remove to listen-only mode.
REMOVED AND REQUESTED DIAGNOSTICS	Unit was removed and diagnostic requested.
REMOVED DENIED	Attempted removal denied by error analysis.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
REMOVED MATE AND RESTORED	The last of a duplicate pair of controllers was found faulty. The other controller was out-of- service, but was forced in-service so the faulty mate could be removed.
REMOVED STANDBY	A fault from the standby API has resulted in the removal of the API.
REQ CLEANUP OF	Error analysis requested a cleanup.
REQ NO ACTION	Error analysis recommends that no action be taken.
REQUESTED INITIALIZATION APDRV	A request was made to initialize APDRV.
REQUESTED 3B BOOT	A request was made to boot the 3B processor.
REQUESTS NO ACTION	Error analysis requests no action be taken.
REQUESTS REMOVAL	Error analysis requests removal.
REQUESTS RESTART	Error analysis requests a restart.
REQUESTS RESTORAL	Error analysis requests a restoral.
REQUESTS RMV & DGN	Error analysis requests removal and diagnostic restoral.
RESOLVED ERROR	Unit that the error was really in.
RESTORED	Error analysis requests a restore or unit was restored.
RESTORE DENIED	Attempted restoral denied by error analysis.
RETRY FAILED	Retry requested by error analysis was unsuccessful.
RETRY PASSED	Retry requested by error analysis was successful.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
RMVD BOTH MATE &	Error analysis requests both the specified SUTMN and its mate be removed.
RMVD & DEF RST	Error analysis requests a removal and deferred restoral.
RMV MATE LOM & RST	Error analysis requests the specified SUTMN be restored and its mate removed to listen-only mode.
RST MATE UPD & RMVD	Error analysis requests the specified SUTMN to be removed and its mate updated and restored.
RST MATE NO UPD & RMVD	Error analysis requests the specified SUTMN to be removed and its mate restored.
RST NO UPDATE	Error analysis requests a restore with no memory updates.
RST WITH UPDATE	Error analysis requests a restore with memory updates.
SADK ERROR:	The disk system audit program has found an error; refer to BLM error word in data block.
SCHED DGN	Error analysis requests a diagnostic.
SCHED DGN & OPT PHASES	Error analysis requests a diagnostic to be run with optional phases.
SCHED PERIPH UNIT STATUS AUDIT	Error analysis requested a peripheral unit audit to be run.
SCHED ZSTART	Scheduled zero start of mate.
SCHED PEST UPDATE	Error analysis requests a pest update.
SOFT ERROR	A program error caused the failure.
STOPPED CONFIGURATION OF	A configuration requested by error analysis was stopped.

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TABLE B (continued)
MOST FREQUENTLY PRINTED ACTION TAKEN

Action	Meaning
STOPPED REMOVE OF	A remove requested by error analysis was stopped.
STOPPED RESTORE ON	A restore requested by error analysis was stopped.
STOPPED SWITCH ON	A switch requested by error analysis was stopped.
STORE DATA PARITY FAILURE	Store error is a result of a parity failure only.
SWITCHED	Error analysis requests a switch function.
SWITCH REMOVED API a	APFR switched the standby API to active and the active API was removed to out of service.
TRANSIENT	The faulty condition was found to be transient.
UNEQ UNIT	Fault occurred on unequipped unit.
UNIQUE TROUBLE	AUFR has determined that the problem exists in a unique AU unit.
UNIQUE TROUBLE	The unique fault recovery task routine in APFR has been called to recover the APS; see the recovery information word in the data block to determine which recovery actions were taken.
UNIQUE TROUBLE: BAD STATUS	The unique fault recovery task routine in APFR has discovered a bad status for APS.
UNRESOLVED ERROR	Fault recovery could not find the problem.
UPDATED STATUS	Error analysis updated status to correct fault.
WRITE PROTECT VIOLATION	A program has attempted to write into an address range in a 256K store that is write-protected by the write protect administration program.
ZSTART MATE & ZAPED	Error analysis requests a zap and zero start function.

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TABLE C
COMMONLY USED WORD PREFIXES

Prefix	Meaning
AC1	Active CC address
AU1	Core storage location for auxiliary unit data
CS1	Core location for stack and call store results
DC1	Core storage location for file store data
DS1	Core storage location for file store data
FS1	Core storage location for File Store Data
IB1D_	Core storage location for D-levels
IB1E_	Core storage location for E-levels
IB1F_	Core storage location for F-levels
IN1	Internal CC address
MA1	Core storage location for MAC control memory
PC1	Processor configuration data
PU1	Peripheral unit data
ST1	Standby CC address

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TABLE D
COMMONLY USED ABBREVIATIONS OF REGISTERS AND LOCATIONS

	AC1 prefix = Active CC register
	ST1 prefix = Standby CC register
	IN1 prefix = Internal CC register
	(H) suffix = High order 8 bits
	(L) suffix = Low order 24 bits
Prefix	Meaning
ABC	Auxiliary buffer control
ABL	Auxiliary buffer order word, left
ABR	Auxiliary buffer order word, right
ACR	Auxiliary current address register
ACT	Auxiliary activity register
AP	Address parity register
ASA	Interrupt return store A
ASB	Interrupt return store B
ASC	Interrupt return store C
ASD	Interrupt return store D
ASE	Interrupt return store E
ASF	Interrupt return store F
ASG	Interrupt return store G
ASH	Interrupt return store H
ASJ	Interrupt return store J
ASK	Interrupt return store K
BOL	Buffer order word, left
BOR	Buffer order word, right
BPS	Buffer pulse source
BR	Buffer (B) register
BRS	Buffer register shadow
BRW	Buffer register wraparound
BS0	CC RAM location 0
BS1	CC RAM location 1
BS2	CC RAM location 2
BS3	CC RAM location 3
BS4	CC RAM location 4
BS5	CC RAM location 5
CAR	Current address register
CCS	Bus control status
CES	CC error summary
CFA	Current fetch address register
CLE	Clock error detect and status
CR00	Control read store data register (even)

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TABLE D (continued)
COMMONLY USED ABBREVIATIONS OF REGISTERS AND LOCATIONS

Prefix	Meaning
CR01	Control read store configuration and error source register
CR10	Control read store status register
CR11	Control read store data register (odd)
CRAL	Control store address loop-around
CSC	Central control status flip-flops
CUI	Utility bus interface register
CW00	Control write store data register (even)
CW01	Control write store configuration register
CW10	Control write store write-protect control
CW11	Control write store data register (odd)
D00	DIR 0 control, segment 0
D01	DIR 0 control, segment 1
D02	DIR 0 control, segment 2
D10	DIR 1 control, segment 0
D11	DIR 1 control, segment 1
D12	DIR 1 control, segment 2
DAR	Data address register
DLR	Delay-limited-run register
EPS	Execution pipeline state
ER	Peripheral unit enable (E) register
FCE	IFBC client enable
FCT	IFBC control register
FEE	IFBC error enable
FER	IFBC error request
FES	IFBC error source register
FIP	IFBC interrupt/interject poll
FIS	Fetch-index state register
FLA	IFBC last transfer address
FLD	IFBC last transfer data
FLT	IFBC last transfer type
FR	F register
FRL	IFBC lower relocation register
FRU	IFBC upper relocation register
FST	IFBC status
GR	G register
HWR	Half word register
IBR	Inhibit buffer bus read flip-flops
IFR	Instruction fetch state register

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TABLE D (continued)
COMMONLY USED ABBREVIATIONS OF REGISTERS AND LOCATIONS

Prefix	Meaning
ILA	Interrupt level activity
ILR	Interrupt level request
INH	Interrupt inhibit register
INJ	Interject source
INS	Interrupt source register
ITR	Interval timer register
IXI	Index adder intermediate
JR	J register
KR	K register
LIT	Long interval timer
LPA	Lower protected area bound
LPI	Address of last peripheral instruction
LR	Logic (L) register
MCD	MCC data insert
MCLK	Millisecond clock
MCO	MCC override register
MCP	MCC A-level program request
ME0	External matcher register 0
ME1	External matcher register 1
MI0	Internal matcher register 0
MI1	Internal matcher register 1
MMR	Match mode control register
MSR	Match summary register
PCR	Processor configuration control register
PES	Peripheral error summary
PM0	Peripheral unit KCODE matcher 0
PM1	Peripheral unit KCODE matcher 1
PRL	P register, least significant bits
PRM	P register, most significant bits
PSC	Peripheral sequencer control
PSQ	PU sequencer auxiliary counter
RP0	PU reply bus 0 ONEs catcher
RP1	PU reply bus 1 ONEs catcher
SAL	Save auxiliary, left
SAR	Save auxiliary, right
SAT	Sanity timers

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TABLE D (continued)
COMMONLY USED ABBREVIATIONS OF REGISTERS AND LOCATIONS

Prefix	Meaning
SC	Stack counter
SCA	Saved current address
SCCA	Saved CC address register
SDA	Saved data address register
SR	Stack (T) register
STAR	Saved transition address register
TAR	Transition address register
UBPS	Utility buffer pulse source
UPA	Upper protected area bound
XACTL	Extended access (XA) control register
XAWT	XA window type register
XAWP0	XA window pointer 0
XAWP1	XA window pointer 1
XAWP2	XA window pointer 2
XAWP3	XA window pointer 3
XAWP4	XA window pointer 4
XAWP5	XA window pointer 5
XAWP6	XA window pointer 6
XAWP7	XA window pointer 7
XR	X register
YR	Y register
ZR	Z register

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Data Blocks

DATA: A-LEVEL (ALEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR (H)	AC1BR (L)	AC1ASA (H)	AC1ASA (L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS (H)	AC1BRS (L)	AC1SAT	AC1PCR
AC1MCO	AC1MCP	AC1MCD (H)	AC1MCD (L)	AC1TAR	

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DATA: ACTIVE CC BUS NODE DATA PART 1

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E for CC and TABLE F for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2	Bus Node Arbiter Word 2.
Bit	Meaning
0-5	Bus Node operation results.
Bit	Meaning
0	All Seems Well (ASW).
1	Data Parity Failure (DPF).
2	All Seems Well Failure (ASWF).
3	Node Attempted Illegal Access (NAIA).
4	Control Parity B Source (CPBS)
5	Controller or Client D Source (CLIDS).
6-13	Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.
14-23	Internal fault recovery results.

TABLE E
BUS NODE CONTROL BITS - CENTRAL CONTROL

Bit	Meaning
10	Write control signal from the data node.
11	Maintenance control signal from the data node.
12	Control signal from the data node.
13	GCP control signal from the data node.
14	Control signal from the index node.
15	Write request signal from the data node.
16	Interface Bus grant to data node.
17	Not used.

TABLE F
BUS NODE CONTROL BITS - INTERFACE BUS

Bit	Meaning
10	Write control signal from the Interface Bus Controller.
11	Maintenance control signal from the Interface Bus Controller.
12	Control signal from the Interface Bus Controller.
13	Word DMA request from the Interface Bus Controller.
14	Not used.

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DATA: ACTIVE CC BUS NODE DATA PART 2

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART 1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

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DATA: ACTIVE CC BUS NODE DATA PART 3

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART 1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART 1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

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DATA: ACTIVE CC BUS NODE DATA PART 4

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART 1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART 1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

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DATA: ACTIVE CC EXECUTION PIPELINE HISTORY

SCA(00)	SDA_H(00)	SDA(00)	EPH_RESULT(00)
.	.	.	.
.	.	.	.
.	.	.	.
SCA(15)	SDA_H(15)	SDA(15)	EPH_RESULT(15)

NOTE: Entry 00 is the oldest in time and entry 15 is the most recent in time.

Defined as:

SCA Saved Current Address.

Bit Meaning

0-23 The address of an instruction that left indexing.

SDA_H Saved Data Address. (High order bits)

Bit Meaning

0-6 The high order bits of the 30 bit Saved Data Address (SDA). The complete data address is determined by concatenating SDA_H with SDA.

SDA Saved Data Address. (Low order bits)

Bit Meaning

0-23 The low order bits of the 30 bit SDA. The complete data address is determined by concatenating SDA_H with SDA.

NOTE: The data address (from concatenation fo SDA_H and SDA) applies only when the SDA/EPH valid bit is set in the EPH_RESULT field. A valid SDA entry must be confirmed with the source listing to verify that the SDA applies to the SCA.

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EPH_RESULT Execution pipeline history (EPH) result. Applies only when the SDA/EPH valid bit is set in the EPH_RESULT field.

This word represents the different pipeline states and completion of an instruction located at SCA.

Bit Meaning

0 Instruction completion bit. If set, instruction was determined to have completed. If not set, instruction completion could not be determined.

3-7 Final pipeline state of the instruction. (Refer to TABLE G for a list of pipeline states).

9-13 Initial pipeline state of the instruction. (Refer to TABLE G for a list of pipeline states).

15-17 Operation type of the instruction.

0 = The instruction that left indexing was an INDEX ONLY operation and does not require a decoded instruction register to execute.

1 = The instruction that left indexing was a READ operation and requires at least 1 decoded instruction register to execute.

2 = The instruction that left indexing was a WRITE operation and requires at least 1 decoded instruction register to execute.

3 = The instruction that left indexing was a NON-MEMORY operation and requires at least 1 decoded instruction register to execute.

4 = The instruction that left indexing was a GCP operation and does not require a decoded instruction register to execute.

5 = The instruction that left indexing was a STACK operation and requires at least 1 decoded instruction register to execute.

23 SDA/EPH data is valid if set.

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TABLE G
EXECUTION PIPELINE STATES (OCTAL)

- 000 = Nothing happened during this clock cycle. The pipeline may be empty or an instruction is stalled in decoded instruction register 0. The instruction in indexing could be blocked waiting for another condition to clear or we could be waiting for an instruction fetch to provide an instruction to indexing.
- 002 = The instruction in indexing was loaded into decoded instruction register 1 since decoded instruction register 0 is not available.
- 004 = The instruction in decoded instruction register 0 has completed, but there is no instruction in either decoded instruction register 1 or an index only instruction to execute. Therefore, the empty word is clocked into decoded instruction register 0.
- 005 = The instruction in indexing was loaded into decoded register 0.
- 007 = The instruction in indexing requires two decoded instruction registers and is loaded into both decoded registers 0 and 1.
- 010 = There is an instruction in both decoded instruction registers 0 and 1, but the instruction in decoded instruction register 0 has not completed yet.
- 014 = The instruction in decoded instruction register 0 is complete, so the instruction in decoded instruction register 1 moves to decoded instruction register 0 and the empty word is loaded into decoded instruction register 1.
- 016 = The instruction in decoded instruction register 0 is complete, so the instruction in decoded instruction register 1 moves to decoded instruction register 0 and the instruction in indexing is loaded into decoded instruction register 1.

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DATA: ACTIVE CC REGISTERS (CLEVAC)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1SR	AC1SC	AC1CES	AC1IBR
AC1INS	AC1INJ	AC1ILA	AC1ILR	AC1ITR	AC1INH
AC1CSC	AC1SAT	AC1PCR	AC1MCLK	AC1LIT	AC1DLR
AC1LPA	AC1UPA	AC1ACT	AC1ER	AC1PRM	AC1PRL
AC1LPI	AC1PES	AC1PSC	AC1PSQ	AC1RP0	AC1RP1
AC1PM0	AC1PM1	AC1ABC	AC1SAL	AC1SAR	AC1FIS
AC1EPS	AC1IFR	AC1MMR	AC1MSR	AC1MCO (H)	AC1MCO (L)
AC1MCD (H)	AC1MCD (L)	AC1MCP	AC1CCS (H)	AC1CCS (L)	AC1CUI
AC1FCT	AC1FCE	AC1FES	AC1FEE	AC1FER	AC1FST
AC1FLA (H)	AC1FLA (L)	AC1FLD (H)	AC1FLD (L)	AC1FLT (H)	AC1FLT (L)
AC1FRU (H)	AC1FRU (L)	AC1FRL (H)	AC1FRL (L)	AC1FIP	AC1CLE

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DATA: ACTIVE IFBC STACK

AC1FST_HI	AC1FST_LOW	AC1FLT_HI	AC1FLT_LOW	AC1FLA_HI	AC1FLA_LOW
AC1FLD_HI	AC1FLD_LOW	AC1FST_HI	AC1FST_LOW	AC1FLT_HI	AC1FLT_LOW
AC1FLA_HI	AC1FLA_LOW	AC1FLD_HI	AC1FLD_LOW	AC1FST_HI	AC1FST_LOW
AC1FLT_HI	AC1FLT_LOW	AC1FLA_HI	AC1FLA_LOW	AC1FLD_HI	AC1FLD_LOW
AC1FST_HI	AC1FST_LOW	AC1FLT_HI	AC1FLT_LOW	AC1FLA_HI	AC1FLA_LOW
AC1FLD_HI	AC1FLD_LOW	AC1FST_HI	AC1FST_LOW	AC1FLT_HI	AC1FLT_LOW
AC1FLA_HI	AC1FLA_LOW	AC1FLD_HI	AC1FLD_LOW	AC1FST_HI	AC1FST_LOW
AC1FLT_HI	AC1FLT_LOW	AC1FLA_HI	AC1FLA_LOW	AC1FLD_HI	AC1FLD_LOW

Defined as:

AC1FST_HI	Upper byte of active IFBC status stack
AC1FST_LOW	Lower bytes of active IFBC status stack
AC1FLT_HI	Upper byte of active IFBC last transaction stack
AC1FLT_LOW	Lower bytes of active IFBC last transaction stack
AC1FLA_HI	Upper byte of active IFBC last transfer address stack
AC1FLA_LOW	Lower bytes of active IFBC last transfer address stack
AC1FLD_HI	Upper byte of active IFBC last transfer data stack
AC1FLD_LOW	Lower bytes of active IFBC last transfer data stack

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DATA: API DUMP RAM DATA (API Firmware code MC5A014)

76543210	76543210	76543210	76543210	h-----h	i-----i
j-----j	k-----k	l-----l	m-----m	n-----n	o-----o
p-----p	q-----q	r-----r	s-----s	t-----t	u-----u
v-----v	w-----w	x-----x	y-----y	z-----z	A-----A
B-----B	C-----C	D-----D	E-----E	F-----F	G-----G
H-----H	I-----I	J-----J	K-----K	L-----L	M-----M
N-----N	O-----O	P-----P	Q-----Q	R-----R	S-----S
T-----T	U-----U	V-----V	W-----W	X-----X	Y-----Y
Z-----Z	a1-----a1	b1-----b1	c1-----c1	d1-----d1	e1-----e1
f1-----f1	g1-----g1	h1-----h1	i1-----i1	j1-----j1	k1-----k1
l1-----l1	m1-----m1	n1-----n1	o1-----o1	p1-----p1	q1-----q1
r1-----r1	s1-----s1	t1-----t1	u1-----u1	v1-----v1	w1-----w1
x1-----x1	y1-----y1	z1-----z1	A1-----A1	B1-----B1	C1-----C1
D1-----D1	E1-----E1	F1-----F1	G1-----G1	H1-----H1	I1-----I1
J1-----J1	K1-----K1	L1-----L1	M1-----M1	N1-----N1	O1-----O1
P1-----P1	Q1-----Q1	R1-----R1	S1-----S1	T1-----T1	U1-----U1
V1-----V1	W1-----W1	X1-----X1	Y1-----Y1	Z1-----Z1	a2-----a2
b2-----b2	c2-----c2	d2-----d2	e2-----e2	f2-----f2	g2-----g2
h2-----h2	i2-----i2	j2-----j2	k2-----k2	l2-----l2	m2-----m2
n2-----n2	o2-----o2	p2-----p2	q2-----q2	r2-----f2	s2-----s2
t2-----t2	u2-----u2	v2-----v2	w2-----w2	x2-----x2	y2-----y2
z2-----z2	z2-----z2	z2-----z2	z2-----z2	z2-----z2	z2-----z2

Fields h through z2 are explained in DUMP RAM Field Definitions that follow.

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DUMP RAM Field Definitions

The following is the dump of the PIC RAM from the API that detected the error.

h = Send COM/XCOM address offset
i = Send COM/XCOM size
j = Send COM/XCOM load pointer
k = Send COM/XCOM unload pointer
l = Receive COM/XCOM virtual offset
m = Receive COM/XCOM size
n = Receive COM/XCOM load pointer
o = Receive COM/XCOM unload pointer
p = Send job buffer state vector and number of words.
q = Send job buffer DMA address
r = Send job buffer client information
s = Send job buffer from, time and number.
t = Send auditing timing information
u = Spare
v = Spare
w = Send job buffer checksum
x = Receive job buffer state vector and number of words.
y = Receive job buffer DMA address
z = Receive job buffer client information
A = Receive job buffer from, time, and number.
B = Receive auditing timing information
C = Spare
D = Spare
E = Receive job buffer checksum
F = PIC status register.
G = Error Status register.
H = Send Mtce Buffer virtual address for 3B
I = Receive Mtce Buffer virtual address for 3B
J = Send Mtce Buffer address for 1B
K = Receive Mtce Buffer address for 1B
L = Send COM/XCOM Buffer virtual address for 3B

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M = Receive COM/XCOM Buffer virtual address for 3B
N = Send COM/XCOM Buffer address for 1B
O = Receive COM/XCOM Buffer address for 1B
P = Size of Mtce Buffer in 3B
Q = Size of Mtce Buffer in 1B
R = Size of COM/XCOM Buffer in 3B
S = Size of COM/XCOM Buffer in 1B
T = Mtce Job Buffer offset in 3B
U = Mtce Job Buffer address in 1B
V = COM/XCOM Job Buffer offset in 3B
W = COM/XCOM Job Buffer offset in 1B
X = Size of Mtce Job Buffer in 3B
Y = Size of COM/XCOM Job Buffer in 3B
Z = Size of Mtce Job Buffer in 1B
a1 = Size of COM/XCOM Job Buffer in 1B
b1 = Number of Mtce Job Buffers in 3B
c1 = Number of COM/XCOM Job Buffers in 3B
d1 = Number of Mtce Job Buffers in 1B
e1 = Number of COM/XCOM Job Buffers in 1B
f1 = Interprocessor Word sent by 3B
g1 = Interprocessor Word sent by 1B
h1 = PIC Detailed Error Information
i1 = API State word
j1 = Expanded DMA job number for Send Mtce Buffer
k1 = DMA Requested during CNI
l1 = DMA In
m1 = DMA Out
n1 = Direction of Interrupted DMA job
o1 = Common/CNI Buffer polling rate
p1 = Firmware version date
q1 = Current 1B DMA job number
r1 = Current 3B DMA job number
s1 = Memory integrity check word

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t1 = Send TB Headers address in 1B
u1 = Send TB Buffer address in 1B
v1 = Send TB Buffer end address in 1B
w1 = Send TB load pointer
x1 = Send TB unload pointer
y1 = Receive TB Headers address in 1B
z1 = Receive TB Buffer address in 1B
A1 = Receive TB Buffer end address in 1B
B1 = Receive TB load pointer
C1 = Receive TB unload pointer
D1 = Pointer state during TB pointer update
E1 = Spare
F1 = Spare
G1 = Spare
H1 = Spare
I1 = Spare
J1 = API scanning status in 3B
K1 = DLN scanning status in 3B
L1 = Incoming TB start virtual address in 3B
M1 = Incoming TB end virtual address in 3B
N1 = Outgoing TB start virtual address in 3B
O1 = Outgoing TB end virtual address in 3B
P1 = Outgoing TB load pointer in 3B
Q1 = Outgoing TB end pointer in 3B
R1 = Incoming TB unload pointer in 3B
S1 = Incoming TB load pointer in 3B
T1 = Incoming TB end pointer in 3B
U1 = Outgoing TB unload pointer in 3B
V1 = Spare
W1 = Spare
X1 = Spare
Y1 = Spare
Z1 = Send TB Virtual address in 1B

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a2 = Receive TB Virtual Address in 1B
b2 = Spare
c2 = Send and Receive TB Virtual Address in 3B
d2 = TB error threshold and TB DMA transfer size for 1B
e2 = TB DMA transfer size for 3B
f2 = TB Send Load and Receive Unload Error Count
g2 = TB Incoming Load and Outgoing Unload Error Count
h2 = Interprocessor Data Word going to 3B from 1B
i2 = Interprocessor Data Word going to 1B from 3B
j2 = TB Error and Status Word
k2 = TB DMA segment index
l2 = Spare
m2 = Spare
n2 = Spare
o2 = Spare

The following words are the contents of the last message processed by the API.

p2 = First word of APS message. (From, size, To)
q2 = Message AP Type and Sequence number
r2 = Message Client Identification
s2 = Spare
t2 = Message Checksum
u2 = Message Options Field
v2 = Message Time and number of words
w2 = Message Address
x2 = Message ETIME field
y2 = Spare
z2 = Message DATA

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DATA: AUXILIARY DATA - (TMS MEMPF)

a...a	b...b	c...c	d...d	e...e	f...f
g...g	h...h	i...i	j...j	0...0	0...0
k...k	l...l	0...0	0...0	m...m	0...0
n...n	o...o	p...p	q...q	r...r	s...s

Defined as:

a = Dump size/ type (All bits in 1460 OCTAL):

Bit	Meaning

0	Tag (0).

1-7	Dump size (24 decimal).

8-9	Dump type (MEMPF=3).

b = Software status for controller 0. See TABLE H.

c = Software status for controller 1. See TABLE H.

d = Hardware status for controller 0. See TABLE I.

e = Hardware status for controller 1. See TABLE I.

f = UTYPE TRANS (unit type translator):

Bit	Meaning

0-23	First word of unit type translator.

g = ASW ESR (all-seems-well failure) for controller 0. See TABLE J.

h = ASW ESR for controller 1. See TABLE J.

i = AINT ESR (autonomous interrupt) for controller 0. See TABLE K.

j = AINT ESR for controller 1. See TABLE K.

k = KCODE:

Bit	Meaning

0-6	Member number.

7-11	Unit type (TMS=4).

l = TSM (time slot memory):

Bit	Meaning

0-6	Time slot memory.

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m = Suspect controller:

Bit	Meaning
0-1	0 - Controller 0. 1 - Controller 1. 2 - Both controllers.

n = Network status:

Bit	Meaning
0-1	0 - Duplex failure 1 - Controller 0 only 2 - Controller 1 only 3 - Duplex operation

o = Time slot:

Bit	Meaning
0-6	Time slot.

p = Memory read for controller 0. See TABLE L.

q = Memory read for controller 1. See TABLE L.

r = Retry pass/fail flags:

Bit	Meaning
0-1	0 - Both controllers passed retry. 1 - Controller 0 only failed retry. 2 - Controller 1 only failed retry. 3 - Both controllers failed retry.

s = Memory correction flags:

Bit	Meaning
0-1	0 - No correction attempted. 1 - Correction attempted. 2 - Update via mate controller.

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TABLE H
SOFTWARE STATUS - CONTROLLER 0 OR 1

Bit	Meaning
0	Maintenance access bit.
1	Receive on (PU bus 0 or 1).
2	Send on PU bus 0.
3	Send on PU bus 1.
4	Divorce controller from mate.
5	Stop autonomous operation.
7	Diagnosis has been requested.
8	Controller to be restored only by teletypewriter (TTY).
12	Controller out-of-service.
13	Bus access circuit 0 power off.
14	Bus access circuit 1 power off.
15	Power off controller.
16	Controller cannot receive on PU Bus 0.
17	Controller cannot send on PU bus 0.
18	Controller cannot receive on PU bus 1.
19	Controller cannot send on PU bus 1.
20-23	PU maintenance code.

TABLE I
HARDWARE STATUS - CONTROLLER 0 or 1

Bit	Meaning
0	Maintenance access bit.
1	Receive on (PU bus 0 or 1).
2	Send on bus 0.
3	Send on bus 1.
4	Divorce controller from mate.
5	Stop autonomous operation.
6	Inhibit busy/idle bit checks.
7	Inhibit data matching on writes.
8	Inhibit interrupts.
9	Unit is synced with TDS (time division switch) subsystem.
10	Soft stop autonomous operation.
11	Inhibit gating to memory registers.
12	Allow self-start.
13	Soft stop at phase 6.
14	Forces zeros across matcher interface.
15	Forces ones across matcher interface.

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TABLE J
ASW ESR -CONTROLLER 0 or 1

Bit	Meaning
0	All-seems-well failure.
1	Autonomous interrupt.
2	Parity failure even (PUB).
3	Parity failure odd (PUB).
4	Mode failure.
5	Order sequencer sequence check.
6	Memory address failure.
7	Time slot memory parity failure.
8	Audit error.
9	Time slot address mismatch.
10	Memory write mismatch.
11	Order sequencer abort check.

TABLE K
AINT ESR - CONTROLLER 0 or 1

Bit	Meaning
0	Clock error (internal).
1	Time slot counter sequence check.
2	Time slot counter mismatch.
3	Clock mismatch.
4	Time slot memory parity failure.
6	Link of memory that failed.
7-13	Time slot memory that failed.
14	Overflow-multiple interrupts have occurred.
15-21	Time slot during which failure occurred.

TABLE L
MEMORY READ - CONTROLLER 0 or 1
(Bits 0-11 are odd TSM)

Bit	Meaning
0-3	Data (even side).
4	Busy / idle bit.
5	Parity bit.
6-9	Data (odd side).
10	Busy / idle bit.
11	Parity bit.
12-23	Same format as bits 0-11, but represents even TSM.

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DATA: AUXILIARY DATA (TSI TRPF,TMM;XTSI TRPF)

TRPF AUX DUMP					
DUMP SZ	TTSI SWSTAT C0	TTSI SWSTAT C1	TTSI HW STAT C0	TTSI HW STAT C1	TTSI PATH
ACTIVE TMS NTWK	TTSM ARRAY C0,C1	0....0	0....0	0....0	TMS ST2 PATH
	TTSM0 XTSI C0	TTSM0 XTSI C1	TTSM1 XTSI C0	TTSM1 XTSI C1	
TMS ACCESS RESULT	TMS SW STAT C0	TMS SW STAT C1	TMS HW STAT C0	TMS HW STAT C1	TMS ST1 PATH
TMS SW2 ARRAY C0	TMS SW2 ARRAY C1	TMS SW1 ARRAY C0	TMS SW1 ARRAY C0	TMS SW1 ARRAY C0	TMS SW1 ARRAY C0
TMS SW1 ARRAY C1	TMS SW1 ARRAY C1	TMS SW1 ARRAY C1	TMS SW1 ARRAY C1	0....0	RTSI PATH
RTSI ACCESS RESULT	RTSI SW STAT C0	RTSI SW STAT C1	RTSI HW STAT C0	RTSI HW STAT C1	PATH TIMESLOT
0....0	RTSI ASW ERR C0	RTSI ASW ERR C1	RTSI AINT ESR C0	RTSI AINT ESR C1	0....0
RTSI MA_RESP C0	RTSI MA_RESP C1	RTSI CESR C0	RTSI CESR C1	RTSI RECEIVE ESR C0 SUMMARY	RTSI RECEIVE ESR C1 SUMMARY
RTSM ARRAY C0	RTSM ARRAY C0	RTSM ARRAY C0	RTSM ARRAY C0	RTSM ARRAY C1	RTSM ARRAY C0
RTSM0 XTSI C0	RTSM0 XTSI C1	RTSM1 XTSI C0	RTSM1 XTSI C1	PEST C0	PEST C1
RTSM ARRAY C1	RTSM ARRAY C1	0....0	ORIGINAL SUSPECT LIST	TRACE OUTCOME	OUTCOME SUSPECT LIST
SPU C0	SPU C1				
TTSI UTYPE TRANS	TMS UTYPE TRANS	RTSI UTYPE TRANS	TTSI UTMN	TMS UTMN	RTSI UTMN
TTSI PCMIL C0	TTSI PCMIL C1	TTSI PCMIH C0	TTSI PCMIH C1	TTSI PCMOL C0	TTSI PCMOL C1
TTSI PCMOH C0	TTSI PCMOH C1	CHANNEL/SPU C0	CHANNEL/SPU C1	0....0	0....0

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Defined as:

DUMP SZ — Report Type and Block Size
TTSI SWSTAT C0 — Controller 0 SW Status
TTSI SWSTAT C1 — Controller 1 SW Status
TTSI HW STAT C0 — Controller 0 HW Status
TTSI HW STAT C1 — Controller 1 HW Status
TTSI PATH — TTSI Path Data
ACTIVE TMS NTWK — Active TMS Network
TTSM0 XTSM C0 — TTSM0 ARRAY Controller 0
TTSM0 XTSM C1 — TTSM0 ARRAY Controller 1
TTSM1 XTSM C0 — TTSM1 ARRAY Controller 0
TTSM1 XTSM C1 — TTSM1 ARRAY Controller 1
TMS ST2 PATH — TMS ST2 Path
TMS SW2 ARRAY C0 — TMS SW2 ARRAY Controller 0
TMS SW2 ARRAY C1 — TMS SW2 ARRAY Controller 1
TMS HW STAT C0 — TMS HW Status Controller 0
TMS HW STAT C1 — TMS HW Status Controller 1
TMS ST1 PATH — TMS ST1 Path
TMS SW1 ARRAY C0 — TMS SW1 ARRAY Controller 0
TMS SW1 ARRAY C1 — TMS SW1 ARRAY Controller 1
RTSI PATH — RTSI Path
RTSI ACCESS RESULT — RTSI Access Result
RTSI SW STAT C0 — RTSI SW Status Controller 0
RTSI SW STAT C1 — RTSI SW Status Controller 1
RTSI HW STAT C0 — RTSI HW Status Controller 0
RTSI HW STAT C1 — RTSI HW Status Controller 1
PATH TIMESLOT — Path Timeslot
RTSI MA_RESP C0 — RTSI MA Response Controller 0
RTSI MA_RESP C1 — RTSI MA Response Controller 1
RTSI CESR C0 — RTSI CESR Controller 0
RTSI CESR C1 — RTSI CESR Controller 1
RTSI RECEIVE ESR C0 SUMMARY — RTSI Receive ESR Controller 0 Summary
RTSI RECEIVE ESR C1 SUMMARY — RTSI Receive ESR Controller 1 Summary

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RTSM0 XTSM C0 — RTSM0 XTSM Controller 0
RTSM0 XTSM C1 — RTSM0 XTSM Controller 1
RTSM1 XTSM C0 — RTSM1 XTSM Controller 0
RTSM1 XTSM C1 — RTSM1 XTSM Controller 1
RTSI PEST C0 — RTSI Pest Register Controller 0
RTSI PEST C1 — RTSI Pest Register Controller 1
RTSM ARRAY C1 — RTSM Array Controller 1
ORIGINAL SUSPECT LIST — Original Suspect List
TACE OUTPUT — Trace Outcome
OUTCOME SUSPECT LIST — Outcome Suspect List
TTSI UTYPE TRANS — TTSI Utype Translation
TMS UTYPE TRANS — TMS Utype Translation
RTSI UTYPE TRANS — RTSI Utype Translation
TTSI UTMN — TTSI Unit Type and Member
TMS UTMN — TMS Unit Type and Member
RTSI UTMN — RTSI Unit Type and Member
TTSI PCMIL C0 — TTSI Input PCM Low Controller 0
TTSI PCMIL C1 — TTSI Input PCM Low Controller 1
TTSI PCMIL C0 — TTSI Input PCM High Controller 0
TTSI PCMIL C1 — TTSI Input PCM High Controller 1
TTSI PCMOL C0 — TTSI Output PCM Low Controller 0
TTSI PCMOL C1 — TTSI Output PCM Low Controller 1
TTSI PCMOL C0 — TTSI Output PCM High Controller 0
TTSI PCMOL C1 — TTSI Output PCM High Controller 1
CHANNEL XTSM C0 — TTSM Channel/LOD BI Bit SPU/Digroup for Controller 0
CHANNEL XTSM C1 — TTSM Channel/LOD BI Bit SPU/Digroup for Controller 1
SPU C0 — SPU/Digroup for controller 0
SPU C1 — SPU/Digroup for controller 1

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DATA: B-LEVEL (BLEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR (H)	AC1BR (L)	AC1ASB (H)	AC1ASB (L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS (H)	AC1BRS (L)	AC1SAT	AC1PCR
AC1MCO	AC1MCP	AC1MCD (H)	AC1MCD (L)	AC1ITR	AC1ACT
AC1PSQ	AC1TAR	AC1BNCTL		ST1ASB (H)	ST1ASB (L)

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DATA: BLEV STANDBY CC REGISTERS (PCRVST)

ST1FR	ST1GR	ST1JR	ST1KR	ST1LR	ST1XR
ST1YR	ST1ZR	ST1BR (H)	ST1BR (L)	ST1ASB (H)	ST1ASB (L)
ST1SCA	ST1SDA	ST1CSC	ST1CES	ST1FST	ST1FES
ST1ILA	ST1INS	ST1INH	ST1INJ	ST1SC	ST1SR
ST1SCTR	ST1LIT	ELIT	ST1LPI	ST1ER	ST1PRM
ST1PRL	ST1PSC	ST1BRS (H)	ST1BRS (L)	ST1SAT	ST1PCR
ST1MCO	ST1MCP	ST1MCD (H)	ST1MCD (L)	ST1ITR	ST1ACT
ST1PSQ	ST1TAR	AC1BNCTL			

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DATA: C-LEVEL (CLEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR (H)	AC1BR (L)	AC1ASC (H)	AC1ASC (L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS (H)	AC1BRS (L)	ST1ASC (H)	ST1ASC (L)
ST1SCA	ST1SDA	ST1BR (H)	ST1BR (L)	AC1ME0 (H)	AC1ME0 (L)
ST1LIT	ST1LPI	AC1MSR	AC1MMR	ST1MI0 (H)	ST1MI0 (L)
AC1MI0 (H)	AC1MI0 (L)	AC1ME1 (H)	AC1ME1 (L)	AC1MI1 (H)	AC1MI1 (L)
ST1ME0 (H)	ST1ME0 (L)	ST1MI1 (H)	ST1MI1 (L)	AC1ME1 (H)	AC1ME1 (L)
AC1SAT	AC1TAR	AC1BNCTL			

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DATA: CALL STORE IDENTIFICATION DATA (CSFRID)

FAILING H_ADDR	FAILING ADDR	RCES	ST1BRS_H	ST1BRS_L	AC1SAL
AC1SAR	ST1SAL	ST1SAR	SCES	FAILING MEMN	VBOOT
BFAILRT	SYSSTAT	IBUSSTAT	SAMEMN	MNSUSP	BUSBUFFGCPS (CS ONLY) (0 FOR PS)
GCPACT_L	GCPACT_H	CR01ACT	CR10ACT	RESERVE	FLAGS1
GCPSTBY_L	GCPSTBY_H	CR01STBY	CR10STBY	RESERVE	FAFTRACK
CINS	C_ACT_EVEN	C_ACT_ODD	C_STBY_EVEN	C_STBY_ODD	REP_STORE
BUSSTATER	C_H_ACT_EVEN	C_H_ACT_ODD	C_H_STBY_EVEN	C_H_STBY_ODD	ST1ABC
FAILING MCODE	RESERVE				

Defined as:

FAILING H_ADDR	— Bits 24-29 of the 30 bit failing address.
FAILING ADDR	— Bits 0-23 of the 30 bit failing address.
RCES	— CC error summary register actually used by the fault recovery program to recover the interrupt.
ST1BRS_H	— High 8 bits of the standby CC shadow B register.
ST1BRS_L	— Low 24 bits of the standby CC shadow B register.
AC1SAL	— Save even address reply on program fetches.
AC1SAR	— Save odd address reply on program fetches.
ST1SAL	— Save even address reply on standby CC program fetches.
ST1SAR	— Save odd address reply on standby CC program fetches.
SCES	— Standby CES used to recovery standby store when stores were duplexed.

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FAILING MEMN

— Failing member and software decisions:

Bit	Name	Description
0-5	PRDFMEMN	Suspected failing member. MEMN removed if bit 23 = 1
21	PRDFBTF	Bootstrap failed on first attempt (first bus)
22	PRDBOOT	Bootstrap has been entered
23	PRDRMVST	When set, the member indicated in bits 0-5 has been removed

VBOOT

— Variable bootstrap status after recovery.

Bit	Name	Description
0-3	MU1RBTCTR	Count of bootstrap entries
4	MU1RVFOUT	When set, the MEMN in VBOOT was forced out by VBOOT
9-14	MU1RVMEMN	MEMN forced out in current VBOOT state
15-17	MU1RVBSTATE	Variable boot state counter
18	MU1R2WPUMP	2 word pump performed as part of recovery

BFAILRT

— The return address in the recovery program for a bootstrap failure.

SYSSTAT

— System status at time of interrupt.

Bit	Name	Description
0	SPBO	PBO of standby CC at interrupt entry
1	SPBA	PBA of standby CC at interrupt entry
2	SPBT	PBT of standby CC at interrupt entry
3	SCBO	CBO of standby CC at interrupt entry
4	SCBA	CBA of standby CC at interrupt entry
5	SCBT	CBT of standby CC at interrupt entry
6	CS1RPRTBKZP	Indicates base MCODE (3=E-LEVEL/0=D-LEVEL) for community has been pumped when set

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Bit	Name	Description (SYSSTAT continued)
7	CS1RCCS	State of CC1CCS (CC software duplex status) at time of interrupt
15	SDIVA	Status of AC1DIV bit (CC divorce) in CSC prior to interrupt

IBUSSTAT (Call Store) — BUSSTAT at interrupt entry. Call store / D-LEVEL.

Bit	Name	Description
0	CS1RNDLEV	Non D-LEVEL entry flag
1	CS1ROFLC	Used to indicate to CALCONFIG that the CS community is to be set up in an off line configuration
2	CS1RREGEN	When set, call store memory was pumped from disk as part of recovery
3	CS1RCBO	When set, active CC sends over both buses
4	CS1RCBA	Defines the bus used by the active CC. Bus 1 is active when set
5	CS1RCBT	Both CCS will receive from the active bus when set
6	CS1RBUS0TBL	CS bus 0 is in trouble if set
7	CS1RBUS1TBL	CS bus 1 is in trouble if set
8	CS1RDGNB	When set indicates there has been a change in the bus configuration.
9	CS1RFROZEN	Set if one or more stores are in the frozen state.
11	CS1RPHINPR	Set at start of phase by application program. Reset at end of phase by application program. Used to alter recovery strategy
12	CS1RAUDF	If status audit fails in CALCONFIG this item is set before going to the hardware status update. When set, audit failure in CALCONFIG will not go to hard status
13	CS1RBREX	SET When a CS bus routine exercise has been requested
14	CS1RREX	SET When a CS bus or CS routine exercise has been requested

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Bit	Name	Description (IBUSSTAT continued)
15	CS1RNBKZ	A non-backed up store has failed without a duplicate
16	CS1RKEEPB	If set the standby bus is to be kept out of service until a manual restoral request (TTY)
17	CS1RSTPR	If set, stop REX before testing next store
18	CS1RBKZP	Set when block zero has been pumped
19	CS1RDGCU	If set, the DGN is performing critical tests in case an interrupt occurs, establish CONFIG found in status table
20	CS1RTAVL	Used in search through CS1RSTATUS table for available store
21	CS1RPASBOOT	CS bootstrap assembled a working configuration
22	CS1RBOOTNG	CS bootstrap failed to assemble a working configuration using in service stores and the selected bus.
23	CS1RFCBA	Used to save state of CBA/PBA (bit 4/1) prior to a bus store routine or REX

IBUSSTAT (Program Store) — BUSSTAT at interrupt entry. Program store.

Bit	Name	Description
0	PS1RPBO	When set, active CC sends over both program store buses
1	PS1RPBA	Defines the program store bus used by the active CC
2	PS1RPBT	Both CCS will receive from the active bus when set
3	PS1RNELEV	Non E-LEVEL entry flag
4	PS1ROFLC	Used to indicate to CALCONFIG that the PS community is To be set up in an off line configuration
5	PS1RREGEN	When set, PS memory was pumped from disk as part of recovery

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Bit	Name	Description (IBUSSTAT continued)
6	PS1RBUS0TBL	PS bus 0 is in trouble if set
7	PS1RBUS1TBL	PS bus 1 is in trouble if set
8	PS1RDGNB	When set indicates there has been a change in the bus CONFIG
9	PS1RFROZEN	Set if one or more stores are in the frozen state
11	PS1RPHINPR	Set at start of phase by application program. Reset at end of phase. Used to alter interrupt recovery strategy if in a phase.
12	PS1RAUDF	If status audit fails in CALCONFIG, this item is set before going to the hardware status update. When set, audit failures in CALCONFIG will not go to hardware status.
13	PS1RBREX	Set when a PS store bus routine has been requested
14	PS1RREX	Set when a PS store routine exercise has been requested
16	PS1RKEEPB	If set the standby bus is to be kept out of service until manually restored
17	PS1RSTPR	If set, stop the store routine. (1/2 hour has expired since exerciser was started) bit 14
18	PS1RBKZP	Set when block zero has been pumped
19	PS1RDGCU	If set, the DGN is performing critical tests. In case an interrupt occurs, establish configuration found in status table
20	PS1RTAVL	Used in search through PS1RSTATUS table for available store
21	PS1RPASBOOT	PS bootstrap assembled a working configuration
22	PS1RBOOTNG	Bootstrap failed to assemble a working configuration using all operational stores and one CS bus.
23	PS1RFPBA	Used to save state of PBA prior to a REX routine

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SAMEMN — Standby and active member numbers for failing MCODE (valid for non-bus related faults only).

Bit	Name	Description
0-5	PRDRAMEMN	Active member number supplying MCODE interrupting
6-9	PRDRAERRCNT	Error count for active unit at entry to interrupt
10	PRDRAMEMNF	Flag for active member number (set if in service)
12-17	PRDRSMEMN	standby member number supplying MCODE interrupting
18-21	PRDRSERRCNT	Error count for standby unit at entry to interrupt
22	PRDRSMEMNF	Flag for standby member number (set if in service)
23	PRDRSMEMNC	When set, copy was in progress on the standby unit when an interrupt occurred

MNSUSP — Suspect member list.

Bit	Name	Description
0-5	MU1RMNSUSP1	Last MEMN having ATP DGN after interrupt
6	MU1RSUSFL1	When set, bits 0-5 are valid
7-12	MU1RMNSUSP2	Next to last MEMN having ATP DGN
13	MU1RSUSFL2	When set, bits 7-12 are valid

BUSBUFFGCPS — Call store bus buffer GCP status information (call store only - value of 0 for PS).

Bit	Name	Description
0	CSB_00	GCP reply for call store bus 0 - frame 0 (active if set)
1	CSB_01	GCP reply for call store bus 0 - frame 1 (active if set)
2	CSB_10	GCP reply for call store bus 1 - frame 0 (active if set)
3	CSB_11	GCP reply for call store bus 1 - frame 1 (active if set)

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GCPACT_L — Low 24 bits of active store GCP response.

Bit	Name	Description
0	MU1GCPS01	Send on bus 0 FF
1	MU1GCPS11	Send on bus 1 FF
2	MU1GCPRO1	Receive on bus FF
3	MU1GCPRO0	Receive on bit complement
4-12	MU1GCPNO01-81	MCODE name bits
13	MU1GCPUPDT1	store update bit
14	MU1GCPTME1	Trap mode error
15	MU1GCPMCCAMD	MCC address match detected when set
16	MU1GCPTWPV1	Trap write protect violation when set
17	MU1GCPTASWF1	Trap all seems well fail when set
18	MU1GCPTDPF1	Trap data parity failure when set
19	MU1GCPTAPF1	Trap address parity failure when set
20	MU1GCPAMD1	Address match detected when set
21	MU1GCPCRIO	Communications reply inhibit when 0
22	MU1GCPMTCE1	store in MTCE when 1
23	MU1GCPMTCE0	store maintenance complement bit

GCPACT_H — High 8 bits of active store GCP response.

Bit	Name	Description
2	MU1GCPIIB	When set, store was not listening to bus

CR01ACT — Control read 01 response active store.

Bit	Name	Description
0	MU1CR01S01	Send on bus 0 if set
1	MU1CR01S11	Send on bus 1 if set
2	MU1CR01RO1	Receive on bus
3	MU1CR01RO0	Receive on bus complement bit
4-12	MU1CR0(11-81)	store MCODE
13	MU1CR01UPDT1	Update bit - software controlled
14	MU1CR01TME1	Trap mode error bit
15	MU1CR01MCCAMD	MCC address match detected

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Bit	Name	Description (CR01ACT continued)
16	MU1CR01TWPV1	Trap write protect violation
17	MU1CR01TASWF1	Trap all seems well failure
18	MU1CR01TDPF1	Trap data parity fail
19	MU1CR01TAPF1	Trap address parity fail
20	MU1CR01AMD1	Address match detected
21	MU1CR01CRI0	Communications reply inhibit complement
22	MU1CR01MTCE1	Maintenance bit
23	MU1CR01MTCE0	Maintenance bit complement

CR10ACT

— Control read 10 response.

Bit	Name	Description
3	MU1CR10WPINH1	Write protect inhibit
4	MU1CR10WP1	Write protect
13	MU1CR10DPF01	Data parity failure byte 0
14	MU1CR10DPF11	Data parity failure byte 1
15	MU1CR10DPF21	Data parity failure byte 2
16	MU1CR10DPF31	Data parity failure byte 3
17	MU1CR10APF01	Address parity failure byte 0
18	MU1CR10APF11	Address parity failure byte 1
19	MU1CR10APF21	Address parity failure byte 2
20	MU1CR10APF31	Address parity failure byte 3
21-23	MU1CR10TYPE	Store hardware (1 = megaword)

FLAGS1

— Flags and data relevant to interrupt

Bit	Name	Description
0	PRDUNDUPACT	Unduplicated and suspect store interrupt
2	PRDRWPHS	Indicates the write protect program entered at MUFRWPHS - (memory not protected by WPAD)
3	PRDRLDCPYFL	MAC failed to accept the copy job
4	PRDRWPVOLY	Indicates a write protect violation has occurred on this interrupt and no other errors were indicated

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Bit	Name	Description (FLAGS1 continued)
5	PRDUPSTORES	MCODEs duplexed for the failing address
6	PRDSBYPCK	Standby store chosen as faulty by recovery
7	PRDACTPCK	Active store chosen as faulty by recovery
8	PRDPFOFLAG	Indicates parity failure only

GCPSTBY_L — Same as GCPACT but for standby.
GCPSTBY_H — Same as GCPACT_H but for standby.
CR01STBY — Same as CR01ACT but for standby.
CR10STBY — Same as CR10ACT but for standby.
FAFTRACK — Full access failure tracking word.

Bit	Name	Description
0-2	PRDRFAFCNT	The number of times that the full access test failed
3-5	PRDRFAFRMVS	indicates which time through the full access failure that the standby store was removed
6-8	PRDRFAFRMVB	Indicates which time through the full access failure that the bus was removed to recover
9-11	PRDRFAFSWB	Indicates which time through the full access failure that the bus was switched to recover
12	PRDRFAFRMVBUS	Indicates that the standby bus was removed
13	PRDRFAFSWBUS	Indicates that the buses were switched
14	PRDRFAFPIPE	Indicates that the pipeline was suspected of error propagation. All store traps were cleaned and the full access tests were re-executed
15	PRDRFAFENTERED	Indicates that full access failure was entered
16	PRDRFAFRBUS0	Set if bus 0 removed by fault recovery

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Bit	Name	Description (FAFTRACK continued)
17	PRDRFAFRBUS1	Set if bus 1 removed by fault recovery
18	PRDRFINFILL	Disk pumping routine FINFILL was entered as part of recovery
19	PRDRFMCDER	2 Word pump inconsistency - failing address and MCODE do not match
20	PRDCCMTCH	CCs failed access tests when put in step
21	PRDRCPFAIL	Copying of store failed.

CINS	— Active interrupt error source (AC1INS) register or'ed with standby (ST1INS)
C_ACT_EVEN	— Contents of the active store at the failing address aligned on an even word boundary. (e.g 311 = 310, 310 = 310)
C_ACT_ODD	— Contents of the active store at the failing address aligned on an odd word boundary. (e.g 310 = 311, 311 = 311)
C_STBY_EVEN	— Same as C_ACT_EVEN except for the standby store when duplexed.
C_STBY_ODD	— Same as C_ACT_ODD except for the standby store when duplexed.
REP_STORE	— Replacement stores status.

Bit	Name	Description
0-5	PRDREPMEMN	Replacement member used when bit 23 = 1
6-14	PRDREPMCD	MCODE store was at when taken as a replacement
22	PRDREPLT	Attempt to find a substitute was made
23	PRDREPLV	Replacement found when bit = 1

BUSSTATER	— BUSSTAT at end of recovery. See IBUSSTAT.
C_H_ACT_EVEN	— Bit register contents for the active store on an even word boundary:

Bit	Description
0- 7	Contents of bits 24-31 in memory for the active store at the failing address aligned on an even word boundary. (e.g. 311 = 310, 310 = 310)
12-15	Stored parity bits for the B register.
18-21	Computed parity bits for associated 32 bit word.

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C_H_ACT_ODD — Bit register contents for the active store on an odd word boundary:

Bit	Description
0- 7	Contents of bits 24-31 in memory for the active store at the failing address aligned on an odd word boundary. (e.g. 311 = 310, 310 = 310)
12-15	Stored parity bits for the B register.
18-21	Computed parity bits for associated 32 bit word.

C_H_STBY_EVEN — Same as C_ACT_EVEN except for the standby store when duplexed.

C_H_STBY_ODD — Same as C_ACT_ODD except for the standby store when duplexed.

ST1ABC — Standby auxiliary buffer control containing the all-seems-well and parity bits for the reply words of an instruction fetch.

FAILING MCODE — Failing MCODE and software decisions:

Bit	Name	Description
0-9	PRDFMCODE	MCODE associated with PRDBUSTF, PRDFATF1, PRDFATF2 or PRDQACCF.
11	PRDFASWE	All seems well error.
12	PRDFASWF	All seems well failure response from MCODE in bits 0-9.
13	PRDFPARR	Parity error right for E-LEVEL, CS parity error for D-LEVEL.
14	PRDFPARL	Parity error left for E-LEVEL, not available for D-LEVEL.
19	PRDPQACCF	Set if the pre-qualify test failed.
20	PRDQACCF	Set if the single MCODE access test failed.
21	PRDFATF1	Set if the full access test failed the first time.
22	PRDFATF2	Set if the full access test failed the second time.
23	PRDBUSTF	When set, the bus test failed.

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DATA: CALL STORE TEST RESULTS (CSFRTR)

BOOTTAG	VBOTSTA	BR	FR	GR	JR
KR	LR	XR	YR	ZR	MEMN
.	.	.	.	.	.
.	.	.	.	.	.
BOOTTAG	VBOTSTA	BR	FR	GR	JR
KR	LR	XR	YR	ZR	MEMN

Defined as:

BOOTTAG = A program address which will identify the reason for the bootstrap entry.

VBOTSTA = The contents of the variable bootstrap status word at bootstrap entry after BTGTR has been incremented. It contains a bootstrap counter and a variable bootstrap state counter.

MEMN = Failing store member number.

BR, FR, GR,
JR, KR, LR, XR,
YR, ZR = CC register that contains the address of the failing test.

NOTE: Each two-line entry corresponds to a store that has failed a bootstrap test. The failing store's member number is MEMN and the failing test is identified by the address in the JR field.

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DATA: CCFR INTERRUPT DATA

CC1BLSTAT	CC1STATUS	CC1EADAT	CC1CLDAT	CC1EXDAT	CC1DGNCC
CC1BLDGN	CC1PSRDAT	CC1CPBDAT	CC1BRBDAT	CC1BLINV	CC1SWDAT
XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
dddddddddd	dddddddddd	dddddddddd	dddddddddd	dddddddddd	dddddddddd
AC1INS	AC1INH	AC1CES	ST1INS	ST1INH	ST1CES

Defined as:

CC1BLSTAT — CCFR B-level status word. Failing member and software decisions:

Bit	Description
0	Active CC pulse source failure occurred
1	Active CC boot ROM parity failure occurred
2	Active CC control parity failure occurred
3	Standby CC pulse source failure occurred
4	Standby CC boot ROM parity failure occurred
5	Standby CC control parity failure occurred
9	CC switch occurred
10	CCFR CC switch escalation
11	Manual CC switch requested
12	CCFR attempted CC switch

CC1STATUS — CC status word.

Bit	Description
0	Run deferred CCFR on active CC only
1	Print results when deferred tests ATP
2	Switch CCs and re-Test if deferred tests ATP
3	Restore standby CC to service
4	Loop on deferred CCFR
5	Deferred CCFR in progress

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- 6 Software active CC member number
- 7 CCs are running in step
- 8 CCs are in a normal configuration (duplex)
- 9 Standby CC under test
- 10 Routine CC exercise in progress
- 11 Standby CC diagnosed due to high error rate
- 12 Active CC diagnosed due to high error rate
- 13 High error rate when CCs run in step
- 14 External fault recovery requested access tests
- 15 Request CC diagnostics
- 16 CCFR error analysis diagnostic request
- 17 Deferred tests run as part of diagnostics
- 18 Results of deferred CC tests during diagnostics
- 19 The standby CC was removed via TTY
- 20 Update CC out-Of-Service lamps
- 21 B-level occurred on standby CC
- 22 CC stopped by CC access test

CC1EADAT — CCFR long term error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1CLDAT — CCFR short term C-level error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1EXDAT — CCFR short term external entry error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

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CC1DGNCC — CCFR short term C-/D-/E-/F-level DGN error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1BLDGN — CCFR short term B-level DGN error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1PSRDAT — CCFR short term pulse source failure error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1CPBDAT — CCFR short term control parity B-level error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1BRBDAT — CCFR short term boot ROM B-level error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

CC1BLINV — CCFR short term invalid B-level entry error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

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CC1SWDAT — CCFR short term switch CC B-level error counter.

Bit	Description
0-13	Error timer
14	Counter enable flag (if set, counter active)
15-23	Error counter

dddddddd — Active CC pulse source B-levels only, where any number of from 0 to 6 "dddddddd" lines of data can occur depending on how many GCP addresses are found in the bus node data. Each GCP address found will contain the GCP address in bits 0 thru 21 and a code two bit code in bits 22 and 23 as follows:

Bit	Description
00	Null entry
01	Retry of GCP address passed
10	Retry of GCP address failed (hardware error)
11	Invalid GCP address (software error)

AC1INS — Active CC interrupt register (CCFR B-levels only) .

AC1INH — Active CC inhibit register (CCFR B-levels only) .

AC1CES — Active CC error source register (CCFR B-levels only).

ST1INS — Standby CC interrupt register (CCFR B-levels only).

ST1INH — Standby CC inhibit register (CCFR B-levels only).

ST1CES — Standby CC error source register (CCFR B-levels only).

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DATA: COMMON AUXILIARY UNIT DATA (ADCOMM)

AU1REIW0	AU1REIW1	AU1REIW2	AU1REIW3	AU1RFADR	AU1RFDAT
AU1RRIW0	AU1RRIW1	AU1RRIW2	AU1RRIW3	AU1RAUIBA	AU1RFBAD
AU1CID	AU1MID	AU1STA	AU1CTL	AU1ESR	AU1LLA
AU1ULA	AU1RSDAT_U	AU1RSDAT_L	AU1ACM	AU1RSAAS_U	AU1RSAAS_L
AU1ARR	AU1AUAR	AU1AUB	AU1ADW	AU1AMW	AUIRPROGAD
AUIRTESTAD	AUIRTESTOP	AU1RTSAVF	AU1RTSAVG	AU1RTSAVJ	AU1RTSAVK
AU1RTSAVL	AU1RTSAVX	AU1RTSAVY	AU1RTSAVZ	AU1ESR0	AU1RFGCP
AU1RSTATE	AU1RERAT	AU1RERAC	AU1REMRG	AU1EAST	AU1RDTADR
AU1RLTTAT	AU1RLTTAC0	AU1RLTTAC1	AU1RLTTAC2	AU1RLTTAC3	76543210
76543210	AU1RSAPI0_BR	AU1RSAPI1_BR	AU1RSDUS0_BR	AU1RSDUS1_BR	AU1RBSTAT_BR
76543210	AU1RSAPI0_AR	AU1RSAPI1_AR	AU1RSDUS0_AR	AU1RSDUS1_AR	AU1RBSTAT_AR

Defined as:

AU1REIW0-AU1REIW3	Error information words
Bit	Meaning
0-3	Error type
6	Indicates API 0 involved in the error
7	Indicates API 1 involved in the error
8	Indicates DUS 0 involved in the error
9	Indicates DUS 1 involved in the error
12-13	Operation in progress at the time of the error
15-16	Read or write indicator
17	Control mode indicator
18-20	In-service status of AUI 0
21-23	In-service status of AUI 1
AU1RFADR	Failing address
AU1RFDAT	Failing data

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AU1RRIW0-AU1RRIW3	Recovery information words
	Bit Meaning
	0-2 Current recovery state
	3 Indicates a status update was attempted
	4 Indicates AUI tests were run
	5 Indicates an attempt was made to remove an AUI
	6 Indicates control was passed to unique AU recovery
	7 Indicates an attempt was made to remove an AU
	8 Indicates an attempt was made to remove an AU bus
	9 Indicates an AUFR bootstrap was attempted
	10 Indicates an IFFR bootstrap was requested
	12 Indicates the attempt to update status failed
	13 Indicates the AUI tests failed
	14 Indicates the attempt to remove an AUI failed
	16 Indicates the attempt to remove an AU failed
	17 Indicates the attempt to remove an AU bus failed
	21-23 Recovery state necessary for the next int/inj
AU1RAUIBA	Base address of AUI requesting/reporting the error
AU1RFBAD	Base address of failing AU
AU1CID	Client identification register of suspect AUI
	Bit Meaning
	0-9 Circuit pack name
AU1MID	Microcode identification register of suspect AUI
	Bit Meaning
	0-9 Microcode name
AU1STA	Status register of suspect AUI
	Bit Meaning
	0 RCVD data parity bit 0
	1 RCVD data parity bit 1
	2 RCVD data parity bit 2
	3 RCVD data parity bit 3
	4 Last cycle was read
	5 Last cycle was write

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AU1CTL

- 7 Last cycle was word DMA
 - 9 Operational interject active
 - 10 Maintenance interject active
 - 11 Maintenance interrupt active
 - 13 Word DMA request
 - 16 Interface busy
 - 17 All seems well from MMIO
 - 18 AU GCP or MMIO resp present
 - 19 AUI maintenance mode status
 - 20 AU activity status
- Control register of suspect AUI
- | Bit | Meaning |
|-----|-----------------------------------|
| 0 | Client IFB enable |
| 1 | Parity checking enable |
| 2 | Address limit checking enable |
| 3 | Operational interject enable |
| 4 | Maintenance interject enable |
| 5 | Maintenance interrupt enable |
| 6 | Operational interject clear |
| 7 | MTCE interject clear |
| 8 | MTCE interrupt clear |
| 9 | AUI is in-service - toggle ff |
| 10 | Update is in progress - toggle ff |
| 11 | AUI reset |
| 12 | Trouble AU bus 0 |
| 13 | Trouble AU bus 1 |
| 14 | Enable verify AU match |
| 15 | Enable all seems well fail chks |
| 16 | Enable AU request from API 0 |
| 17 | Enable AU request from API 1 |
| 18 | Enable AU request from DUS 0 |
| 19 | Enable AU request from DUS 1 |

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	20 Maintenance mode
	21 AU sequencer step
	22 AU sequencer init
	23 AU activity FF
AU1ESR	Error source register of suspect AUI
	Bit Meaning
	0 DMA lower limit exceeded
	1 DMA upper limit exceeded
	2 Detected no all seems well
	3 Detected all seems well failure
	4 Master detected data parity error
	5 Slave detected data parity error
	6 Slave detected command error
	7 Slave detected invalid address error
	8 Slave detected address parity error
	9 Sent all seems well failure
	10 AU bus detected error
	11 IFB error maintenance interrupt
	16 Command overwrite error
	17 AU verify mismatch error
	18 AU SAP verify mismatch error
	19 AU store address bus parity error
	20 AU reply bus parity error
AU1LLA	Lower DMA limit register of suspect AUI
	Bit Meaning
	8-23 Lowest DMA address - bits 14 to 29
AU1ULA	Upper DMA limit register of suspect AUI
	Bit Meaning
	8-23 High DMA address limit
AU1RSDAT_U	Data register (upper byte) of suspect AUI
AU1RSDAT_L	Data register (lower bytes) of suspect AUI

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AU1ACM	Communication register of suspect AUI Bit Meaning
	0 AU enable verify expected bit 00
	1 AU enable verify expected bit 01
	2 AU enable verify expected bit 12
	3 AU enable verify expected bit 13
	4 Store access permitted expected bit 00
	5 Store access permitted expected bit 01
	6 Store access permitted expected bit 12
	7 Store access permitted expected bit 13
	8 AU request bit 00
	9 AU request bit 01
	10 AU request bit 12
	11 AU request bit 13
	12 AU enable verify bit 00
	13 AU enable verify bit 01
	14 AU enable verify bit 12
	15 AU enable verify bit 13
AU1RSAAS_U	Store address register (upper byte) of suspect AUI Bit Meaning
	0-5 Upper address bits 24-29
	0 AU store address register read bit
AU1RSAAS_L	Store address register (lower bytes) of suspect AUI Bit Meaning
	0-23 AU store address
	22 AU store address parity bit
	23 AU store address write bit
AU1ARR	AU reply register of suspect AUI Bit Meaning
	0-23 AU reply register bits 0-23
	0 AU reply register all seems well
	1 AU reply register parity bit 1
	2 AU reply register parity bit 2

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AU1AUAR	AU address register of suspect AUI Bit Meaning
	0-15 AU address register
	16 AU address register read bit
	17 AU address register write bit
	18 AU address register control bit
	19 AU address register parity bit
AU1AUB	AUB register of suspect AUI Bit Meaning
	0 AU store address parity bit AU store address write bit
	2 AU store address read bit
	3 AU reply parity bit 1
	4 AU reply parity bit 2
	5 AU reply all seems well
	6 AU bus 0 operational interject
	7 AU bus 1 operational interject
	8 AU bus 0 maintenance interject
	9 AU bus 1 maintenance interject
	10 P1 parity on AMW register
	11 P2 parity on the AMW register
	12 P1 parity on the ADW register
	13 P2 parity on the ADW register
	14 Invert data parity on DMA transaction
	15 Enable AU bus drivers
AU1ADW	DMA write register of suspect AUI
AU1AMW	MMIO write register of suspect AUI
AUIRPROGAD	Program address at test failure
AUIRTESTAD	Test address at test failure
AUIRTESTOP	Test options and flags
AU1RTSAVF	F register returned from failing tests or bootstrap
AU1RTSAVG	G register returned from failing tests or bootstrap
AU1RTSAVJ	J register returned from failing tests or bootstrap
AU1RTSAVK	K register returned from failing tests or bootstrap

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AU1RTSAVL	L register returned from failing tests or bootstrap
AU1RTSAVX	X register returned from failing tests or bootstrap
AU1RTSAVY	Y register returned from failing tests or bootstrap
AU1RTSAVZ	Z register returned from failing tests or bootstrap
AU1ESR0	Error source register of failing AU
AU1RFGCP	GCP response of failing AU
AU1RSTATE	AUFR state timing word Bit Meaning 0-8 State timer 12-20 Value of state timer before recovery 23 State timing enable
AU1RERAT	AUFR error analysis timing word Bit Meaning 0-5 Error analysis timer 12-17 Value of error analysis timer before recovery 23 Error analysis timing enable
AU1RERAC	AUFR error analysis counters Bit Meaning 0-2 ERA counter for passing status updates 3-5 ERA counter for unique AU recovery no fault found returns
AU1REMRG	AUFR emergency action timing word Bit Meaning 0-10 Emergency action state timer 12-22 Value of emergency action timer before recovery 23 Emergency action timing enable
AU1EAST	Save AUFR emergency action state counter Bit Meaning 0-4 AUFR emergency action state counter
AU1RDTADR	Program address where bootstrap was called
AU1RLTTAT	Long-term trouble analysis timing word Bit Meaning 0-11 Long term trouble analysis timer 23 Long term trouble analysis timing enable
AU1RLTTAC0	Long-term trouble analysis counter for AUI 0
AU1RLTTAC1	Long-term trouble analysis counter for AUI 1

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AU1RLTTAC2	Long-term trouble analysis counter for AUB 0
AU1RLTTAC3	Long-term trouble analysis counter for AUB 1
AU1RSAPI0_BR	API 0 status word before recovery
AU1RSAPI1_BR	API 1 status word before recovery
	Bit Meaning
	0 AU marked in trouble
	1 AU in offline configuration
	2 AU stopped and in maintenance mode
	4 Diagnosis to be requested for AU
	5 AU KCODE trouble
	6 AU is active unit, for API
	7 AU is standby unit, for API
	8 API is being restored
	18 Do not restore AU
AU1RSDUS0_BR	DUS 0 status word before recovery
AU1RSDUS1_BR	DUS 1 status word before recovery
	Bit Meaning
	0 AU marked in trouble
	1 AU in offline configuration
	2 AU stopped and in maintenance mode
	4 Diagnosis to be requested for AU
	5 AU KCODE trouble
	8 API is being restored
	18 Do not restore AU
AU1RBSTAT_BR	AU bus status word before recovery
	Bit Meaning
	0 AU bus 0 trouble f/f in active AUI
	1 AU bus 1 trouble f/f in active AUI
	2 AU bus 0 trouble f/f in standby AUI
	3 AU bus 1 trouble f/f in standby AUI
	4 AU bus 0 system in offline configuration
	5 AU bus 1 system in offline configuration
	6 AU bus stopped and in maintenance mode
	7 Do not restore AU bus

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AU1RSAPI0_AR	API 0 status word after recovery
AU1RSAPI1_AR	API 1 status word after recovery
	Bit Meaning
	0 AU marked in trouble
	1 AU in offline configuration
	2 AU stopped and in maintenance mode
	4 Diagnosis to be requested for AU
	5 AU KCODE trouble
	6 AU is active unit, for API
	7 AU is standby unit, for API
	8 API is being restored
	18 Do not restore AU
AU1RSDUS0_AR	DUS 0 status word after recovery
AU1RSDUS1_AR	DUS 1 status word after recovery
	Bit Meaning
	0 AU marked in trouble
	1 AU in offline configuration
	2 AU stopped and in maintenance mode
	4 Diagnosis to be requested for AU
	5 AU KCODE trouble
	8 API is being restored
	18 Do not restore AU
AU1RBSTAT_AR	AU bus status word after recovery
	Bit Meaning
	0 AU bus 0 trouble f/f in active AUI
	1 AU bus 1 trouble f/f in active AUI
	2 AU bus 0 trouble f/f in standby AUI
	3 AU bus 1 trouble f/f in standby AUI
	4 AU bus 0 system in offline configuration
	5 AU bus 1 system in offline configuration
	6 AU bus stopped and in maintenance mode
	7 Do not restore AU bus

NOTE 1: Octal data 76543210 means that the word was not used by interject or D-level control.

NOTE 2: See PA-4A002-01, No. 4ESSTM *User's Manual* for more detailed interpretations of the AU data.

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DATA: COMMON IFB RECOVERY DATA

IF1RSTAT_BR0	IF1RSTAT_BR1	IF1RSTAT_BR2	IF1RSTAT_BR3	IF1RSTAT_BR4	IF1RSTAT_BR5
IF1RSTAT_BR6	IF1RSTAT_BR7	IF1RSTAT_BR8	IF1RSTAT_BR9	IF1RSTAT_BR10	IF1RSTAT_BR11
IF1RSTAT_BR12	IF1RSTAT_BR13	IF1RSTAT_BR14	IF1RSTAT_BR15	IF1RSTAT_BR16	IF1RSTAT_BR17
IF1RSTAT_BR18	IF1RSTAT_BR19	IF1RSTAT_BR20	IF1RSTAT_BR21	IF1RSTAT_BR22	IF1RSTAT_BR23
IF1RBSTAT_BR	IF1RSRW	IF1RSSW	IF1RECW	IF1RLTW	IF1RRAW
IF1RAFCT	IF1RAFCE	IF1RAFES	IF1RAFEE	IF1RAFER	IF1RAFIP
IF1RSFCT	IF1RSFCE	IF1RSFES	IF1RSFEE	IF1RSFER	IF1RSFIP
IF1RAFRU_U	IF1RAFRU_L	IF1RAFRL_U	IF1RAFRL_L	IF1RACSC	IF1RCR01
IF1RSFRU_U	IF1RSFRU_L	IF1RSFRL_U	IF1RSFRL_L	IF1RRQESR	IF1RCLSTA
IF1RFADR_U	IF1RFADR_L	IF1RFDAT_U	IF1RFDAT_L	IF1RMCADR	IF1RSCADR
IF1RRCADR	IF1RDCADR	IF1RRCERA	IF1RDCERA	IF1RBSERA	IF1RERATW
IF1RLTPASAV	IF1RLTTASAV	IF1RLTTOSAV	IF1RLTFSAV	IF1RLTGSAV	IF1RLTJSAV
IF1RLTKSAV	IF1RLTLSAV	IF1RLTXSAV	IF1RLTYSAV	IF1RLTZSAV	RESERVED
IF1RICRAA	IF1RBSRAA	IF1RRAATW	IF1RDTW	IF1RDTADR	IF1RSEMRG
IF1RB0ANALX	IF1RB1ANALX	IF1RBANAL	IF1RBLW	IF1RBLADR	RESERVED
IF1RSTAT_AR0	IF1RSTAT_AR1	IF1RSTAT_AR2	IF1RSTAT_AR3	IF1RSTAT_AR4	IF1RSTAT_AR5
IF1RSTAT_AR6	IF1RSTAT_AR7	IF1RSTAT_AR8	IF1RSTAT_AR9	IF1RSTAT_AR10	IF1RSTAT_AR11
IF1RSTAT_AR12	IF1RSTAT_AR13	IF1RSTAT_AR14	IF1RSTAT_AR15	IF1RSTAT_AR16	IF1RSTAT_AR17
IF1RSTAT_AR18	IF1RSTAT_AR19	IF1RSTAT_AR20	IF1RSTAT_AR21	IF1RSTAT_AR22	IF1RSTAT_AR23
IF1RBSTAT_AR					

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Defined as:

IF1RSTAT_BR0 - IF1RSTAT_BR23 IFB client status prior to recovery

Bit	Meaning
0	IFB client is OOS
1	IFB client is stopped
3	IFB client is active
4	IFB client is standby
5	IFB client is forced
6	Request DGN for IFB client
8	IFB client is being restored
9	Do not restore IFB client

IF1RSTAT_BR IFB status prior to recovery

Bit	Meaning
0	IFBC activity in active CC
1	IFB 0 trouble set in active CC
2	IFB 1 trouble set in active CC
3	IFBC activity in standby CC
4	IFB 0 trouble set in standby CC
5	IFB 1 trouble set in standby CC
8	IFB subsystem is stopped
9	Do not restore IFB

IF1RSRW IFB subsystem recovery word

Bit	Meaning
0	Current entry resulted from a D-level interrupt
1	Current entry resulted from an interject
2	Current entry resulted from a BLM
3	Standby CC is available for use during testing
4	Standby CC was in service at entry
5	Multiple client maintenance requests present
6	Requesting client bins loaded

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- 7 Driving client bins loaded
- 8 Common bins loaded
- 9 Plant measurement counts must be updated
- 10 Active IFBC stack bins loaded
- 11 Standby IFBC stack bins loaded

IF1RSSW

IFB shadow stack word

Bit Meaning

0-1 Indicates the stack utilized during recovery (octal)

- 1 Bus node stack
- 2 IFBC stack

3-7 Stack depth utilized during recovery

9 Indicates the standby CC's stacks were utilized

IF1RECW

IFB error classification word

Bit Meaning

0-2 Error class (octal)

- 1 Indiscernible error
- 2 Discernible error
- 3 Memory unit error
- 4 Client-specific error
- 5 Software error

3-5 Error sub-class (octal)

- 1 Address parity error
- 2 Data parity error
- 3 Control parity error
- 4 Invalid slave reply error
- 5 Invalid master reply error
- 6 All seems well error

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6-9 Requesting unit (octal)

- 1 Active CC
- 2 Standby CC
- 3 Active CC's IFBC
- 4 Standby CC's IFBC
- 5 Memory unit
- 6 Master client
- 7 Slave client
- 10 Uninvolved client

12-14 In-progress operation (octal)

- 1 MMIO
- 2 Word DMA
- 3 Block DMA
- 4 Client to client

15-17 Read / Write Indicator (octal)

- 1 Read operation
- 2 Write operation

18-21 Driving unit (octal)

- 1 Active CC
- 2 Standby CC
- 3 Active CC's IFBC
- 4 Standby CC's IFBC
- 5 Memory unit
- 6 Master client
- 7 Slave client
- 10 Uninvolved client

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IF1RLTW

IFB logical test word

Bit Meaning

0-3 Type of logical test requested (octal)

- 1 IFBC test
- 2 Client MMIO test
- 3 Client DMA test
- 5 False responder test
- 6 All tests with respect to all clients on IFB 0
- 7 All tests with respect to all clients on IFB 1
- 10 All tests with respect to a given client
- 11 All tests with respect to all clients

9-11 Indicates which client was tested (octal)

- 1 Requesting client tested
- 2 Driving client tested

21-23 Logical test disposition (octal)

- 1 Logical tests failed
- 2 Logical tests passed

IF1RRW

IFB recovery action word

Bit Meaning

0-5 Recovery action (octal)

- 1 Active CC implicated
- 2 Standby CC implicated
- 3 Active CC's IFBC implicated
- 4 Standby CC's IFBC implicated
- 5 Memory unit implicated by first look
- 6 Master client implicated by first look
- 7 Slave client implicated by first look
- 10 Uninvolved client implicated by first look
- 26 Memory unit implicated by logical tests

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- 27 Client implicated by logical tests
- 30 IFB 0 implicated
- 31 IFB 1 implicated
- 32 Client-specific problem implicated
- 33 Software implicated
- 34 IFB subsystem status implicated
- 35 IFB subsystem configuration implicated
- 36 Transient error implicated
- 37 Inconclusive error implicated

21-23 Recovery action disposition (octal)

- 1 Recovery action failed or was denied
- 2 Recovery action completed

IF1RAFCT	Active CC's IFBC control register (AC1FCT)
IF1RAFCE	Active CC's IFBC client enable register (AC1FCE)
IF1RAFES	Active CC's IFBC error source register (AC1FES)
IF1RAFEE	Active CC's IFBC error enable register (AC1FEE)
IF1RAFER	Active CC's IFBC error request register (AC1FER)
IF1RAFIP	Active CC's IFBC poll register (AC1FIP)
IF1RSFCT	Standby CC's IFBC control register (ST1FCT)
IF1RSFCE	Standby CC's IFBC client enable register (ST1FCE)
IF1RSFES	Standby CC's IFBC error source register (ST1FES)
IF1RSFEE	Standby CC's IFBC error enable register (ST1FEE)
IF1RSFER	Standby CC's IFBC error request register (ST1FER)
IF1RSFIP	Standby CC's IFBC poll register (ST1FIP)
IF1RAFRU_U	Upper byte of active CC's IFBC upper relocation register (AC1FRU)
IF1RAFRU_L	Lower bytes of active CC's IFBC upper relocation register (AC1FRU)
IF1RAFRL_U	Upper byte of active CC's IFBC lower relocation register (AC1FRL)
IF1RAFRL_L	Lower bytes of active CC's IFBC lower relocation register (AC1FRL)

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IF1RACSC	Active CC's CC status register (AC1CSC)
IF1RCR01	Memory unit's CR01 register
IF1RSFRU_U	Upper byte of standby CC's IFBC upper relocation register (ST1FRU)
IF1RSFRU_L	Lower bytes of standby CC's IFBC upper relocation register (ST1FRU)
IF1RSFRL_U	Upper byte of standby CC's IFBC lower relocation register (ST1FRL)
IF1RSFRL_L	Lower bytes of standby CC's IFBC lower relocation register (ST1FRL)
IF1RRQESR	Requesting client's error summary register

Bit Meaning

- 0 Lower DMA limit exceeded
- 1 Upper DMA limit exceeded
- 2 Master detected no all seems well
- 3 Master detected all seems well failure
- 4 Master detected data parity error
- 5 Slave detected data parity error
- 6 Slave detected control error
- 7 Slave detected unused address error
- 8 Slave detected address parity error
- 9 Slave sent ASWF (summary bit for slave errors)
- 10 Client error (summary bit for maintenance interject)
- 11 IFB error (summary bit for master errors)
- 12-15 Reserved
- 16-23 Client options

IF1RCLSTA	Client's status register

Bit Meaning

- 0-3 Data parity received by client
- 4 Last cycle was a read
- 5 Last cycle was a write
- 6 Last cycle was block DMA
- 7 Last cycle was word DMA

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- 8 Last cycle was client to client
- 9 Operational interject active
- 10 Maintenance interject active
- 11 Maintenance interrupt active
- 12 Block DMA request
- 13 Word DMA request
- 14 Client to client request
- 15 Reserved
- 16-23 Client options

IF1RFADR_U	Upper byte of failing address
IF1RFADR_L	Lower bytes of failing address
IF1RFDAT_U	Upper byte of failing data
IF1RFDAT_L	Lower bytes of failing data
IF1RMCADR	Base address of master client
IF1RSCADR	Base address of slave client
IF1RRCADR	Base address of requesting client
IF1RDCADR	Base address of driving client
IF1RRCERA	Requesting client's error analysis counters

Bit Meaning

- 0-2 CC access error count
- 3-5 Store access error count
- 6-8 Client access error count
- 9-11 IFBC error count
- 12-14 Total error count

IF1RDCERA	Driving client's error analysis counters

Bit Meaning

- 0-2 CC access error count
- 3-5 Store access error count
- 6-8 Client access error count
- 9-11 IFBC error count
- 12-14 Total error count

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IF1RBSERA	Bus and subsystem error analysis counters
	Bit Meaning
	0-5 IFB 0 error count
	6-11 IFB 1 error count
	12-17 IFB subsystem error count
IF1RERATW	IFB error analysis timing word
	Bit Meaning
	0-11 Error analysis timer
	23 Error analysis timing enable
IF1RLTPASAV	Program address at logical test failure
IF1RLTTASAV	Test address at logical test failure
IF1RLTTOSAV	Test options and flags
IF1RLTFSAV	F register at point of logical test failure
IF1RLTGSAV	G register at point of logical test failure
IF1RLTJSAV	J register at point of logical test failure
IF1RLTKSAV	K register at point of logical test failure
IF1RLTLSAV	L register at point of logical test failure
IF1RLTXSAV	X register at point of logical test failure
IF1RLTYSAV	Y register at point of logical test failure
IF1RLTZSAV	Z register at point of logical test failure
IF1RICRAA	Implicated client's recovery action analysis counters
	Bit Meaning
	15-17 Client removal denied counter
	18-20 Client program no action counter
	21-23 Client tests run counter

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IF1RBSRAA Bus and subsystem recovery action analysis counters

Bit Meaning

0-2 IFB removal denied counter

3-5 IFB 0 test run counter

6-8 IFB 1 test run counter

9-11 CC removal denied counter

12-14 Successful status update counter

15-17 Subsystem tests run counter

18-20 Memory unit recovery failure counter

IF1RRAATW Recovery action analysis timing word

Bit Meaning

0-5 Recovery action analysis timer

23 Recovery action analysis timing enable

IF1RDTW IFB double trouble word

Bit Meaning

0-5 Reason for double trouble (octal)

1 Client program requested a bootstrap

2 Status update was attempted and failed

3 Invalid configuration detected

4 Client program no action threshold exceeded

5 Client remove denied threshold exceeded

6 Client tests run threshold exceeded

7 IFB 0 tests run threshold exceeded

10 IFB 1 tests run threshold exceeded

11 IFB remove denied threshold exceeded

12 CC remove denied threshold exceeded

13 Status update threshold exceeded

14 Subsystem tests run threshold exceeded

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15 Pre-termination access test failed

16 Memory unit recovery failure threshold exceeded

23 Indicates a bootstrap is necessary

IF1RDTADR

Program address where double trouble condition was detected

IF1RSEMERG

IFB emergency action word

Bit Meaning

0-3 Emergency action state

6-17 Emergency action timer

23 Emergency action timing enable

IF1RB0ANALX

IFB 0 long term trouble analysis counter

IF1RB1ANALX

IFB 1 long term trouble analysis counter

IF1RBANAL

IFB long term trouble analysis timing word

Bit Meaning

0-11 Long term trouble analysis timer

23 Long term trouble analysis timing enable

IF1RBLW

IFB base level maintenance word

Bit Meaning

0-6 Member number of suspect unit

7-13 Unit type number of suspect unit

18-20 BLM client ID

21-23 BLM client error code

IF1RBLADR

Program address where BLM was called

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IF1RSTAT_AR0 - IF1RSTAT_AR23 IFB client status following recovery

Bit Meaning

- 0 IFB client is OOS
- 1 IFB client is stopped
- 3 IFB client is active
- 4 IFB client is standby
- 5 IFB client is forced
- 6 Request DGN for IFB client
- 8 IFB client is being restored
- 9 Do not restore IFB client

IF1RBSTAT_AR

IFB status following recovery

Bit Meaning

- 0 IFBC activity in active CC
- 1 IFB 0 trouble set in active CC
- 2 IFB 1 trouble set in active CC
- 3 IFBC activity in standby CC
- 4 IFB 0 trouble set in standby CC
- 5 IFB 1 trouble set in standby CC
- 8 IFB subsystem is stopped
- 9 Do not restore IFB

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DATA: CONTENTS OF STACK (STACK)

CS1STACK				
+IN1SC+1	CS1STACK+2	CS1STACK+3	CS1STACK+4	CS1STACK+5
		.		
		.		
		.		
CS1STACK+60	CS1STACK+61	CS1STACK+62	CS1STACK+63	

DATA: D-LEVEL (DLEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	AC1ASD(H)	AC1ASD(L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)	ST1CES	ST1ILA
AC1AP	AC1ABC	AC1IBR	ST1IBR	AC1TAR	AC1BNCTL

DATA: D-LEVEL SOFTWARE FAILURE RESULTS (CSFRPG)

IB1D_H_ADDR	IB1D_ADDR	IB1D_LHIN	IB1D_RHIN	IN1UPA	IN1LPA

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DATA: DATA ID FOR REPORTING CCIS CRITICAL REG (CCISCR)

SSTAT_C0	HSTAT_C0	ERSRC_C0	CONTM_C0	TERMM_C0	12345670
SSTAT_C1	HSTAT_C1	ERSRC_C1	CONTM_C1	TERMM_C1	12345670
SSREG_C0	MODER_C0	ESRCR_C0	CONTR_C0	INSTA_C0	12345670
SSREG_C1	MODER_C1	ESRCR_C1	CONTR_C1	INSTA_C1	00000000

DATA: DIF AUXILIARY DATA (for Base Level Maintenance)

BSIZE	KIND	HEADER	DATA0	DATA1	DATA2
DATA3	DATA4	DATA5	DATA6	DATA7	DATA8
DATA9	DATA10	DATA11	DATA12	DATA13	DATA14
DATA15	MBPTRS*	MPBSTAT*	CCPSTO*	CCPST1*	DIUOS0*
DIUOS1*					

*Only present for illegitimate reports; otherwise, all zeros.

Defined as:

BSIZE	Block size.
KIND	Kind of report (illegitimate or autonomous).
HEADER	Frame report header word (from the maintenance buffer).
DATA0-DATA15	Frame report data words 00-15 (From the maintenance buffer).
MBPTRS	Maintenance buffer pointers.
MPBSTAT	Maintenance (processor) buffer status.
CCPST0	Common alarm pest 0 (for DIUs 00-23).
CCPST1	Common alarm pest 1 (for DIUs 24-33).
DIUOS0	Out of service DIU summary 0 (for DIUs 00-23).
DIUOS1	Out of service DIU summary 1 (for DIUs 24-33).

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DATA: DIF / DIF-E1 CRITICAL REGISTERS (for F-level and interject)

CSTATUS	HWSTATR	MADATA	FSTATUS	DIUOS0	DIUOS1
CESR	PEST	MPESRH *MPESR	MPESRF *MPRETE	DIUSUM0	DIUSUM1
CLKESR	SPESR	IBIR	EXR	PSRL	PSRH
PSVL	PSVH	0...0 *MAPESR	0...0 *EXCFESR	AUDR EXCMASK	TRKCNTR
BSTATR	HPPTRS	LPPRTS	DBPTRS	SZPTRS	MBPTRS
SPSTATR	LUSPD0 *MAPCNTRS **ESCNCNTL	LUSPD1 *MAPREGS	LUSPP0 *MPSTKPTR	LUSPP1 *MPPMCNT	MPBSTAT
URD1	URD2	URD3	URD4	URD5	URD6
URD7	URD8	URD9	URD10	URD11	URD12
CCPST0	CCPST1	MPIES	MPRTIS	MPMBSF *EXECSMW	0...0
DACPST0	DACPST1	DRFPST0	DRFPST1	PSSSL	PSSSH
CALOW	CAHIGH	INTJ	0...0	0...0	0...0
MEMN	XLATE	FIRMWARE	5...5	5...5	5...5

NOTE: UPPER HALF = CONTROLLER 0
 LOWER HALF (not shown) = CONTROLLER 1
 *DIFE1 REGISTERS
 **DIFE1 MF / DTMF 4ST REGISTERS

Defined as:

CSTATUS	Controller software status.
HWSTATR	Controller hardware status.
MADATA	Maintenance access data.
FSTATUS	Frame software status.
DIUOS0	DIU software OOS status 0 (for DIUs 00-23).
DIUOS1	DIU software OOS status 1 (for DIUs 24-33).

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CESR	Controller primary error source register.
PEST	Controller pest register.
MPESRH	Maintenance processor error source register for hardware errors (domestic DIF only).
*MPESR	Maintenance processor ESR and halt pest bit (DIF-E1 only).
MPESRF	Maintenance processor error source register for firmware errors (domestic DIF only).
*MPRETE	Maintenance processor reset enable bit (DIF-E1 only).
DIUSUM0	DIU error source register summary 0 (for DIUs 00-23).
DIUSUM1	DIU error source register summary 1 (for DIUs 24-33).
CLKESR	Clock error source register.
SPESR	Signal processor error source register (domestic DIF only)
IBIR	Internal bus error source register.
EXR	Exercise register.
PSRL	Protection switch request register (for DIUs 00-15) - lower half.
PSRH	Protection switch request register (for DIUs 16-31) - higher half.
PSVL	Protection switch verify (for DIUs 00-15) -lower half.
PSVH	Protection switch verify (for DIUs 16-31) - high half.
*MAPESR	Message accounting processor error source register and status register (DIF-E1 only).
*EXCFESR	Exec processor firmware error source register (DIF-E1 only).
AUDR	Arithmetic unit data register (domestic DIF only).
*EXCMASK	Exec processor interrupt masks (DIF-E1 only).
TRKCNT	Signal processor trunk counters.
BSTATR	Buffer status register.
HPPTRS	High priority buffer pointers.
LPPTS	Low priority buffer pointers.
DBPTRS	Digit buffer pointers.
SZPTRS	Seizure buffer pointers.
MBPTRS	Maintenance buffer pointers.
SPSTATR	Signal processor status register.
LUSPD0	Look up signal processor link error data 0 (domestic DIF only).
*MAPCNTRS	Message accounting processor trunk counters (DIF-E1 only).

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**ESCNCNTL	E-scanner control register (DIF-E1 DTMF / 4-state and MF / 4-state only).
LUSPD1	Look up signal processor link error data 1 (domestic DIF only).
*MAPREGS	Message accounting processor initial pulsing interval register and pulse width register (DIF-E1 only).
LUSPP0	Look up signal processor pest data 0 (domestic DIF only).
*MPSTKPTR	Maintenance processor stack pointer (DIF-E1 only).
LUSPP1	Look up signal processor pest data 1 (domestic DIF only).
*MPPMCNT	Maintenance processor program counter (DIF-E1 only).
MPBSTAT	Maintenance processor buffer status.
URD1	Unit raw data common format for DIUs 0-2.
URD2	Unit raw data common format for DIUs 3-5.
URD3	Unit raw data common format for DIUs 6-8.
URD4	Unit raw data common format for DIUs 9-11.
URD5	Unit raw data common format for DIUs 12-14.
URD6	Unit raw data common format for DIUs 15-17.
URD7	Unit raw data common format for DIUs 18-20.
URD8	Unit raw data common format for DIUs 21-23.
URD9	Unit raw data common format for DIUs 24-26.
URD10	Unit raw data common format for DIUs 27-29.
URD11	Unit raw data common format for DIUs 30-32.
URD12	Unit raw data common format for DIUs 33.
CCPST0	Common alarm pest 0 (for DIUs 00-23).
CCPST1	Common alarm pest 1 (for DIUs 24-33).
MPIES	Maintenance processor interrupt enable status bits
MPRTIS	Maintenance routine task inhibit status.
MPMBSF	Maintenance processor maintenance buffer seizure flag (domestic DIF only).
*EXECSTMW	Exec processor saved mask word (DIF-E1 only).
DACPST0	Digroup alarm pest 0 (For DIUs 00-23).
DACPST1	Digroup alarm pest 1 (For DIUs 24-33).
DRFPST0	Digroup report function pest 0 (For DIUs 00-23).
DRFPST1	Digroup report function pest 1 (For DIUs 24-33).

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PSSSL	Protection switch firmware status (for DIUs 00-15) - lower half.
PSSSH	Protection switch firmware status (for DIUs 16-33) - upper half.
CALOW	Common alarms (for DIUs 00-15) - lower half.
CAHIGH	Common alarms (for DIUs 16-33) - upper half.
INTJ	Interject register.
MEMN	Member number.
XLATE	First word of the DIF / DIF-E1 unit type translator.
FIRMWARE	Work 48 (octal 60) of DIF / DIF-E1 unit type translator.

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DATA: E-LEVEL (ELEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	AC1ASE(H)	AC1ASE(L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)	ST1CES	ST1ILA
AC1AP	AC1ABC	AC1IBR	ST1IBR	AC1TAR	AC1BNCTL

DATA: E-LEVEL SOFTWARE FAILURE RESULTS (PSFRPG)

IB1E_H_ADDR IB1E_ADDR IB1E_LHIN IB1D_RHIN

DATA: ERROR ANALYSIS RECENT HISTORY TABLE (RCNTHIST)

ER4RCNT+0	ER4RCNT+1	ER4RCNT+2	ER4RCNT+3	ER4RCNT+4	ER4RCNT+5
ER4RCNT+6	ER4RCNT+7	ER4RCNT+8	ER4RCNT+9	ER4RCNT+10	ER4RCNT+11
ER4RCNT+12	ER4RCNT+13	ER4RCNT+14	ER4RCNT+15	ER4RCNT+16	ER4RCNT+17
ER4RCNT+18	ER4RCNT+19	ER4RCNT+20	ER4RCNT+21	ER4RCNT+22	ER4RCNT+23
ER4RCNT+24	ER4RCNT+25	ER4RCNT+26	ER4RCNT+27	ER4RCNT+28	ER4RCNT+29
ER4RCNT+30	ER4RCNT+31	ER4RCNT+32	ER4RCNT+33	ER4RCNT+34	ER4RCNT+35
ER4RCNT+36	ER4RCNT+37	ER4RCNT+38	ER4RCNT+39	ER4RCNT+40	ER4RCNT+41
ER4RCNT+42	ER4RCNT+43	ER4RCNT+44	ER4RCNT+45	ER4RCNT+46	ER4RCNT+47
ER4RCNT+48	ER4RCNT+49	ER4RCNT+50	ER4RCNT+51	ER4RCNT+52	ER4RCNT+53
ER4RCNT+54	ER4RCNT+55	ER4RCNT+56	ER4RCNT+57	ER4RCNT+58	ER4RCNT+59
ER4RCNT+60	ER4RCNT+61	ER4RCNT+62	ER4RCNT+63		

NOTE: ER4RCNT+63 is the first word of the unit type translator for the interrupting frame.

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DATA: ERROR ANALYSIS STRATEGY DATA (TSI/TS)

W0	W1	W2	W3	W4	W5
W6					

Defined as:

W0	Time of interrupt.
W1	Number of interrupts.
W2	Leaky bucket count.
W3	Sequence table number.
W4	Interrupt state number.
W5	Diagnostic sequence state.
W6	How to return.

DATA: ERROR STOP (ERSP)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	-----	-----
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)		

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DATA: EST CREG

CSTATUS	STATR	USTATUS	USTAR	CESR1	CESR2
CESR3	CESR4	PEST12	PEST34	USR	UPR
EXR	PSR	PCM	UPA	LLSSR	TSSSR
CSTATUS	STATR	USTATUS	USTAR	CESR1	CESR2
CESR3	CESR4	PEST12	PEST34	USR	UPR
EXR	PSR	PCM	UPA	LLSSR	TSSSR

NOTE 1: Upper half of message applies to controller 0; lower half to controller 1.

NOTE 2: All words prefixed with ES4.

Defined as:

CSTATUS	Software status.
STATR	Hardware status.
USTATUS	Unit software status.
USTAR	Unit status.
CESR1	Error source register 1.
CESR2	Error source register 2.
CESR3	Error source register 3.
CESR4	Error source register 4.
PEST12	Pest register 12.
PEST34	Pest register 34.
USR	Unit error summary.
UPR	Unit pest.
EXR	Exercise.
PSR	Protection switch request.
PCM	Protection switch relay contact monitor.
UPA	Unit power alarm.
LLSSR	Last look store status.
TSSSR	Trunk status store status.

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DATA: EST LLS MEMORY (for Interject Printouts)

ESU0ESR1	ESU0ESR0	ESU1ESR1	ESU1ESR0	ESU2ESR1	ESU2ESR0
ESU3ESR1	ESU4ESR0	ESU4ESR1	ESU4ESR0	ESU5ESR1	ESU5ESR0
ESU6ESR1	ESU6ESR0	ESU7ESR1	ESU7ESR0	ESU8ESR1	ESU8ESR0
ESU9ESR1	ESU9ESR0	ESU10ESR1	ESU10ESR0	ESU11ESR1	ESU11ESR0
ESU12ESR1	ESU12ESR0	ESU13ESR1	ESU13ESR0	ESU14ESR1	ESU14ESR0
ESU15ESR1	ESU15ESR0	CESR1	USR	UPR	UPA

Defined as:

ESU0ESR1 to
ESU15ESR1 High-half error source register (ESR) for error
source unit (ESU) 1.

ESU0ESR0 to
ESU15ESR0 Low-half ESR bits for ESU 0.

CESR1 Controller ESR (CESR) 1.

USR Unit pest register.

UPA Unit power alarm.

NOTE: This data block dumps at time of interject via active controller. The data block dump repeats after clearing all errors and hit timing for 10 ms.

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DATA: F-LEVEL (FLEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	AC1ASF(H)	AC1ASF(L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)	ST1LR	
AC1PSQ	AC1ULR	AC1PES	ST1PES	ST1ER	ST1PRM
ST1PRL	ST1PSC	AC1RP0	AC1RP1	ST1RP0	ST1RP1
ST1CSC	ST1INH	PU1RFLCO0	PU1RFLCO1	PU1RFLCO2	PU1RFLCO3
PUQRFLCO4	PUQRFLCO5	PUQRFLCO6	PUQRFLCO7		

Defined as (Peripheral F-Levels):

IB1ULR	Unsuccessful response in LR from PU list.
PU1RFLC00	Controller 0 pulse point reply.
PU1RFLC01	Controller 1 pulse point reply.
PU1RFLC02	Controller 0 status register.
PU1RFLC03	Controller 1 status register.
PU1RFLC04	Controller 0 error source register.
PU1RFLC05	Controller 1 error source register.
PU1RFLC06	Controller 0 reply bus register.
PU1RFLC07	Controller 1 reply bus register.

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Defined as (I/O frame and MCC F-Levels):

IB1ULR	Unsuccessful response in LR from PU list.
PU1RFLC00	Pulse point reply. (Layout for pulse point reply is the same as the IOUS status register, except that the uppermost two bits are parity bits, but not parity failure indications.)
PU1RFLC01	Unit software status: MC1RSTATUS for MCC F-Levels, IO1RSTIOUS for I/O F-Levels.
PU1RFLC02	Unit status register (hardware status).
PU1RFLC03	Subunit software status: (Not used for MCC F-Levels.) IO1RSTIOUC for Phase III channel F-Levels, IO1RSTIOMP for Phase I channel F-Levels.
PU1RFLC04	Error summary register: (Not used for MCC F-Levels.)
PU1RFLC05	PFLR action word (PU1RESULT).
PU1RFLC06	Subunit status reg. (hardware status). (Used only on Phase II IOP channels.)
PU1RFLC07	Test results.

NOTE: Layouts for IO1RSTIOUS, IO1RSTIOUC, IOUS status register, IOUC status register and error summary register can be found in layouts under DATA: IO STATUS (IOSTAT) in this part.

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MC1RSTATUS = PPPP-O-N-MLKJ--IHGFEDCBA

A = MC1RMA	–	Image of MA flip-flop
B = MC1RROO	–	Image of RO flip-flop
C = MC1RS0	–	Image of S0 flip-flop
D = MC1RS1	–	Image of S1 flip-flop
E = MC1RTBL	–	MCC trouble bit
F = MC1RBDGNRQ0	–	No GBT when dgn. req. on IPUB 0
G = MC1RBDGNRQ1	–	No GBT when dgn. req. on IPUB 1
H = MC1RDGNRQ	–	No GBT when dgn. req. on MCC
I = MC1RRMVTY	–	MCC removed by TTY
J = MC1RBYPASS	–	Bypass MCC
K = MC1ROS	–	MCC OOS
L = MC1RBRMTTY0	–	IPUB 0 access removed by TTY
M = MC1RBRMTTY1	–	IPUB 1 access removed by TTY
N = MC1RRECTBL0	–	IPUB 0 access removed
O = MC1RRECTBL1	–	IPUB 1 access removed
P = MC1RSMINT	–	PU maintenance code

MCC STATUS REG = MCC status register

Bit

0	MC1MAFF	Maintenance flip-flop
1	MC1ROFF	Receive on bus flip-flop
2	MC1S0	Send on bus 0
3	MC1S1	Send on bus 1
4-23	Unused.	

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PU1RESULT = QQPPSR--ONMLKJIHGFEDCBA

A = PU1CC0	–	CC 0 BLAMED OR FOUND FAULTY
B = PU1CC1	–	CC 1 BLAMED OR FOUND FAULTY
C = PU1C0	–	CONTROLLER 0 FOUND FAULTY
D = PU1C1	–	CONTROLLER 1 FOUND FAULTY
E = PU1MAT0	–	PU BUS 0 FOUND FAULTY
F = PU1MAT1	–	PU BUS 1 FOUND FAULTY
G = PU1MIN0	–	BUS 0 AT UNIT FOUND FAULTY
H = PU1MIN1	–	BUS 1 AT UNIT FOUND FAULTY
I = PU1RMDIG	–	FAULT REC. REMD & ISSUED DGN RESTORE
J = PU1REMV	–	FAULT REC. REMOVED UNIT (NO DGN)
K = PU1QU	–	FAULT REC. COULD NOT FIND FAULT
L = PU1SOFT	–	FAULT REC. FOUND SOFTWARE ERROR
M = PU1TRANS	–	F-LEVEL BLAMED ON TRANSIENT ERROR
N = PU1HANG	–	FAULT REC. RESTARTED CHANNEL
O = PU1REST	–	FAULT REC. DEFERRED RESTORED UNIT.
P = PU1FAULT	–	FAULT TYPE (CONTAINS 2 FOR F-LEVELS)
Q = PU1GRP	–	GROUP NUMBER OF UNIT
R = PU1FRESP	–	FALSE RESPONDER FOUND ON PU BUS
S = PU1BABL	–	BABBLING DETECTED ON PU BUS

TEST RESULTS (PU1RFLCO7) = -----NMLKJIHHGFEDCBA

A = INVCCON	–	Invalid CC configuration.
B = SHSTE	–	Software-Hardware configuration mismatch.
C = INVDMODE	–	Unit addressed in wrong mode.
D = INVDFROW	–	Invalid row addressed in MCC.
E = UPOT	–	Unit software configuration state not compatible with PU bus configuration.
F = INVI	–	ID invalid instruction.
G = RECOVER	–	Interrupt can be unwound.
H = BUSFAIL	–	Unit failed on PU bus 0/1.
I = SKIPRETRY	–	Skip instruction retry.
J = SUBUNEQ	–	Subunit addressed is unequipped.
K = SUBOP	–	Subunit addressed.
L = MSORD	–	MTCE substitute order.
M = FRESP	–	False responder found on PU bus.
N = IOUS_FLAG	–	Flag set when IOUS fails test.

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DATA: FAULT RECOGNITION ISOLATION DATA

W0 W1 W2 W3 W4 W5

Defined as:

W0 Sequence table number.
W1 Interrupt state number.
W2 PMD number.
W3 Resolution class.
W4 Fault class.
W5 Number of isolation attempts.

DATA: FILE STORE ERROR CORRECTION DATA (FSECD)

WORDS DISKADD ID FLAGS

Defined as:

WORDS Number of words corrected by status failure control.
DISKADD Start disk address of correction.
ID ID tag associated with record.
FLAGS Correction control flags:
 Bit 1 Disk write is for copy.
 2 Disk job being dispensed as cancel request.
 3 Reread failed.
 4 ID is provided by client.
 5 Client requests all writes be verified.
 6 Buffer choice; 0 = Priv buf, 1=mac paging area.
 7 Data transfer in progress.
 8 Data transfer is waiting for completion of disk write.
 9 Data transfer is delayed by no DRRs.
 10 Request pending completion by FSC.
 11 Give client an immediate return.
 13 DF is in update mode.

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14	Task dispenser loaded DRR for data transfer.
18	About copy operation at first opportunity.
19-20	Priority of copy client.
21	Rewrite same file.
22-23	Error correction code: 0 Copy mode. 1 IDMM. 2 UTRAMM. 3 Exerciser error.

DATA: FILE STORE STATUS FAILURE REPORT DATA (FSSTAT)

DRB0	DRB1	DRB2	DRB3	CAB0*	CAB1*
SAVEJ*	DRR*				

NOTE: SAVEJ program address+1 where failure detected (printed only when an FS or DF is removed or when an attempt to remove was made).

DATA: H-LEVEL CC REGISTERS (HLEV)

IN1FR	IN1GR	IN1JR	IN1KR	IN1LR	IN1XR
IN1YR	IN1ZR				

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DATA: IFB BOOTSTRAP FAILURE DATA

FAIL_NUM	PROGADDR	TESTADDR	TESTOPTS	SAVF	SAVG
SAVJ	SAVK	SAVL	SAVX	SAVY	SAVZ
.					
.					
.					

Defined as:

FAIL_NUM - SAVZ — One failure block, in which:

FAIL_NUM — Number of access test failures.

PROGADDR — Program address at failure.

TESTADDR — Test address at failure or:

- Base address of client if client is implicated.
- Address of memory if store failure.
- 0 for CC0 or 1 for CC1.
- 0 for IFB0 or 1 for IFB1.

TESTOPTS — Test options and flags at failure. Also indicates failing unit:

Bit	Description
0	Active CC failed.
1	Standby CC failed.
2	Store failed.
3	An IFB failed.
4	An IFB client failed.

SAVF - SAVZ — The save of register content when the failure was reported.

NOTE: The failure block consists of one or more instances of failure information with the size of decimal 12. The failure information was filled to the last one.

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DATA: INTERJECT

IN1INJ

DATA: INTERNAL DUS REGISTERS AND TEST RESULTS (DUSREG)

DS1OBR	DS1IBR	DS1OAR	DS1IRA	DS1SELREG	DS1SVRM
DS1OIRA	DS1MCR	DS1PCR	DS1ESR	GCPA	GCPR
DS1R_TFWRD	DS1R_TADDR	DS1R_TVCTR	DS1R_TRSLT	DS1R_XFRWD0	DS1R_SVR1
DS1R_TFWRDB	DS1R_TADDRB	DS1R_TVCTRB	DS1R_TRSLTB	DS1R_XFRWD1	DS1R_SVR2
DS1ROVSTAT+0	DS1RSTAT0+0	DS1RSTAT0+1	DS1RSTAT1+0	DS1RSTAT1+1	DS1R_SVR3
DC1RSTAT0+0	DC1RSTAT0+1	DC1RSTAT0+2	DC1RSTAT0+3	DC1RSTAT0+4	DC1RSTAT0+5
DC1RSTAT0+6	DC1RSTAT0+7	DC1RSTAT0+8	DC1RSTAT0+9	DC1RSTAT0+10	DC1RSTAT0+11
DC1RSTAT0+12	DC1RSTAT0+13	DC1RSTAT0+14	DC1RSTAT0+15	DC1RSTAT+12	AU1RSTAT+13
DC1RSTAT0*+0	DC1RSTAT0*+1	DC1RSTAT0*+2	DC1RSTAT0*+3	DC1RSTAT0*+4	DC1RSTAT0*+5
DC1RSTAT0*+6	DC1RSTAT0*+7	DC1RSTAT0*+8	DC1RSTAT0*+9	DC1RSTAT0*+10	DC1RSTAT0*+11
DC1RSTAT0*+12	DC1RSTAT0*+13	DC1RSTAT0*+14	DC1RSTAT0*+15	AU1RSTAT*+12	AU1RSTAT*+13
DC1RSTAT1+0	DC1RSTAT1+1	DC1RSTAT1+2	DC1RSTAT1+3	DC1RSTAT1+4	DC1RSTAT1+5
DC1RSTAT1+6	DC1RSTAT1+7	DC1RSTAT1+8	DC1RSTAT1+9	DC1RSTAT1+10	DC1RSTAT1+11
DC1RSTAT1+12	DC1RSTAT1+13	DC1RSTAT1+14	DC1RSTAT1+15	XR	XR
TU1AREG	TU1DR	TU1CCREG	TU1DBR	TU1COM	TU1PCREG
TU1MR	TU1CBREG	23-12 TU1ECREG 11-0 TU1WDCREG	23-12 TU1RCRCREG 11-0 TU1WCRCREG	TU1MIS	TU1OIS
TU1TTS	23-18 TU1SRR 17-0 TU1LTCR	TU1CIBG	TU1HLSB		

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Defined as:

DS10BR	DUS output buffer register which contains output data for CC-DUS reads and DUS-CORE writes; also contains the read / write data after a CC-DUC read / write operation.
DS1IBR	DUS input buffer register (buffers input data for CC-DUS/DUC writes and DUS-CORE reads).
DS10AR	DUS output address register (contains core address for DUS-CORE reads and writes).
DS1IRA	DUS inhibit register (controls which DUCs the DUS polls: 0 = Do not poll associated DUC, 1 = Poll associated DUC).
DS1SELREG	DUS select register (indicates which DUC the DUS is polling at this time as controlled by the DUS inhibit register).
DS1SVRM	DUS select verify register (contains the select verify response of the DUC just accessed).
DS10IRA	DUS operational interject register (indicates which DUC(s) are requesting operational interject).
DS1MCR	DUS maintenance and control register (applies nonoperational conditions to the DUS for maintenance purposes).
DS1PCR	DUS pest control register (allows internal DUS errors to be inhibited).
DS1ESR	DUS error summary register (contains summary of DUS error conditions if they exist).
GCPA	GCP address of DUS.
GCPR	GCP results of DUS.
DS1R_TFWRD	Test failure word (contains unique identification of the test that the DUS/DUC failed during fault recovery - for the suspected faulty DUS/DUC).
DS1R_TADDR	Test address (contains the internal DUS/DUC address where the test failed - for the suspected faulty DUS/DUC).
DS1R_TVCTR	Test vector (contains the input test data - test vector - applied to the DUS/DUC - for the suspected faulty DUS/DUC).
DS1R_TRSLT	Test result (contains the output test results received from the DUS/DUC - for the suspected faulty DUS/DUC).
DS1R_XFRWD0	Transfer trace word 0 (contains a point by point trace of the program flow through the PIDENT DUFRTADM).
DS1R_SVR1	Contains the identity of the DUC (in 1/N format) that is to be used in diagnosing the DUS just removed from service.
DS1R_TFWRDB	Test failure word buffer (contains unique identification of the test that the DUS/DUC failed during fault recovery - for the DUS/DUC used in alternate route testing).

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DS1R_TADDRB	Test address buffer (contains the internal DUS/DUC address where the test failed - for the DUS/DUC used in alternate route testing).
DS1R_TVCTRB	Test vector buffer (contains the input test data - test vector - applied to the DUS/DUC - for the DUS/DUC used in alternate route testing).
DS1R_TRSLTB	Test result buffer (contains the output test results received from the DUS/DUC - for the DUS/DUC used in alternate route testing).
DS1R_XFRWD1	Transfer trace word 1 (contains a point by point trace of the program flow through the PIDENT DUFRPCDU).
DS1R_SVR2	Contains the identity of the DUC (in 1/N format) used for alternate route testing by the fault recovery program.
DS1R0VSTAT	Overall status for ADS COMMUNITY 0 or ADS COMMUNITY 1 (status that applies to the ADS).
DS1RSTAT0	Status word 0 for DUSs 0 and 1 (ADS COMMUNITY 0) or DUSs 2 and 3 (ADS COMMUNITY 1) (contains control and status flags).
DS1RSTAT1	Status word 1 for DUSs 0 and 1 (ADS COMMUNITY 0) or DUSs 2 and 3 (ADS COMMUNITY 1) (contains error history information).
DS1R_SVR3	Contains the identity of the DUC (in 1/N format) with which the DUS was communicating at the time of failure.
DC1RSTAT0	Status word 0 for DUCs 0 - 15 (ADS COMMUNITY 0) or DUCs 16 - 31 (ADS COMMUNITY 1) at INTERJECT or D-Level entry (contains control and status flags).
AU1RSTAT	Common AU status word for DUSs 0 and 1 (ADS COMMUNITY 0) or DUSs 2 and 3 (ADS COMMUNITY 1) at INTERJECT or D-Level entry (contains control and status flags).
DC1RSTAT0*	Status word 0 for DUCs 0 - 15 (ADS COMMUNITY 0) or DUCs 16 - 31 (ADS COMMUNITY 1) after INTERJECT or D-Level recovery (contains control and status flags).
AU1RSTAT*	Common AU status word for DUSs 0 and 1 (ADS COMMUNITY 0) or DUSs 2 and 3 (ADS COMMUNITY 1) after INTERJECT or D-Level recovery (contains control and status flags).
DC1RSTAT1	Status word 1 for DUC 0 - 15 (ADS COMMUNITY 0) or DUC 16 - 31 (ADS COMMUNITY 1) (contains control and status flags).
DC1RSTAT2	Status word 2 for DUCs 0 - 15 (ADS COMMUNITY 0) or DUCs 16 - 31 (ADS COMMUNITY 1) (contains error history information).
XR	Contains the actual KCODE of the DUS involved in the INTERJECT or D-Level failure.
TU1AREG	TUC store address register (contains core address for TUC-CORE reads and writes).
TU1DR	TUC data register (contains output/input data for TUC-CORE writes/reads).

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TU1CCREG	TUC character count register (contains 1's complement of number of 8-bit characters to be read / written from / to tape).
TU1DBR	TUC data buffer register (buffers the data that is read / written from / to tape between the data register and the tape for writes onto tape. It divides the 24 bits of data into three 8-bit tape characters; for tape reads, it generates a 24-bit data word from the three 8-bit tape characters read from tape).
TU1COM	TUC command register (contains the TUC tape transport operational command, i.e., write, read, backspace).
TU1PCREG	TUC pest control register (allows internal TUC and/or tape transport errors to be inhibited).
TU1MR	TUC maintenance register (applies nonoperational conditions to the TUC for maintenance purposes).
TU1CBREG	TUC control bus register (contains internal TUC maintenance interject, operational interject, read, write status).
TU1ECREG	TUC error correct register - 9 bits (contains the bit to be corrected when operating in the error correct read mode).
TU1WDCREG	TUC write driver register - 9 bits (contains the 8-bit character and parity being written onto tape).
TU1RCRCREG	TUC read CRC register - 9 bits (generates and accumulates the CRC character from data being read from tape).
TU1WCRCREG	TUC write CRC register - 9 bits (generates and accumulates the CRC character from data being written onto tape).
TU1MIS	TUC maintenance interject status register (contains the source of the TUC maintenance interject request).
TU10IS	TUC operational interject status register (contains the source of the TUC operational interject request).
TU1TTS	TUC and tape transport status register (contains internal TUC and tape transport hardware status indications).
TU1SRR	TUC system reinitialization sequence register (contains the state flip-flops of the TUC system reinitialization sequencer).
TU1CIBG	TUC write clock and IBG detector register (TUC interblock gap detector register).
TU1LTCR	TUC long timer counter register (TUC hardware timer).
TU1HLSB	TUC hotline scan back results (TUC front end error indicators received on every TUC hotline address).

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DATA: INTERRUPT SOURCE DATA

W0 W1 W2 W3 W4

Defined as:

W0 PRM.
W1 PRL.
W2 E register.
W3 GI data.
W4 MI data.

DATA: INVALID G-LEVEL

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	AC1ASG(H)	AC1ASG(L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	AC1SINS	AC1ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)		

DATA: INVALID INTERRUPT INTERNAL REGISTER (INVINT)

IN1BR IN1CAR IN1ILA IN1INS IN1INH IN1SC
IN1SR

DATA: I/O OPERATIONAL FAILURE DATA (IOOFD)

ERROR CODE	CHANNEL NUMBER	IO1CHAN- STAT0	IO1CHAN- STAT1	IOUS* REGISTER	IOUC STATUS REGISTER

SUPPLEMEN-
TARY DATA

*Either IOUS error summary register (SD-5A021), or IOP IOUS status register (SD-5A049, 5A052, or 4C049). See layouts under DATA: IO STATUS (IOSTAT).

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Defined as:

ERROR CODE (OCTAL) =

- 1 — Buffer empty indicator not set after 24 characters.
- 2 — Timeout (20 sec) of constant break signal.
- 3 — No service request after ?T acknowledgment.
- 4 — Timeout of channel.
- 5 — Service request but channel has no state.
- 12 — CMS channel removed from service.
- 13 — Timeout of CMS channel in output state.

CHANNEL No. = COMPOOL Assigned.

IO1CHANSTAT = FFFFFFFFEEEDD---CBAAAAA, where:

- A IO1STATUS - Channel state (Octal):
- 0 - Channel is unequipped
 - 1 - Channel idle
 - 2 - Channel status is input
 - 3 - Channel status is output
 - 6 - Channel status is input start
 - 7 - Channel is waiting for acknowledgement
 - 10 - Acknowledgement loaded.
 - 11 - Channel status is last output
 - 12 - Waiting for output idle SR
 - 13 - Break control characters loaded
 - 14 - Waiting for link reset
 - 15 - Waiting for protocol handler analysis
 - 16 - Waiting for input segment
 - 17 - Waiting for next segment
 - 20 - Tape timing
 - 21 - Enquiry loaded
 - 22 - Waiting for start of tape
 - 30 - Channel disconnected (dial-up port)
 - 31 - Received outside call (dial-up port)
 - 32 - Making a call (dial-up port)
 - 36 - Waiting for output acknowledgement
 - 37 - Channel is out of service
- B IO1TRANP - Channel in transparent mode.
- C IO1TCONNECT - Temporary dial up connection.
- D IO1STIME - Secondary timer counter.
- E IO1TOIND - Timeout index:
- 0 - Unassigned
 - 1 - Private line data set in disconnect state
 - 2 - Input timing

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- 3 - Output timing
- 4 - Break timing
- 5 - Acknowledgement timing
- 6 - Timeout characters sent
- 7 - Dial-up timing

F IO1TOTIME - Timeout time.

DATA: I/O STATUS AND INTERNAL DATA - MAINTENANCE REQUEST

IO1RSTIOUS	IO1RSTIOMP	IO1RSTIOUC	IOUS STATUS REG	IOUC STATUS REG	SUPPLEMENTARY DATA

DATA: I/O STATUS AND INTERNAL DATA - POLL FAILURE

IO1RSTIOUS	IO1RSTIOMP	IO1RSTIOUC	IOUS STATUS REGISTER	ERROR SUMMARY REGISTER

IO1RSTIOUS = IOUS software status:

0	MAS**	IOUS maintenance state
1	RO	Receive bus for IOUS
2	S0	Send on bus 0
3	S1	Send on bus 1
4	STBL	IOUS removed by fault recovery action
5	BDGNRQ0	Diagnostic requested for IPUB 0 but no GBT
6	BDGNRQ1	Diagnostic requested for IPUB 1 but no GBT
7	DGNRQ	Diagnostic requested for IOUS but no GBT
8	RMVTTY	IOUS removed by TTY request
9-11		Unused
12	OOS	IOUS out of service
13	BRMTTY0	IPUB 0 removed by TTY request
14	BRMTTY1	IPUB 1 removed by TTY request
15		Unused
16	RECTBL0	IPUB 0 out of service
17		Unused
18	RECTBL1	IPUB 1 out of service
19		Unused
20-23	SMAIN	PU MTCE code

* All item names prefixed by IO1R.

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IO1RSTIOMP = IOMP software status:

0-3		Unused
4	MTBL*	IOMP removed by fault recovery action
5-6		Unused
7	MDGNRQ	Diagnostic requested for IOMP but no GBT
8	MRMVTTY	IOMP removed by TTY request
9-11		Unused
12	MOS	IOMP out of service
13-19		Unused
20-23	MMAIN	PU MTCE code

IO1RSTIOUC = IOUC software status:

0-2	CPFC*	Character parity failure counter
3	CHANPEST	F level pested for I/O KCODE
4	CTBL	IOUC removed by fault recovery action (trouble bit)
5-6	BOF	Input buffer overflow counter
7	CDGNRQ	Diagnostic requested for IOUC but not GBT
8	CRMVTTY	IOUC removed by TTY request
9-10	CHOVR	Character overrun counter
11	MA	Maintenance state of IOUC
12	COS	IOUC out of service
13-15	TIMEOUT	Intercharacter time-out counter
16-17	ERRCNT	BLM protocol error count
18		Unused
19	CRJRQ	Restoral runjob requested
20-23	MAIN	PU MTCE code

* All item names prefixed by IO1R.

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IOUS STATUS REG = IOUS status register (SD-5A021 I/O):

0	MAS*	Maintenance flip-flop
1	RO	'Receive on' bus flip-flop
2	S0	Send on bus 0
3	S1	Send on bus 1
4-23		Unused

IOUS STATUS REG = IOUS status register (SD-5A052 I/O):

0	MAS**	Maintenance flip-flop
1	RO	'Receive on' bus flip-flop
2	S0	Send on Bus 0
3	S1	Send on Bus 1
4	MP0OOS	IOMP 0 out of service
5	MP1OOS	IOMP 1 out of service
6	HACKM	Hold acknowledge monitor
7	MPSELM	IOMP select monitor
8	MP1HAF	IOMP 1 hold acknowledge failure
9	MP0HAF	IOMP 0 hold acknowledge failure
10	MP1DSRF	IOMP 1 data store request failure
11	MP0DSRF	IOMP 0 data store request failure
12	INVLDI	Invalid instruction received
13	MP0INVA	IOMP 0 invalid access (power problem)
14	MP1INVA	IOMP 1 invalid access (power problem)
15	DPF	DMAC parity failure
16		Unused
17	MPOORMF	IOMP out of range memory address
18	ROMPF	ROM parity failure
19	DSF	DMAC sanity failure
20	CCUF	Character counter underflow
21	CHIDMF	Channel ID match failure
22	PPO	PU bus parity failure over odds bits
23	PPE	PU bus parity failure over even bits

* All item names prefixed by IO1.

** All item names prefixed by IO1P.

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ESR = Error summary register (SD-5A021 I/O):

0	ASWF*	All seems well fail
1		Unused
2	PFE	Parity failure over even PU write bus bits
3	PFO	Parity failure over odd PU write bus bits
4		Unused
5	MKM	Multiple KCODE match detected
6	INVI	Invalid instruction detected by IOUS
7-18		Unused
19	CRSF	Channel response failure
20	CBPF	Channel buffer parity failure
21	HCM	High speed (7.7 microseconds) clock monitor bit
22	LCM	Low speed (71.4 microseconds) clock monitor bit
23	CLKF	Clock failure

ESR = Error summary register (SD-4C049):

0	PC error summary**
1	PC sanity failure**
2	PC routine maintenance failure**
3	PC clock failure**
4	PC RAM parity failure**
5	Enable gate through error**
6	Invert parity**
7	PC dual port memory parity error**
8-13	Unused
14	IOMP 1 error summary
15	IOMP 0 error summary
16	PC 0 error
17	PC 1 error
18	PC 2 error
19	PC 3 error
20	PC 4 error
21	PC 5 error
22	PC 6 error
23	PC 7 error

* All item names prefixed by IO1.

** Active zero.

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ESR = Error summary register (IOMP status and error register)
(SD-5A049/5A052 I/O):

0	DMPG*	DMAC-IOMP gate through bit
1	CLKF	IOMP clock failure
2	SF	IOMP sanity failure
3	MPF	Memory parity failure
4	MMPPF	Memory - IOMP parity failure
5	RME	Routine maintenance error
6	FPWRF	Force power failure
7	LUMPPF	LIU - IOMP parity failure
8	RRMCODE	DMAC routine maintenance failure code
9	RRMCODE	DMAC routine maintenance failure code
10	RRMCODE	DMAC routine maintenance failure code
11	RRMCODE	DMAC routine maintenance failure code
12	RRMCODE	DMAC routine maintenance failure code
13	RRMCODE	DMAC routine maintenance failure code
14	RMP1ES	IOMP 1 error summary bit
15	RMP0ES	IOMP 0 error summary bit
16-23		Unused at this time

* All item names prefixed by IO1P.

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IOUC STATUS REG = IOUC status register (SD-5A021 I/O):

0-7		Unused
8	BUFE *	Channel buffer is empty
9	CFA	Carrier failure alarm
10	LPA	Low paper alarm
11	MA	Channel maintenance state
12	IDLE	Channel is in idle state
13	INPUT	Channel is in input state
14	OUTPUT	Channel is in output state
15	BRKREC	Channel is in break received state
16	LODBUF	Channel buffer should be loaded
17	UNLBUF	Channel buffer should be unloaded
18	SOI	Start of input message
19	MR	Maintenance request
20	IMR	Inhibit maintenance request
21	OBO	Output buffer overflow
22	CPF	Character parity failure
23	IBO	Input buffer overflow

* All item names prefixed by IO1P.

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IOUC STATUS REG = IOUC status register (IOP - SD-5A052/5A049/4C049):

0	CONNECT	Channel is connected (SD 4C049 Only)
1-4		PC state (SD-4C049 TN 82 channel only)
5-7		Protocol state (SD-4C049 TN 82 channel only)
8	OOS**	Channel is out of service
9	IDLE	Channel is in idle state
10	EOMREC	Channel is in end of message RCVD state
11	BRKREC	Channel is in break received state
12	INPUT	Channel is in input state
13	OUTPUT	Channel is in output state
14	FDPLX	Channel operation is full duplex
15	BUFE	Channel buffer is empty
16	LODBUF	Channel buffer should be loaded
17	UNLBUF	Channel buffer should be unloaded
18	TRANSP	Channel is in transparent mode
19	GTOUTPR	Toggle bit toggled when channel processes a GTOUT command (SD-4C049 TN 82 channel only)
20		XID (Exchange identification) received by channel (SD-4C049 TN 82 channel only)
21	INVCCMD	Invalid channel command RCVD
22	SFTCERR	Software error detected
23	HRDCERR	Hardware error detected

** All item names prefixed by IO1P.

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CHANNEL MAINTENANCE REGISTER for SD-5A021 I/O:

If the system has this piece of equipment, no meaningful information is reported on the REPT: output message in this word at this time. The word will be zero filled and bits 0-23 are currently unused.

SUPPLEMENTARY DATA (CHANNEL MAINTENANCE REGISTER)
= Layout if bit 23 of channel status is set
(IOP - SD-5A052/5A049):

0-11		Unused at this time
12	TIMEOUT*	Intercharacter timeout (>45 seconds)
13		Unused
14	CHOVRN	Character Overrun
15	IBO	Input buffer overflow
16	SERPF	Serial parity failure
17	MPLUPF	MP to LU parity failure
18	CLUMPPF	LU to MP parity failure
19	LOWPAPR	Low Paper
20	NOCTS	No clear to send
21	CARRF	Carrier failure
22	ACUERR	Automatic call unit failure
23		Unused

CHANNEL MAINTENANCE REGISTER = Layout if bit 23 of channel status
is set (IOP - SD - 4C049):

0		Frame reject (sent)
1		Reject (sent)
2		Receiver not ready (sent)
3		Frame reject (received)
4		Cyclical redundancy check (received)
5		Reject (received)
6		Receiver not ready (received)
7		N2 counter exceeded
8-11		Unused
12	LINKRESET	Link reset from channel (TN82 channel only)
13	PROTOHALT	Protocol halt
14-18		Unused
19	BUFFULL	Buffer full (TN82 channel only)
20	DS_XMITERR	Data set transmit error
21	DS_RECERR	Data set receive error
22	ACVERR	ACV error
23	PROTOERROR	Protocol error

NOTE: Bits 0-7 are only used if bit 23 (PROTOERROR) is set and used only on the TN82 channel.

** All item names prefixed by IO1P.

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SUPPLEMENTARY DATA (CHANNEL MAINTENANCE REGISTER)
Layout if bit 23 of channel status is reset
IOP - SD 5A049/5A052/4C049):

0-7	Unused
8-15	High byte of failing address
16-23	Low byte of failing address

DATA: IOUC PROTOCOL ERROR COUNTER DATA

IO1RMR- DATA0	IO1RMR- DATA1	IO1RMR- DATA2	IO1RMR- DATA3	IO1RMR- DATA4	IR1RMR- DATA5
IO1RMR- DATA6	IO1RMR- DATA7	IO1RMR- DATA8	IO1RMR- DATA9	IO1RMR- DATA10	

Defined as:

IO1MR_DATA0	=	23-16	-	Total number of NAKs received.
		15-8	-	Counter of 'header CRC error' NAKs received.
		7-0	-	Counter of 'data CRC error' NAKs received.
IO1MR_DATA1	=	23-16	-	Counter of 'REP'.
		15-0	-	Unused.
IO1MR_DATA2	=	23-16	-	Counter of "BLOCK TOC Big' NAKs received.
		15-8	-	Counter of 'header TOC big' NAKs received.
		7-0	-	Counter of 'buffer temporarily unavailable NAKs received.
IO1MR_DATA3	=	23-16	-	Counter of 'receiver overrun' NAKs received.
		15-8	-	Total number of NAKs transmitted.
		7-0	-	Counter of 'header CRC error' NAKs transmitted.

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IO1MR_DATA4	=	23-16	-	Counter of 'data CRC error' NAKs transmitted.
		15-8	-	Counter of 'REP' NAKs transmitted.
		7-0	-	Unused.
IO1MR_DATA5	=	23-16	-	Unused.
		15-8	-	Counter of 'block too big' NAKs.
		7-0	-	Counter of 'header format error' NAKs transmitted.
IO1MR_DATA6	=	23-16	-	Counter of 'buffer temporarily unavailable' NAKs received.
		15-8	-	Counter of 'receiver overrun' NAKs transmitted.
		7-0	-	Counter of 'REP' blocks received.
IO1MR_DATA7	=	23-16	-	Counter of 'REP' blocks transmitted.
		15-8	-	Counter of select timeouts in half duplex.
IO1MR_DATA8	=	23-0	-	Unused.
IO1MR_DATA9	=	23-0	-	Unused.
IO1MR_DATA10	=	23-0	-	Unused.

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DATA: J-LEVEL CC REGISTERS (JLEV)

IN1FR	IN1GR	IN1JR	IN1KR	IN1LR	IN1XR
IN1YR	IN1ZR				

DATA: K-LEVEL (KLEV)

AC1FR	AC1GR	AC1JR	AC1KR	AC1LR	AC1XR
AC1YR	AC1ZR	AC1BR(H)	AC1BR(L)	AC1ASK(H)	AC1ASK(L)
AC1SCA	AC1SDA	AC1CSC	AC1CES	AC1FST	AC1FES
AC1ILA	AC1INS	AC1INH	AC1INJ	AC1SC	AC1SR
AC1SCTR	ST1INS	ELIT	AC1LPI	AC1ER	AC1PRM
AC1PRL	AC1PSC	AC1BRS(H)	AC1BRS(L)	AC1SAT	

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DATA: MAC CONTROL MEMORY (MACCM)

CNTL+0	CNTL+1	CNTL+2	CNTL+3	CNTL+4	CNTL+5
CNTL+6	CNTL+7	CNTL+8	CNTL+9	CNTL+10	CNTL+11
CNTL+12	CNTL+13	CNTL+14	CNTL+15	CNTL+16	CNTL+17
CNTL+18	CNTL+19	CNTL+20	CNTL+21	CNTL+22	CNTL+23
CNTL+24	INFO+0	INFO+1	INFO+2	INFO+3	INFO+4

NOTE: Prefix all words with MA1.

Defined as:

CNTL+0 = 0-18 - Job type_program_task.
 19-21 - Class wait states.
 22 - CPSECT loaded.
 23 - Scratch pad activity flag (IE SCR pad is assigned).

CNTL+0 = 0-14 - Program task.

CNTL+0 = 0-6 - Task number.
 7-14 - Program number.
 15-18 - Job type.

CNTL+1 = 0 - MASK AUINJ interject source.
 1 - Mask invalid interrupts.
 2 - Mask APINJ interject source.
 3 - Mask out-of-range interrupts.
 4 - Mask APUFS interject source.
 5 - Mask PUFS interrupt source.
 6 - Mask ELS interrupt source.
 7 - Mask SCDS interrupt source.
 8 - Mask PADS interrupt source.
 9 - Mask AUDS interrupt source.
 10 - Mask CSDS interrupt source.
 11 - Mask CLIS interrupt source.
 12 - Mask SCUFS interrupt source.
 13 - Mask ORDS interrupt source.
 14 - Mask all interrupts.
 15 - Mask PSBSO interrupt source.
 16 - Mask error stop.
 17 - Mask AU base level maintenance.
 18 - Mask IO base level.
 19 - Mask PU base level.
 20 - Mask KL0S interrupt source.
 21 - Mask KL1S interrupt source.
 22 - Mask KL2S interrupt source.
 23 - Mask KL3S interrupt source.

CNTL+2 = 0-21 - Client's next segment address.
 23 - PS36 required for this client or inhibit call interrupt.

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CNTL+3 =	0-21 - Client's abort address. 22 - Client's abort leg in progress.
CNTL+4 =	0-6 - Member number. 0-13 - Unit type number-member number. 7-13 - Unit type number. 14 - Unit type blockage flag has been set. 15 - Page loading completed flag. 16 - Client has been aborted by an interrupt. 17-19 - Abort states. 20-22 - Count of interrupts during client execution. 23 - Unit type blockage check was okay.
CNTL+5 =	0-10 - Segment counter. 11-13 - Job init state. 14-22 - GBT number. 23 - Client in progress flag.
CNTL+6 =	0-13 - LKPGSECT relative address. 16-23 - LKPGSECT page number.
CNTL+6 =	0-23 - LKPGSECT absolute address.
CNTL+7 =	0-7 - LKPGSECT program number. 8-15 - RETNSECT program number. 16 - Inhibit G, H, and J-level interrupts. 17 - Stop AU audits. 18 - Inhibit AU communications option. 19 - Inhibit interrupts option. 20 - Save registers option. 21 - Break option. 22 - Bypass CPSECT option. 23 - Return address saved in CNTL.
CNTL+8 =	0-13 - RETNSECT relative address. 16-23 - RETNSECT page number.
CNTL+8 =	0-23 - RETNSECT absolute address.
CNTL+9 =	0-23 - Save L shadow register.
CNTL+10 =	0-23 - Save F shadow register.
CNTL+11 =	0-23 - Save G shadow register.
CNTL+12 =	0-23 - Save K shadow register.
CNTL+13 =	0-23 - Save X shadow register.
CNTL+14 =	0-23 - Save Y shadow register.
CNLT+15 =	0-23 - Save Z shadow register.
CNTL+16 =	0-23 - Save J shadow register.

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CNTL+17 =	0-13 - Relative address following last paging subroutine. 14-17 - Disk ID for client. 18-19 - Outstanding disk requests. 20-23 - Page loading state.
CNTL+18 =	0-9 - Relative address next subroutine in table. 10-15 - Number of partial disk blocks left to read. 16-23 - Count of remaining subroutines. 0-23 - Disk address of page directory table for page. 0-23 - Beginning intsub address.
CNTL+19 =	0-23 - Link to next control table on load list.
CNTL+20 =	0-23 - Client delay return address (APMH).
CNTL+21 =	0-23 - Save MACP-APS clients scratch pointer.
CNTL+22 =	Unused.
CNTL+23 =	Unused.
CNTL+24 =	Unused.
INFO+0 =	0-11 - Sub class of active client. 12-22 - Class of active client. 23 - Output blocks not saved.
INFO+1 =	Unused.
INFO+2 =	Unused.
INFO+3 =	Unused.
INFO+4 =	Unused.

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DATA: MUP INTERNAL RAW DATA

aabbcc+0	aabbcc+1	aabbcc+2	aabbcc+3	aabbcc+4	aabbcc+5
aabbcc+6	aabbcc+7	aabbcc+8	aabbcc+9	aabbcc+10	aabbcc+11
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
aabbcc+84	aabbcc+85	aabbcc+86	aabbcc+87	aabbcc+88	aabbcc+89
aabbcc+90	aabbcc+91	aabbcc+92	aabbcc+93	aabbcc+94	-----
--aaaa+96	--aaaa+97	--aaaa+98	--aaaa+99	--aaaa+100	--aaaa+101
--aaaa+102	--aabb+103	--aaaa+104	--aaaa+105	--aaaa+106	--aaaa+107
--aaaa+108	--aaaa+109	--aaaa+110	--aaaa+111	--aaaa+112	--aaaa+113
--aaaa+114	--aaaa+115	--aaaa+116	--aaaa+117	--aaaa+118	--aaaa+119
--aaaa+120	--aaaa+121	--aaaa+122	--aaaa+123	--aaaa+124	-----
--aaaa+126	--aaaa+127	--aaaa+128	--aaaa+129	--aaaa+130	--aaaa+131
--aaaa+132	--aaaa+133	--aaaa+134	--aaaa+135	--aaaa+136	--aaaa+137
--aaaa+138	--aaaa+139	--aaaa+140	--aaaa+141	--aaaa+142	--aaaa+143
--aaaa+144	--aaaa+145	--aaaa+146	--aaaa+147	--aaaa+148	--aaaa+149
--aaaa+150	--aaaa+151	--aaaa+152	--aaaa+153	--aaaa+154	--aaaa+155
--aaaa+156	--aaaa+157	-----	-----	-----	-----

NOTE: All characters represent hexadecimal numbers. A dash indicated that digit is not used. The number following the hexadecimal number indicates the word position in the message.

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Defined as:

Word	Name	Description
aa---- +0	MIJ00	Number of MTCE interject zero type interjects generated.
--bb-- +0	MIJ01	Number of MTCE interject one type interjects generated.
----cc +0	MMUIJ	Number of memory management unit type interjects generated.
aa---- +1	RAMIJ	Number of DRAM type interjects generated.
--bb-- +1	BUSIJ	Number of M68010(e) bus type interjects generated.
----cc +1	SANIJ	Number of sanity type interjects generated.
aa---- +2	RIJ00	Number of interjects requested by MUP process identifier 00.
--bb-- +2	RIJ01	Number of interjects requested by MUP process identifier 01.
----cc +2	RIJ02	Number of interjects requested by MUP process identifier 02.
aa---- +3	RIJ03	Number of interjects requested by MUP process identifier 03.
--bb-- +3	RIJ04	Number of interjects requested by MUP process identifier 04.
----cc +3	RIJ05	Number of interjects requested by MUP process identifier 05.
aa---- +4	RIJ06	Number of interjects requested by MUP process identifier 06.
--bb-- +4	RIJ07	Number of interjects requested by MUP process identifier 07.
----cc +4	RIJ08	Number of interjects requested by MUP process identifier 08.
aa---- +5	RIJ09	Number of interjects requested by MUP process identifier 09.
--bb-- +5	RIJ10	Number of interjects requested by MUP process identifier 10.
----cc +5	RIJ11	Number of interjects requested by MUP process identifier 11.

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Word	Name	Description (continued)
aa---- +6	RIJ12	Number of interjects requested by MUP process identifier 12.
--bb-- +6	RIJ13	Number of interjects requested by MUP process identifier 13.
----cc +6	RIJ14	Number of interjects requested by MUP process identifier 14.
aa---- +7	RIJ15	Number of interjects requested by MUP process identifier 15.
--bb-- +7		M68010 VEC 0
----cc +7		M68010 VEC 1
aa---- +8		M68010 VEC 2
--bb-- +8		M68010 VEC 3
----cc +8		M68010 VEC 4
aa---- +9		M68010 VEC 5
--bb-- +9		M68010 VEC 6
----cc +9		M68010 VEC 7
aa---- +10		M68010 VEC 8
--bb-- +10		M68010 VEC 9
----cc +10		M68010 VEC 10
aa---- +11		M68010 VEC 11
--bb-- +11		M68010 VEC 12
----cc +11		M68010 VEC 13
aa---- +12		M68010 VEC 14
--bb-- +12		M68010 VEC 15
----cc +12		M68010 VEC 16
aa---- +13		M68010 VEC 17
--bb-- +13		M68010 VEC 18
----cc +13		M68010 VEC 19
aa---- +14		M68010 VEC 20
--bb-- +14		M68010 VEC 21
----cc +14		M68010 VEC 22
aa---- +15		M68010 VEC 23
--bb-- +15		M68010 VEC 24
----cc +15		M68010 VEC 25

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Word	Name	Description (continued)
aa---- +16		M68010 VEC 26
--bb-- +16		M68010 VEC 27
----cc +16		M68010 VEC 28
aa---- +17		M68010 VEC 29
--bb-- +17		M68010 VEC 30
----cc +17		M68010 VEC 31
aa---- +18		M68010 VEC 32
--bb-- +18		M68010 VEC 33
----cc +18		M68010 VEC 34
aa---- +19		M68010 VEC 35
--bb-- +19		M68010 VEC 36
----cc +19		M68010 VEC 37
aa---- +20		M68010 VEC 38
--bb-- +20		M68010 VEC 39
----cc +20		M68010 VEC 40
aa---- +21		M68010 VEC 41
--bb-- +21		M68010 VEC 42
----cc +21		M68010 VEC 43
aa---- +22		M68010 VEC 44
--bb-- +22		M68010 VEC 45
----cc +22		M68010 VEC 46
aa---- +23		M68010 VEC 47
--bb-- +23		M68010 VEC 48
----cc +23		M68010 VEC 49
aa---- +24		M68010 VEC 50
--bb-- +24		M68010 VEC 51
----cc +24		M68010 VEC 52
aa---- +25		M68010 VEC 53
--bb-- +25		M68010 VEC 54
----cc +25		M68010 VEC 55

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Word	Name	Description (continued)
aa---- +26		M68010 VEC 56
--bb-- +26		M68010 VEC 57
----cc +26		M68010 VEC 58
aa---- +27		M68010 VEC 59
--bb-- +27		M68010 VEC 60
----cc +27		M68010 VEC 61
aa---- +28		M68010 VEC 62
--bb-- +28		M68010 VEC 63
----cc +28		M68010 VEC 64
aa---- +29		M68010 VEC 65
--bb-- +29		M68010 VEC 66
----cc +29		M68010 VEC 67
aa---- +30		M68010 VEC 68
--bb-- +30		M68010 VEC 69
----cc +30		M68010 VEC 70
aa---- +31		M68010 VEC 71
--bb-- +31		M68010 VEC 72
----cc +31		M68010 VEC 73
aa---- +32		M68010 VEC 74
--bb-- +32		M68010 VEC 75
----cc +32		M68010 VEC 76
aa---- +33		M68010 VEC 77
--bb-- +33		M68010 VEC 78
----cc +33		M68010 VEC 79
aa---- +34		M68010 VEC 80
--bb-- +34		M68010 VEC 81
----cc +34		M68010 VEC 82
aa---- +35		M68010 VEC 83
--bb-- +35		M68010 VEC 84
----cc +35		M68010 VEC 85

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Word	Name	Description (continued)
aa---- +36		M68010 VEC 86
--bb-- +36		M68010 VEC 87
----cc +36		M68010 VEC 88
aa---- +37		M68010 VEC 89
--bb-- +37		M68010 VEC 90
----cc +37		M68010 VEC 91
aa---- +38		M68010 VEC 92
--bb-- +38		M68010 VEC 93
----cc +38		M68010 VEC 94
aa---- +39		M68010 VEC 95
--bb-- +39		M68010 VEC 96
----cc +39		M68010 VEC 97
aa---- +40		M68010 VEC 98
--bb-- +40		M68010 VEC 99
----cc +40		M68010 VEC 100
aa---- +41		M68010 VEC 101
--bb-- +41		M68010 VEC 102
----cc +41		M68010 VEC 103
aa---- +42		M68010 VEC 104
--bb-- +42		M68010 VEC 105
----cc +42		M68010 VEC 106
aa---- +43		M68010 VEC 107
--bb-- +43		M68010 VEC 108
----cc +43		M68010 VEC 109
aa---- +44		M68010 VEC 110
--bb-- +44		M68010 VEC 111
----cc +44		M68010 VEC 112
aa---- +45		M68010 VEC 113
--bb-- +45		M68010 VEC 114
----cc +45		M68010 VEC 115

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Word	Name	Description (continued)
aa---- +46		M68010 VEC 116
--bb-- +46		M68010 VEC 117
----cc +46		M68010 VEC 118
aa---- +47		M68010 VEC 119
--bb-- +47		M68010 VEC 120
----cc +47		M68010 VEC 121
aa---- +48		M68010 VEC 122
--bb-- +48		M68010 VEC 123
----cc +48		M68010 VEC 124
aa---- +49		M68010 VEC 125
--bb-- +49		M68010 VEC 126
----cc +49		M68010 VEC 127
aa---- +50		M68010 VEC 128
--bb-- +50		M68010 VEC 129
----cc +50		M68010 VEC 130
aa---- +51		M68010 VEC 131
--bb-- +51		M68010 VEC 132
----cc +51		M68010 VEC 133
aa---- +52		M68010 VEC 134
--bb-- +52		M68010 VEC 135
----cc +52		M68010 VEC 136
aa---- +53		M68010 VEC 137
--bb-- +53		M68010 VEC 138
----cc +53		M68010 VEC 139
aa---- +54		M68010 VEC 140
--bb-- +54		M68010 VEC 141
----cc +54		M68010 VEC 142
aa---- +55		M68010 VEC 143
--bb-- +55		M68010 VEC 144
----cc +55		M68010 VEC 145

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Word	Name	Description (continued)
aa---- +56		M68010 VEC 146
--bb-- +56		M68010 VEC 147
----cc +56		M68010 VEC 148
aa---- +57		M68010 VEC 149
--bb-- +57		M68010 VEC 150
----cc +57		M68010 VEC 151
aa---- +58		M68010 VEC 152
--bb-- +58		M68010 VEC 153
----cc +58		M68010 VEC 154
aa---- +59		M68010 VEC 155
--bb-- +59		M68010 VEC 156
----cc +59		M68010 VEC 157
aa---- +60		M68010 VEC 158
--bb-- +60		M68010 VEC 159
----cc +60		M68010 VEC 160
aa---- +61		M68010 VEC 161
--bb-- +61		M68010 VEC 162
----cc +61		M68010 VEC 163
aa---- +62		M68010 VEC 164
--bb-- +62		M68010 VEC 165
----cc +62		M68010 VEC 166
aa---- +63		M68010 VEC 167
--bb-- +63		M68010 VEC 168
----cc +63		M68010 VEC 169
aa---- +64		M68010 VEC 170
--bb-- +64		M68010 VEC 171
----cc +64		M68010 VEC 172
aa---- +65		M68010 VEC 173
--bb-- +65		M68010 VEC 174
----cc +65		M68010 VEC 175

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Word	Name	Description (continued)
aa---- +66		M68010 VEC 176
--bb-- +66		M68010 VEC 177
----cc +66		M68010 VEC 178
aa---- +67		M68010 VEC 179
--bb-- +67		M68010 VEC 180
----cc +67		M68010 VEC 181
aa---- +68		M68010 VEC 182
--bb-- +68		M68010 VEC 183
----cc +68		M68010 VEC 184
aa---- +69		M68010 VEC 185
--bb-- +69		M68010 VEC 186
----cc +69		M68010 VEC 187
aa---- +70		M68010 VEC 188
--bb-- +70		M68010 VEC 189
----cc +70		M68010 VEC 190
aa---- +71		M68010 VEC 191
--bb-- +71		M68010 VEC 192
----cc +71		M68010 VEC 193
aa---- +72		M68010 VEC 194
--bb-- +72		M68010 VEC 195
----cc +72		M68010 VEC 196
aa---- +73		M68010 VEC 197
--bb-- +73		M68010 VEC 198
----cc +73		M68010 VEC 199
aa---- +74		M68010 VEC 200
--bb-- +74		M68010 VEC 201
----cc +74		M68010 VEC 202
aa---- +75		M68010 VEC 203
--bb-- +75		M68010 VEC 204
----cc +75		M68010 VEC 205

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Word	Name	Description (continued)
aa---- +76		M68010 VEC 206
--bb-- +76		M68010 VEC 207
----cc +76		M68010 VEC 208
aa---- +77		M68010 VEC 209
--bb-- +77		M68010 VEC 210
----cc +77		M68010 VEC 211
aa---- +78		M68010 VEC 212
--bb-- +78		M68010 VEC 213
----cc +78		M68010 VEC 214
aa---- +79		M68010 VEC 215
--bb-- +79		M68010 VEC 216
----cc +79		M68010 VEC 217
aa---- +80		M68010 VEC 218
--bb-- +80		M68010 VEC 219
----cc +80		M68010 VEC 220
aa---- +81		M68010 VEC 221
--bb-- +81		M68010 VEC 222
----cc +81		M68010 VEC 223
aa---- +82		M68010 VEC 224
--bb-- +82		M68010 VEC 225
----cc +82		M68010 VEC 226
aa---- +83		M68010 VEC 227
--bb-- +83		M68010 VEC 228
----cc +83		M68010 VEC 229
aa---- +84		M68010 VEC 230
--bb-- +84		M68010 VEC 231
----cc +84		M68010 VEC 232
aa---- +85		M68010 VEC 233
--bb-- +85		M68010 VEC 234
----cc +85		M68010 VEC 235

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Word	Name	Description (continued)
aa---- +86		M68010 VEC 236
--bb-- +86		M68010 VEC 237
----cc +86		M68010 VEC 238
aa---- +87		M68010 VEC 239
--bb-- +87		M68010 VEC 240
----cc +87		M68010 VEC 241
aa---- +88		M68010 VEC 242
--bb-- +88		M68010 VEC 243
----cc +88		M68010 VEC 244
aa---- +89		M68010 VEC 245
--bb-- +89		M68010 VEC 246
----cc +89		M68010 VEC 247
aa---- +90		M68010 VEC 248
--bb-- +90		M68010 VEC 249
----cc +90		M68010 VEC 250
aa---- +91		M68010 VEC 251
--bb-- +91		M68010 VEC 252
----cc +91		M68010 VEC 253
aa---- +92		M68010 VEC 254
--bb-- +92		M68010 VEC 255
----cc +92	SSTKOV	Number of supervisor stack overflows.
aa---- +93	PUTS	Number of error messages requested for output.
--bb-- +93	NOUT	Number of error mess. actually outputted to line 24 of MCC.
----cc +93		Undefined
aa---- +94		Undefined
--bb-- +94	PID	The process identifier associated with the last error.
----cc +94		Fill
----- +95		Empty
--aaaa +96		M68010 Status Register - at the time of last error.

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Word	Name	Description (continued)
--aaaa +97		Program counter, high word - at the time of last error.
--aaaa +98		Program counter, low word
--aaaa +99		Format (bits 15-12) - if zero, disregard words 99-123. M68010 Vector (bits 9-2) - vector number of last fault exception or interrupt. h bit (bit 1) - MUP error request flag. If h=1, PID is the process identifier of a process that requested a fault. i bit (bit 0) - Supervisor stack overflow flag. If i=1, the operating system detected stack overflow.
--aaaa +100		M68010 special status word - type of operation being attempted which caused a bus or address error.
--aaaa +101		Fault address, high word - bus/segment fault address.
--aaaa +102		Fault address, low word - bus/segment fault address.
--aa-- +103		INTR source - MUP interrupt source register.
----bb +103		INTR mask - MUP interrupt mask register.
--aaaa +104		M68010 data output buffer.
--aaaa +105		Request address, high word - points to the location where an interject was requested.
--aaaa +106		M68010 data input buffer.
--aaaa +107		Request address, low word - points to the location where an interject was requested.
--aaaa +108		TM68010 instruction input buffer.
--aaaa +109		M68010 internal status word.
--aaaa +110		M68010 internal status word.
--aaaa +111		M68010 internal status word.
--aaaa +112		M68010 internal status word.
--aaaa +113		M68010 internal status word.
--aaaa +114		M68010 internal status word.
--aaaa +115		M68010 internal status word.
--aaaa +116		M68010 internal status word.
--aaaa +117		M68010 internal status word.
--aaaa +118		M68010 internal status word.
--aaaa +119		M68010 internal status word.

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Word	Name	Description (continued)
--aaaa +120		M68010 internal status word.
--aaaa +121		M68010 internal status word.
--aaaa +122		M68010 internal status word.
--aaaa +123		M68010 internal status word.
--aaaa +124		M68010 internal status word.
--aaaa +125		Undefined
--aaaa +126		Data register zero (%d0), bits 31-16.
--aaaa +127		Data register zero (%d0), bits 15-0.
--aaaa +128		Data register one (%d1), bits 31-16.
--aaaa +129		Data register one (%d1), bits 15-0.
--aaaa +130		Data register two (%d2), bits 31-16.
--aaaa +131		Data register two (%d2), bits 15-0.
--aaaa +132		Data register three (%d3), bits 31-16.
--aaaa +133		Data register three (%d3), bits 15-0.
--aaaa +134		Data register four (%d4), bits 31-16.
--aaaa +135		Data register four (%d4), bits 15-0.
--aaaa +136		Data register five (%d5), bits 31-16.
--aaaa +137		Data register five (%d5), bits 15-0.
--aaaa +138		Data register six (%d6), bits 31-16.
--aaaa +139		Data register six (%d6), bits 15-0.
--aaaa +140		Data register seven (%d7), bits 31-16.
--aaaa +141		Data register seven (%d7), bits 15-0.
--aaaa +142		Address register zero (%a0), bits 31-16.
--aaaa +143		Address Register zero (%a0), bits 15-0.
--aaaa +144		Address register one (%a1), bits 31-16.
--aaaa +145		Address register one (%a1), bits 15-0.
--aaaa +146		Address register two (%a2), bits 31-16.
--aaaa +147		Address register two (%a2), bits 15-0.
--aaaa +148		Address register three (%a3), bits 31-16.
--aaaa +149		Address register three (%a3), bits 15-0.
--aaaa +150		Address register four (%a4), bits 31-16.
--aaaa +151		Address register four (%a4), bits 15-0.
--aaaa +152		Address register five (%a5), bits 31-16.
--aaaa +153		Address register five (%a5), bits 15-0.
--aaaa +154		Frame pointer, bits 31-16.
--aaaa +155		Frame pointer, bits 15-0.
--aaaa +156		Stack pointer, bits 31-16.
--aaaa +157		Stack pointer, bits 15-0.

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DATA: NETWORK CLOCK DATA (NETCLK)

A...A	B...B	C...C	D...D	E...E	F...F
G...G	H...H	I...I	J...J	K...K	L...L

Defined as:

- A Register 0 chain 0.
- B Register 1 chain 0.
- C Software status chain 0.
- D Register 0 chain 1.
- E Register 1 chain 1.
- F Software status chain 1.
- G Register 0 chain 2.
- H Register 1 chain 2.
- I Software status chain 2.
- J Register 0 chain 3.
- K Register 1 chain 3.
- L Software status chain 3.

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DATA: PCRV TEST RUN AND HASH SUM RESULTS (PCRVHS)

PC1HISTORY	PC1OVERRIDE(H)	PC1OVERRIDE(L)	M_ADDRH	M_ADDRL	M_DATA
M_ADDRH	M_ADDRL	M_DATA	M_ADDRH	M_ADDRL	M_DATA
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

NOTE: This data block may have up to 195 words.

Defined as:

PC1HISTORY Tests executed during last PC state or activate override:

Bit	Description
0	1 - PU bus was switched by PC peripheral tests.
1	1 - CPD bus was switched by PC peripheral tests.
2	1 - Some transient CS was zeroed.
3	1 - PC was executed as part of a system reinitialization.
4	1 - Call store bootstrap was requested.
5	1 - Program store bootstrap was requested.
6	1 - AU bootstrap was requested.
7	1 - Hash sums were pumped due to a failure in the hash over hash check.
8	0 - AU BUS 0 was forced active by PC or activate override.
8	1 - AU BUS 1 was forced active by PC or activate override.
9	1 - AU tests found a bad call store. Call store bootstrap was reexecuted.
10	1 - AU tests found a bad program store. Program store bootstrap was reexecuted.
11	1 - IFB bootstrap was requested.
12	1 - Transient data in CS 0 was zeroed by the PC.
13	1 - Transient data in PS 0 was zeroed by the PC. Always true for PC pump state or activate override.
14	1 - Core pump actions have been executed (entry was activate override, PC pump state, or phase of memory reinitialization).
15	1 - Phase entry to PC. PC circuit enabled.
16	1 - Phase entry to PC. PC circuit was inhibited.

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- 17 1 - Phase entry to hash and correct memory. Returns to phase program.
- 18 1 - Peripheral loop around test failures have occurred.
- 19 1 - PCRIV has used the TTY to print entry or fail data.
- 20 1 - The active API has been reinitialized during this PC.
- 21 1 - The essential AU unit is duplex failed.
- 22 1 - The PC program has completed all of its tasks.

PC10VERRIDES(H) Tests bypassed or overrides requested in last PC state or activate override:

Bit Description

- 0 1 - Inhibit MUP restart on A-level and B-level.
- 1 1 - Supervisory mode in utility SR.
- 2 1 - Skip interface bus (IFB) access tests.
- 3 1 - Inhibit diagnostic tests.

PC10VERRIDES(L) Tests bypassed or overrides requested in last PC state or activate override:

Bit Description

- 15 1 - SR completed using combined generic tape and a separate office data tape.
- 16 1 - All nonbacked-up memory was zeroed.
- 17 1 - The hash sum check of core data was bypassed.
- 18 1 - CC sanity tests were bypassed.
- 19 1 - Tape error correction inhibited during SR.
- 20 1 - Map audits inhibited during SR.
- 21 1 - Store maintenance tests were bypassed.
- 22 1 - File stores were unconditionally restored with internal pests set.
- 23 1 - Duplex file store failure specified during SR.

M_ADDRH Upper byte of mutilated fixed core data address and indicator bits:

Bit Description

- 23 0 - Indicates there may have been additional addresses that were mutilated and part of this same BINK.
- 0-5 Upper byte of address of mutilated fixed core data.

M_ADDRL Lower 24 bits of address of mutilated fixed core data.

M_DATA Invalid contents of address mutilation.

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DATA: PERIPHERAL SYSTEM DATA

W0	W1	W2	W3	W4	W5
W6	W7	W8	W9	W10	W11
W12					

Defined as:

- W0 PUB hardware status.
- W1 PUB 0 software status.
- W2 PUB 1 software status.
- W3 Failing data.
- W4 Failing test.
- W5 Base SP 0 controller 0 software status.
- W6 Base SP 0 controller 1 software status.
- W7 Base SP 1 controller 0 software status.
- W8 Base SP 1 controller 1 software status.
- W9 NCLK chain 0 software status.
- W10 NCLK chain 1 software status.
- W11 NCLK chain 2 software status.
- W12 NCLK chain 3 software status.

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DATA: PERIPHERAL FAULT RECOGNITION RESULTS

PU4RESULT	PU4UTMNO	PU4FRPMD	PU4FRJRG	PBFR0000	TRINDEX
FAILTEST1	FAILDATA1	RELADDR1	FAILTEST2	FAILDATA2	RELADDR2
FAILTEST3	FAILDATA3	RELADDR3	FAILTEST4	FAILDATA4	RELADDR4
FAILTEST5	FAILDATA5	RELADDR5	FAILTEST6	FAILDATA6	RELADDR6
FAILTEST1	FAILDATA1	RELADDR1	FAILTEST2	FAILDATA2	RELADDR2
FAILTEST3	FAILDATA3	RELADDR3	FAILTEST4	FAILDATA4	RELADDR4
FAILTEST5	FAILDATA5	RELADDR5	FAILTEST6	FAILDATA6	RELADDR6

Defined as:

PU4RESULT	Fault recognition summary register.
PU4UTMNO	Unit and member ID register.
PU4FRPMD	Terminal FR program register.
PU4FRJRG	Save J register.
PBFR0000	Address of PBFR.
TRINDEX	Number of words appearing in this result printout.
FAILTESTn	Failing test information.
FAILDATAn	Failing test data. Nonzero bits represent failing bits. Look in PBFR for more detail on failing tests and bits.
RELADDRn	Relative address in PBFR where the bus looptest or controller access test was called.

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DATA: PROGRAM STORE IDENTIFICATION DATA (PSFRID)

FAILING H_ADDR	FAILING ADDR	RCES	ST1BRS_H	ST1BRS_L	AC1SAL
AC1SAR	ST1SAL	ST1SAR	SCES	FAILING MEMN	VBOOT
BFAILRT	SYSSTAT	IBUSSTAT	SAMEMN	MNSUSP	BUSBUFFGCPS (CS ONLY) (0 FOR PS)
GCPACT_L	GCPACT_H	CR01ACT	CR10ACT	RESERVE	FLAGS1
GCPSTBY_L	GCPSTBY_H	CR01STBY	CR10STBY	RESERVE	FAFTRACK
CINS	C_ACT_EVEN	C_ACT_ODD	C_STBY_EVEN	C_STBY_ODD	REP_STORE
BUSSTATER	C_H_ACT_EVEN	C_H_ACT_ODD	C_H_STBY_EVEN	C_H_STBY_ODD	ST1ABC
FAILING MCODE	RESERVE				

Refer to the Call Store Identification Data data block for word definitions.

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DATA: PROGRAM STORE TEST RESULTS (PSFRTR)

BOOTTAG	VBOTSTA	BR	FR	GR	JR
KR	LR	XR	YR	ZR	MEMN
BOOTTAG	VBOTSTA	BR	FR	GR	JP
KR	LR	XR	YR	ZR	MEMN
BOOTTAG	VBOTSTA	BR	FR	GR	JR
KR	LR	XR	YR	ZR	MEMN

Defined as:

BOOTTAG	A program address which will identify the reason for the bootstrap entry.
VBOTSTA	The contents of the variable bootstrap status word which contains a bootstrap counter and a variable bootstrap state counter.
MEMN	Failing store member number.
BR,FR,GR,JR, KR,LR,XR, YR,ZR	CC register which contains the address of failing test.

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DATA: PSC AUXILIARY DATA (XTSI AUXILIARY DATA FOR PSC PROBLEMS)

DUMP SZ (SUBUNIT)	CLIENT_ID	0...0	0...0	0...0	FAULT_TYPE
D3U0	D3U0 USTAT	D3U0 STAT	D3U0 CESR	D3U0 CTL	D3U0 EXR
D3U1	D3U1 USTAT	D3U1 STAT	D3U1 CESR	D3U1 CTL	D3U1 EXR
D3U2	D3U2 USTAT	D3U2 STAT	D3U2 CESR	D3U2 CTL	D3U2 EXR
D3U3	D3U3 USTAT	D3U3 STAT	D3U3 CESR	D3U3 CTL	D3U3 EXR
D3U4	D3U4 USTAT	D3U4 STAT	D3U4 CESR	D3U4 CTL	D3U4 EXR
D3U5	D3U5 USTAT	D3U5 STAT	D3U5 CESR	D3U5 CTL	D3U5 EXR
D3U6	D3U6 USTAT	D3U6 STAT	D3U6 CESR	D3U6 CTL	D3U6 EXR
D3U7	D3U7 USTAT	D3U7 STAT	D3U7 CESR	D3U7 CTL	D3U7 EXR
SPU0	SPU0 USTAT	SPU0 STAT	SPU0 CESR	SPU0 CTL	SPU0 EXR
SPU1	SPU1 USTAT	SPU1 STAT	SPU1 CESR	SPU1 CTL	SPU1 EXR
SPU2	SPU2 USTAT	SPU2 STAT	SPU2 CESR	SPU2 CTL	SPU2 EXR
SPU3	SPU3 USTAT	SPU3 STAT	SPU3 CESR	SPU3 CTL	SPU3 EXR
SPU4	SPU4 USTAT	SPU4 STAT	SPU4 CESR	SPU4 CTL	SPU4 EXR
SPU5	SPU5 USTAT	SPU5 STAT	SPU5 CESR	SPU5 CTL	SPU5 EXR
SPU6	SPU6 USTAT	SPU6 STAT	SPU6 CESR	SPU6 CTL	SPU6 EXR
SPU7	SPU7 USTAT	SPU7 STAT	SPU7 CESR	SPU7 CTL	SPU7 EXR
SPU8	SPU8 USTAT	SPU8 STAT	SPU8 CESR	SPU8 CTL	SPU8 EXR
SPU9	SPU9 USTAT	SPU9 STAT	SPU9 CESR	SPU9 CTL	SPU9 EXR
SPU10	SPU10 USTAT	SPU10 STAT	SPU10 CESR	SPU10 CTL	SPU10 EXR
SPU11	SPU11 USTAT	SPU11 STAT	SPU11 CESR	SPU11 CTL	SPU11 EXR
IBU0	IBU0 USTAT	IBU0 STAT	IBU0 CESR	IBU0 CTL	IBU0 EXR
0...0	0...0	0...0	0...0	0...0	0...0
0...0	0...0	0...0	0...0	0...0	0...0
0...0	0...0	0...0	0...0	0...0	0...0

DUMP SZ => octal 6454

Subunit or D3Ux, SPUx, IBUx word layout:

Bit Description

23-12 Not used.

11-9 Unit Type (UT)

- 0 Digital Signal Level 3 Unit (D3U)
- 1 Signal Processing Unit (SPU)
- 2 In-Band Unit (IBU)
- 3 Reserved

8-0 Unit Type Member Number (UTMEM). D3U member number range 0-7. SPU member number range 0-11. IBU member number is 0.

Print all 21 PSCs for CB Error.

SEE PROPRIETARY NOTICE ON COVER PAGE

Defined as:

DUMP SZ	Report Type and Block Size
CLIENT_ID	Suspect client identification number
D3Ux	Subunit Type Indicator
D3Ux USTAT	D3U Hardware Status
D3Ux STAT	D3U Software Status
D3Ux CESR	D3U Error Source Register
D3Ux CTL	D3U Control Register
D3Ux EXR	D3U Exercise Register
SPUx	Subunit Type Indicator
SPUx USTAT	SPU Hardware Status
SPUx STAT	SPU Software Status
SPUx CESR	SPU Error Source Register
SPUx CTL	SPU Control Register
SPUx EXR	SPU Exercise Register
IBUx	Subunit Type Indicator
IBUx USTAT	IBU Hardware Status
IBUx STAT	IBU Software Status
IBUx CESR	IBU Error Source Register
IBUx CTL	IBU Control Register
IBUx EXR	IBU Exercise Register
FAULT_TYPE	Internal value for development only

NOTE: Where x is the register number of the subunit.

DATA: PSC CIRCUIT PACK AUXILIARY DATA (XTSI AUXILIARY DATA FOR PSC CIRCUIT PACK ERRORS)

DUMP SZ	0....0	0....0	0....0	0....0	0....0
unit	unit USTAT	unit STAT	unit CESR	unit CTL	unit EXR

Where unit is either D3Ux, SPUx or IBUx.

DUMP SZ for D3U => octal 10030
DUMP SZ for SPU => octal 11030
DUMP SZ for IBU => octal 12030

SEE PROPRIETARY NOTICE ON COVER PAGE

This auxiliary block is printed if a D3U/SPU/IBU hardware fault is detected.

Defined as:

DUMP SZ	Report Type and Block Size.
D3UX/SPUX/IBUX	Subunit type indicator.
D3UX/SPUX/IBUX STAT	D3U/SPU/IBU Software Status.
D3UX/SPUX/IBUX USTAT	D3U/SPU/IBU Hardware Status.
D3UX/SPUX/IBUX CESR	D3U/SPU/IBU Error Register.
D3UX/SPUX/IBUX CTL	D3U/SPU/IBU Control Register.
D3UX/SPUX/IBUX EXR	D3U/SPU/IBU Exercise Register.

DATA: PSC SOFTWARE ERROR AUXILIARY DATA (XTSI auxiliary data for D3U shared memory)

D3U subunit shared memory auxiliary data dump.

DUMP SZ	0...0	ER_CODE_HIGH	ER_CODE_LOW	RTN_ADR_HIGH	RTN_ADR_LOW
D3UX	D3UX USTAT	D3UX STAT	D3UX CESR	D3UX CTL	D3UX EXR
WTT WD1	WTT WD2	WTT WD3	WTT WD4	WTT WD5	WTT WD6
WTT WD7	WTT WD8	WTT WD9	WTT WD10	WTT WD11	WTT WD12
WTT WD13	WTT WD14	WTT WD15	WTT WD16	WTT WD17	WTT WD18
WTT WD19	WTT WD20	WTT WD21	WTT WD22	WTT WD23	WTT WD24
WTT WD25	WTT WD26	WTT WD27	WTT WD28	WTT WD29	WTT WD30
WTT WD31	WTT WD32	WTT WD33	WTT WD34	WTT WD35	WTT WD36
WTT WD37	WTT WD38	WTT WD39	WTT WD40	WTT WD41	WTT WD42
WTT WD43	WTT WD44	WTT WD45	WTT WD46	WTT WD47	WTT WD48
WTT WD49	WTT WD50	WTT WD51	WTT WD52	WTT WD53	WTT WD54
WTT WD55	WTT WD56	WTT WD57	WTT WD58	WTT WD59	WTT WD60
WTT WD61	WTT WD62	WTT WD63	WTT WD64	WTT WD65	WTT WD66
WTT WD67	WTT WD68	TASK_ID	ERR_DATA1	ERR_DATA2	ERR_DATA3
ERR_DATA4	ERR_DATA5	ERR_DATA6	ERR_DATA7	ERR_DATA8	ERR_DATA9
ERR_DATA10	ERR_DATA11	ERR_DATA12	ERR_DATA13	ERR_DATA14	ERR_DATA15
STACK WD1	STACK WD2	STACK WD3	STACK WD4	STACK WD5	STACK WD6
STACK WD7	STACK WD8	STACK WD9	STACK WD10	STACK WD11	STACK WD12
STACK WD13	STACK WD14	STACK WD15	STACK WD16	STACK WD17	STACK WD18

DUMP SZ => 10344

Each row of Work Task Table (WTT) Data Dump Block represents 4 32 bits Data Words packed into 6 24 bits AUX Dump printout. Following shows the layout of WTT Data Words packed into the AUX DUMP.

11111111 111XX222 22222222 33333333 333XX444 44444444

Each number represent one 32 bits WTT Data Word. X will be printed as 0 in the printout.

SEE PROPRIETARY NOTICE ON COVER PAGE

NOTE: Not all the data in this printout is relevant to the craft. Many of the data in this printout is for development to debug error. Refer to the Maintenance Reference Handbook for relevant data on this printout.

NOTE: Working Task Table takes up 68 words in the AUX DUMP. This section of the report involves some data repacking to fit the 32-bits words in the printout into some easily readable form. Each line in the AUX DUMP can have a maximum of 4 32-bits words. See example in the table on how the data words are repacked.

The Working Task Table holds a maximum of 15 entries. There are 3 words per entry.

1st 32-bit word - Task Address

2nd 32-bit word - Time of Execution

3rd 32-bit word - Previous Time of Execution

Defined as:

DUMP SZ — Report Type and Block Size

ER_CODE_HIGH — High 8 bits of a 32-bit Error Code

ER_CODE_LOW — Low 24 bits of a 32-bit Error Code

RTN_ADR_HIGH — High 8 bits of a 32-bit Return Address

RTN_ADR_LOW — Low 24 bits of a 32-bit Return Address

WTT WDXX — Working Task Table

TASK_ID — Task Executing at the time of interrupt

ERR_DATAYY — Specific Error information for a particular fault

STACK WDZZ — First 12 words in the PSC's Stack

SEE PROPRIETARY NOTICE ON COVER PAGE

DATA: PSC SOFTWARE ERROR AUXILIARY DATA (XTSI auxiliary data for SPU shared memory)

SPU subunit shared memory auxiliary data dump.

DUMP SZ	0....0	ER_CODE_HIGH	ER_CODE_LOW	RTN_ADR_HIGH	RTN_ADR_LOW
SPUX	SPUX CSTAT	SPUX STAT	SPUX ESR	SPUX CTL	SPUX EXR
WTT WD1	WTT WD2	WTT WD3	WTT WD4	WTT WD5	WTT WD6
WTT WD7	WTT WD8	WTT WD9	WTT WD10	WTT WD11	WTT WD12
WTT WD13	WTT WD14	WTT WD15	WTT WD16	WTT WD17	WTT WD18
WTT WD19	WTT WD20	WTT WD21	WTT WD22	WTT WD23	WTT WD24
WTT WD25	WTT WD26	WTT WD27	TASK_ID	ERR_DATA1	ERR_DATA2
ERR_DATA3	ERR_DATA4	ERR_DATA5	ERR_DATA6	ERR_DATA7	ERR_DATA8
ERR_DATA9	ERR_DATA10	ERR_DATA11	ERR_DATA12	ERR_DATA13	ERR_DATA14
ERR_DATA15	ERR_DATA16	ERR_DATA17	ERR_DATA18	ERR_DATA19	ERR_DATA20
ERR_DATA21	ERR_DATA22	ERR_DATA23	ERR_DATA24	ERR_DATA25	ERR_DATA26
ERR_DATA27	ERR_DATA28	ERR_DATA29	ERR_DATA30	ERR_DATA31	ERR_DATA32
ERR_DATA33	ERR_DATA34	ERR_DATA35	ERR_DATA36	ERR_DATA37	ERR_DATA38
ERR_DATA39	ERR_DATA40	ERR_DATA41	ERR_DATA42	ERR_DATA43	ERR_DATA44
ERR_DATA45	ERR_DATA46	ERR_DATA47	ERR_DATA48	ERR_DATA49	ERR_DATA50
ERR_DATA51	ERR_DATA52	ERR_DATA53	ERR_DATA54	ERR_DATA55	ERR_DATA56
ERR_DATA57	ERR_DATA58	ERR_DATA59	ERR_DATA60	ERR_DATA61	ERR_DATA62
ERR_DATA63	ERR_DATA64	ERR_DATA65	ERR_DATA66	ERR_DATA67	ERR_DATA68
ERR_DATA69	ERR_DATA70	ERR_DATA71	ERR_DATA72	ERR_DATA73	ERR_DATA74

DUMP SZ => octal 11344

Each row of Work Task Table (WTT) Data Dump Block represents 4 32 bits Data Words packed into 6 24 bits AUX Dump printout. Following shows the layout of WTT Data Words packed into the AUX DUMP.

11111111 111XX222 22222222 33333333 333XX444 44444444

Each number represent one 32 bits WTT Data Word. X will be printed as 0 in the printout.

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DATA: PSC SOFTWARE ERROR AUXILIARY DATA (XTSI auxiliary data for IBU shared memory)

IBU subunit shared memory auxiliary data dump.

DUMP SZ	0....0	ER_CODE_HIGH	ER_CODE_LOW	RTN_ADR_HIGH	RTN_ADR_LOW
IBUX	IBUX CSTAT	IBUX STAT	IBUX ESR	IBUX CTL	IBUX EXR
WTT WD1	WTT WD2	WTT WD3	WTT WD4	WTT WD5	WTT WD6
WTT WD7	WTT WD8	WTT WD9	WTT WD10	WTT WD11	WTT WD12
WTT WD13	WTT WD14	WTT WD15	WTT WD16	WTT WD17	WTT WD18
WTT WD19	WTT WD20	WTT WD21	WTT WD22	WTT WD23	WTT WD24
WTT WD25	WTT WD26	WTT WD27	TASK_ID	ERR_DATA1	ERR_DATA2
ERR_DATA3	ERR_DATA4	ERR_DATA5	ERR_DATA6	ERR_DATA7	ERR_DATA8
ERR_DATA9	ERR_DATA10	ERR_DATA11	ERR_DATA12	ERR_DATA13	ERR_DATA14
ERR_DATA15	ERR_DATA16	ERR_DATA17	ERR_DATA18	ERR_DATA19	ERR_DATA20
ERR_DATA21	ERR_DATA22	ERR_DATA23	ERR_DATA24	ERR_DATA25	ERR_DATA26
ERR_DATA27	ERR_DATA28	ERR_DATA29	ERR_DATA30	ERR_DATA31	ERR_DATA32
ERR_DATA33	ERR_DATA34	ERR_DATA35	ERR_DATA36	ERR_DATA37	ERR_DATA38
ERR_DATA39	ERR_DATA40	ERR_DATA41	ERR_DATA42	ERR_DATA43	ERR_DATA44
ERR_DATA45	ERR_DATA46	ERR_DATA47	ERR_DATA48	ERR_DATA49	ERR_DATA50
ERR_DATA51	ERR_DATA52	ERR_DATA53	ERR_DATA54	ERR_DATA55	ERR_DATA56
ERR_DATA57	ERR_DATA58	ERR_DATA59	ERR_DATA60	ERR_DATA61	ERR_DATA62
ERR_DATA63	ERR_DATA64	ERR_DATA65	ERR_DATA66	ERR_DATA67	ERR_DATA68
ERR_DATA69	ERR_DATA70	ERR_DATA71	ERR_DATA72	ERR_DATA73	ERR_DATA74

DUMP SZ => octal 12344

Each row of Work Task Table (WTT) Data Dump Block represents 4 32 bits Data Words packed into 6 24 bits AUX Dump printout. Following shows the layout of WTT Data Words packed into the AUX DUMP.

11111111 111XX222 22222222 33333333 333XX444 44444444

Each number represent one 32 bits WTT Data Word. X will be printed as 0 in the printout.

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DATA: SCLK CRITICAL REGISTERS (SCFR)

SK4STAT*	SK4STAT	SK4ASWF	SK4PASWF	SK4HTSF+	SK4HTSF**	CONT 0
SK4STAT*	SK4STAT	SK4ASWF	SK4PASWF	SK4HTSF+	SK4HTSF**	CONT 1

* Software Status
+ Counter A (HIGH)
** Counter B (HIGH)

DATA: SCS AUXILIARY DATA (for base level maintenance)

BSIZE	KIND	HEADER	DATA0	DATA1	DATA2
DATA3	DATA4	DATA5	DATA6	DATA7	DATA8
DATA9	DATA10	DATA11	DATA12	DATA13	DATA14
DATA15	MBPTRS*	SDMPTR*	MBSTAT*	SOFTPST0*	0...0
SCUOS0*					

NOTE: Only present for illegitimate reports, otherwise all zeros.

BSIZE	Block size.
KIND	Kind of report (illegitimate or autonomous).
HEADER	Frame report header word (from the maintenance buffer).
DATA0-DATA15	Frame report data words 00-15 (from the maintenance buffer).
MBPTRS*	Maintenance buffer pointers.
SDMPTR*	Shadow maintenance buffer pointer.
MBSTAT*	Maintenance processor buffer status.
SOFTPST0*	Software service circuit unit (SCU) pest 0 (for SCUs 00-15).
SCUOS0*	Out of SCU summary (for SCUs 00-15).

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DATA: SCS CRITICAL REGISTERS (for F-level and Interject)

CSTATUS	HWSTATR	MADATA	FSTATUS	SCUOS	CESR
PEST	CONTROL	EBLKSTATL	EBLKDATAH	EBLKADR	GRESR
GRCNTRM	GADRM0	GADRM1	EXESR	EXCSTATML	EXCSTATMH
EXFPTR	EXPC	EXSANTIM	EXSTKBL	EXSTKBH	EXSTRPTR
EXINTR	RLBPTR	WLPBPTR	RDBPTR	WDBPTR	MTC
SDOWMTC	MBSTAT	SCU0ESR	SCU1ESR	SCU2ESR	SCU3ESR
SCU4ESR	SCU5ESR	SCU6ESR	SCU7ESR	SCU8ESR	SCU9ESR
SCU10ESR	SCU11ESR	SCU12ESR	SCU13ESR	SCU14ESR	SCU15ESR
FWERRBUF0	FWERRBUF1	FWERRBUF2	FWERRBUF3	FWERRBUF4	FWERRBUF5
FWERRBUF6	FWERRBUF7	FWERRBUF8	FWERRBUF9	EBMEMRST	EBLNKADR
EBLNKSTATL	EBLNKSTATH	0...0	0...0	0...0	0...0
MEMN	XLATE	5...5	5...5	5...5	5...5

NOTE: UPPER HALF = CONTROLLER 0
LOWER HALF (not shown) = CONTROLLER 1

Defined as:

CSTATUS	Controller software status.
HWSTATR	Controller hardware status.
MADATA	MA data response.
FSTATUS	Frame software status.
SCUOS	Service circuit unit (SCU) software out-of-service (OOS) status.
CESR	Controller primary error source register (ESR).
PEST	Controller programmable error source trigger (PEST) register.
CONTROL	Controller control register.
EBLKSTATL	Extended bus link status low register.
EBLKDATAH	Extended bus link status high register.
EBLKADR	Extended bus link address register.

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GRESR	Global ram esr.
GRCNTRM	Global ram control register memory.
GADRM0	Global address memory 0.
GADRM1	Global address memory 1.
EXESR	Execute (EXEC) ESR.
EXCSTATML	EXEC control/status register memory low.
EXCSTATMH	EXEC control/status register memory high.
EXFPTR	EXEC frame pointer.
EXPC	EXEC program counter.
EXSANTIM	EXEC sanity timer.
EXSTKBL	EXEC stack boundary register low.
EXSTKBH	EXEC stack boundary register high.
EXSTRPTR	EXEC stack pointer.
EXINTR	EXEC interrupt/mask register.
RLBPTR	LP buffer read pointer.
WLPBPTR	LP buffer write pointer.
RDBPTR	Digit buffer read pointer.
WDBPTR	Digit buffer write pointer.
MTC	Maintenance buffer pointer.
SDOWMTC	Shadow maintenance buffer pointer.
MBSTAT	Maintenance buffer status.
SCU0ESR-SCU15ESR	Service circuit unit (SCU) 0-15 primary ESRs.
FWERRBUF0-FWERRBUF9	Firmware error register and buffer words 0-9. FWERRBUF0 contains the F-level/interject level error code. FWERRBUF1-FWERRBUF9 contains additional information based on the error code.
EBMEMRST	Extended bus memory reset.
EBLNKADR	Extended bus link address memory.
EBLNKSTATL	Extended bus link status low memory.
EBLNKSTATH	Extended bus link status high memory.
MEMN	Service circuit system (SCS) member number.
XLATE	Base translation address.

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DATA: SP INTERNAL REGISTERS (SPIR)

SP4ESR2	SP4ESR2	SP4WPEST	SP4WPEST	SP4MAR	SP4MAR
SP4MDR	SP4MDR	SP4CDR	SP4CDR	SP4MXAR	SP4MXAR
SP4MXWR	SP4MXWR	SP4MXHR	SP4MXHR	SP4MFWR	SP4MFWR
SP4DPWR	SP4DPWR	SP4DPWAUX	SP4DPWAUX	SP4TBSR	SP4TBSR
SP4PLSR	SP4PLSR	SP4EDST	SP4EDST	SP4EDSTM	SP4EDSTM
SP4SDST	SP4SDST	SP4AP33	SP4AP33	SP4SDSTM	SP4SDSTM
SP4MMST	SP4MMST	SP4MMSTM	SP4MMSTM	SP4MSEC	SP4MSEC
SP4XMC	SP4XMC	SP4PSTAT	SP4PSTAT	SP4FHPB	SP4FHPB
SP4FSZB	SP4FSZB	SP4FLPB	SP4FLPB	SP4FDGB	SP4FDGB
10SP4FDPI	SP4FDPI	SP4FDPO	SP4FDPO	SP4MALLO	SP4MALIO
SP4MALLZ	SP4MALLZ	SP4MZOZ	SP4MZOZ	SP4MOZO	SP4MOZO
SP4MEMZ	SP4MEMZ	SP4MEMO	SP4MEMO	SP4SPECT	SP4SPECT
SP4SVMEMA	SP4SVMEMA	SP4SVMEMD	SP4SVMEND		

The following is additional data if unit was an SP2:

				SP4ESR3	SP4ESR3
SP4DTARA	SP4DTARA	SP4DTARB	SP4DTARB	SP4DTDOPA	SP4DTDOPA
SP4DTDOPB	SP4DTDOPB	SP4DTBST	SP4DTBST	SP4DTCNT	SP4DTCNT
SP4DTSQFF	SP4DTSQFF	SP4DTSANT	SP4DTSANT	SP4DTRCVL	SP4DTRCVL
SP4DTRCVU	SP4DTRCVU				

NOTE 1: Columns 1, 3, and 5 are devoted to controller 0; columns 2, 4, and 6 are devoted to controller 1.

NOTE 2: SP2 words are printed in an SP1 printout but the data is not usable.

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DATA: STANDBY CC BUS NODE DATA PART 1

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

SEE PROPRIETARY NOTICE ON COVER PAGE

BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

SEE PROPRIETARY NOTICE ON COVER PAGE

DATA: STANDBY CC BUS NODE DATA PART 2

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

SEE PROPRIETARY NOTICE ON COVER PAGE

Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

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DATA: STANDBY CC BUS NODE DATA PART 3

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

SEE PROPRIETARY NOTICE ON COVER PAGE

BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

SEE PROPRIETARY NOTICE ON COVER PAGE

DATA: STANDBY CC BUS NODE DATA PART 4

BNA_WD0(000)	BNA_WD1(000)	BNA_WD2(000)	BNA_WD0(001)	BNA_WD1(001)	BNA_WD2(001)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
BNA_WD0(040)	BNA_WD1(040)	BNA_WD2(040)	BNA_WD0(041)	BNA_WD1(041)	BNA_WD2(041)

NOTE: Each part contains a variable list report from entry 000 to 041 where entry 000 is the oldest in time and entry 041 is the most recent in time.

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Defined as:

BNA_WD0 Bus Node Arbiter Word 0.

Bit Meaning

0-5 Upper bits of the port address.

6 Read control signal.

7 Control parity signal.

8-9 Port identification information.

Number Port Identification

0 = DNA

1 = XNA

2 = FNA

3 = IBA

10-17 Control bits for CC or IFB based on active port identification information (Refer to TABLE E ("ACTIVE CC BUS NODE DATA PART1" part) for CC and TABLE F ("ACTIVE CC BUS NODE DATA PART1" part) for IFB).

18-20 Access identification information.

Number Identification

0 = NA

1 = CS

2 = PS

3 = PROM

4 = MMIO

5 = Buffer Bus

23 Entry valid bit used by software.

Number Identification

0 = Invalid

1 = Valid

BNA_WD1 Bus Node Arbiter Word 1.

Bit Meaning

0-23 Address on the port.

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BNA_WD2 Bus Node Arbiter Word 2.

Bit Meaning

0-5 Bus Node operation results.

Bit Meaning

0 All Seems Well (ASW).

1 Data Parity Failure (DPF).

2 All Seems Well Failure (ASWF).

3 Node Attempted Illegal Access (NAIA).

4 Control Parity B Source (CPBS)

5 Controller or Client D Source (CLIDS).

6-13 Number of the entry in the raw data bin. This number can be used to identify what ports were active at the same time.

14-23 Internal fault recovery results.

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DATA: STANDBY CC EXECUTION PIPELINE HISTORY

SCA(00)	SDA_H(00)	SDA(00)	EPH_RESULT(00)
.	.	.	.
.	.	.	.
.	.	.	.
SCA(15)	SDA_H(15)	SDA(15)	EPH_RESULT(15)

NOTE: Entry 00 is the oldest in time and entry 15 is the most recent in time.

Defined as:

SCA Saved Current Address.

Bit Meaning

0-23 The address of an instruction that left indexing.

SDA_H Saved Data Address. (High order bits)

Bit Meaning

0-6 The high order bits of the 30 bit Saved Data Address (SDA). The complete data address is determined by concatenating SDA_H with SDA.

SDA Saved Data Address. (Low order bits)

Bit Meaning

0-23 The low order bits of the 30 bit SDA. The complete data address is determined by concatenating SDA_H with SDA.

NOTE: The data address (from concatenation of SDA_H and SDA) applies only when the SDA/EPH valid bit is set in the EPH_RESULT field. A valid SDA entry must be confirmed with the source listing to verify that the SDA applies to the SCA.

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EPH_RESULT Execution pipeline history (EPH) result. Applies only when the SDA/EPH valid bit is set in the EPH_RESULT field.

This word represents the different pipeline states and completion of an instruction located at SCA.

Bit Meaning

0 Instruction completion bit. If set, instruction was determined to have completed. If not set, instruction completion could not be determined.

3-7 Final pipeline state of the instruction. (Refer to TABLE G for a list of pipeline states).

9-13 Initial pipeline state of the instruction. (Refer to TABLE G for a list of pipeline states).

15-17 Operation type of the instruction.

0 = The instruction that left indexing was an INDEX ONLY operation and does not require a decoded instruction register to execute.

1 = The instruction that left indexing was a READ operation and requires at least 1 decoded instruction register to execute.

2 = The instruction that left indexing was a WRITE operation and requires at least 1 decoded instruction register to execute.

3 = The instruction that left indexing was a NON-MEMORY operation and requires at least 1 decoded instruction register to execute.

4 = The instruction that left indexing was a GCP operation and does not require a decoded instruction register to execute.

5 = The instruction that left indexing was a STACK operation and requires at least 1 decoded instruction register to execute.

23 SDA/EPH data is valid if set.

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DATA: STANDBY CC REGISTERS (CLEVST)

ST1FR	ST1GR	ST1JR	ST1KR	ST1LR	ST1XR
ST1YR	ST1ZR	ST1SR	ST1SC	ST1CES	ST1IBR
ST1INS	ST1INJ	ST1ILA	ST1ILR	ST1ITR	ST1INH
ST1CSC	ST1SAT	ST1PCR	ST1MCLK	ST1LIT	ST1DLR
ST1LPA	ST1UPA	ST1ACT	ST1ER	ST1PRM	ST1PRL
ST1LPI	ST1PES	ST1PSC	ST1PSQ	ST1RP0	ST1RP1
ST1PM0	ST1PM1	ST1ABC	ST1SAL	ST1SAR	ST1FIS
ST1EPS	ST1IFR	ST1MMR	ST1MSR	ST1MCO(H)	ST1MCO(L)
ST1MCD(H)	ST1MCD(L)	ST1MCP	ST1CCS(H)	ST1CCS(L)	ST1CUI
ST1FCT	ST1FCE	ST1FES	ST1FEE	ST1FER	ST1FST
ST1FLA(H)	ST1FLA(L)	ST1FLD(H)	ST1FLD(L)	ST1FLT(H)	ST1FLT(L)
ST1FRU(H)	ST1FRU(L)	ST1FRL(H)	ST1FRL(L)	ST1FIP	ST1CLE

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DATA: STANDBY IFBC STACK

ST1FST_HI	ST1FST_LOW	ST1FLT_HI	ST1FLT_LOW	ST1FLA_HI	ST1FLA_LOW
ST1FLD_HI	ST1FLD_LOW	ST1FST_HI	ST1FST_LOW	ST1FLT_HI	ST1FLT_LOW
ST1FLA_HI	ST1FLA_LOW	ST1FLD_HI	ST1FLD_LOW	ST1FST_HI	ST1FST_LOW
ST1FLT_HI	ST1FLT_LOW	ST1FLA_HI	ST1FLA_LOW	ST1FLD_HI	ST1FLD_LOW
ST1FST_HI	ST1FST_LOW	ST1FLT_HI	ST1FLT_LOW	ST1FLA_HI	ST1FLA_LOW
ST1FLD_HI	ST1FLD_LOW	ST1FST_HI	ST1FST_LOW	ST1FLT_HI	ST1FLT_LOW
ST1FLA_HI	ST1FLA_LOW	ST1FLD_HI	ST1FLD_LOW	ST1FST_HI	ST1FST_LOW
ST1FLT_HI	ST1FLT_LOW	ST1FLA_HI	ST1FLA_LOW	ST1FLD_HI	ST1FLD_LOW

Defined as:

ST1FST_HI Upper byte of standby IFBC status stack
 ST1FST_LOW Lower bytes of standby IFBC status stack
 ST1FLT_HI Upper byte of standby IFBC last transaction stack
 ST1FLT_LOW Lower bytes of standby IFBC last transaction stack
 ST1FLA_HI Upper byte of standby IFBC last transfer address stack
 ST1FLA_LOW Lower bytes of standby IFBC last transfer address stack
 ST1FLD_HI Upper byte of standby IFBC last transfer data stack
 ST1FLD_LOW Lower bytes of standby IFBC last transfer data stack

DATA: TMS CRITICAL REGISTERS (TMSCR)

TG4STAT	TG4STRD	TG4ESR+0	TG4ESR+1
TG4STAT	TG4STRD	TG4ESR+0	TG4ESR+1

NOTE: The first line supplies information for controller 0; the second line supplies information for controller 1.

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DATA: TSI CRITICAL REGISTERS (NON XTSI;TSI CR)

TI4STAT*	TI4STAT	TI4ESR+0	TI4ESR+1	TI4ESR+2	TI4ESR+3
TI4ESR+4	TI4ESR+5	TI4ESR+6	TI4ESR+7	TI4ESR+10	TI4ESR+11
TI4ESR+12	TI4ESR+13	TI4ESR+14	TI4ESR+15	TI4ESR+16	TI4ESR+17
TI4ESR+20	TI4ESR+21	TI4ESR+22	TI4ESR+23	TI4ESR+24	TI4ESR+25
TI4ESR+26	TI4ESR+27	TI4ESR+30	TI4ESR+31		

TI4STAT*	TI4STAT	TI4ESR+0	TI4ESR+1	TI4ESR+2	TI4ESR+3
TI4ESR+4	TI4ESR+5	TI4ESR+6	TI4ESR+7	TI4ESR+10	TI4ESR+11
TI4ESR+12	TI4ESR+13	TI4ESR+14	TI4ESR+15	TI4ESR+16	TI4ESR+17
TI4ESR+20	TI4ESR+21	TI4ESR+22	TI4ESR+23	TI4ESR+24	TI4ESR+25
TI4ESR+26	TI4ESR+27	TI4ESR+30	TI4ESR+31		

NOTE: The first five lines of the data block supply information for controller 0; the sixth through tenth lines supply information for controller 1.

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DATA: TSI CRITICAL REGISTERS (XTSI CR)

CSTATUS	STATR	MADATA	FSTATUS0	FSTATUS1	CESR
PEST	CNTL	EXCNTLSTATL	EXCNTLSTATH	XESR	GESR
GCNTL	GADDR0	GADDR1	EXINTR	CIAESCL	EXSANTIM
EXSTKBNDL	EXSTKBNDH	MBPTR	SHDWMBPTR	CIARADDRL	CIARADDRH
CIADATAL	CIADATAH	PSSNS	XTFERSUM	TSICTL	TSITSC
TSISTAT	TSITSEL	TSIEXR0	TSIEXR1	TSIESR0	TSIESR1
CSPETSC	FBICTL	PSCSUM	PSCPEST	PSCPSE	PSCPCMCO
PSCCBCO	ALFESR0	ALFESR1	TRPFER0	TRPFER1	ALNKER0
ALNKER1	CSPESR0	CSPESR1	CSPSTAT	CSPCTL0	CSPCTL1
CSPTCERR	PSCEQUIP	PSCINSRV	GRSVRCODE	GRSVCAUSE	GRSVMISC1
GRSVMISC2	GRSVSP	GRSVSTK	GRSVFP	GRSVPC	GRSVLOAD
GRSVCHKSUM	CTLEQIP	0.....0	0.....0	0.....0	0.....0
MEMN	XLATE	7.....7	7.....7	7.....7	7.....7

NOTE: UPPER HALF = CONTROLLER 0
LOWER HALF (not shown) = CONTROLLER 1

Defined as:

CSTATUS	Controller software status.
STATR	Controller hardware status
MADATA	MA data response
FSTATUS0	Frame software status WORD 0
FSTATUS1	Frame software status WORD 1
CESR	Controller primary Error Source Register (ESR)
PEST	Controller programmable error source inhibit register
CNTL	Controller control register
EXCNTLSTATL	EXEC Control/Status register Low 24 bits
EXCNTLSTATH	EXEC Control/Status register High 8 bits
XESR	EXEC ESR
GESR	Global Ram ESR
GCNTL	Global Ram Control Register
GADDR0	Global Ram Address Memory 0
GADDR1	Global Ram Address Memory 1
EXINTR	EXEC Interrupt Register
CIAESCL	CIA Error, Status, and Control Register
EXSANTIM	Sanity Timer Register
EXSTKBNDL	Stack Boundary Register Low 24 bits

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EXSTKBNH	Stack Boundary Register High 8 bits
MBPTR	Maintenance Buffer Pointer
SHDWMBPTR	Shadow Maintenance Buffer Pointer
CIARADDRL	CIA Read Address Register Low 24 bits
CIARADDRH	CIA Read Address Register High 8 bits
CIADATAL	CIA Control Bus Data Register Low 24 bits
CIADATAH	CIA Control Bus Data Register High 8 bits
PSSNS	Protection Switch Sense Register
XTFERSUM	XTF Fabric Error Summary Register
TSICTL	TSI Control Register
TSITSC	TSI Time-Slot Counter
TSISTAT	TSI Status Register
TSITSEL	TSI Time-Slot Error Latch
TSIEXR0	TSI Exercise Register 0
TSIEXR1	TSI Exercise Register 1
TSIESR0	TSI ESR 0
TSIESR1	TSI ESR 1
CSPETSC	Controller Signal Processor (CSP) Timeslot Counter Register
FBICTL	FBI Control Register
PSCSUM	PSC Error Summary Register
PSCPEST	PSC Error Source Inhibit Register
PSCPSE	PSC Read Protection Switch Enable Register
PSCPCMCO	PSC PCM Cutoff Register
PSCCBCO	PSC CB Cutoff Register
ALFESR0	ALF Error Register 0
ALFESR1	ALF Error Register 1
TRPFER0	ALF Primary TRPF Error Register 0
TRPFER1	ALF Primary TRPF Error Register 1
ALNKER0	ALF Primary A-Link Error Register 0
ALNKER1	ALF Primary A-Link Error Register 1
CSPESR0	CSP Error Source Register 0
CSPESR1	CSP Error Source Register 1
CSPSTAT	CSP Status Register

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CSPCTL0	CSP Control Register 0
CSPCTL1	CSP Control Register 1
CSPTCERR	CSP Trunk Counter Error Latch Register
PSCEQUIP	XTC PSC Equipage Array
PSCINSRV	XTC PSC In-service Array
GRSVRCODE	GRAM F-Level Error Code
GRSVCAUSE	GRAM Cause of F-Level Error
GRSVMISC1	GRAM Miscellaneous Firmware Buffer 1
GRSVMISC2	GRAM Miscellaneous Firmware Buffer 2
GRSVSP	GRAM Stack Pointer Register
GRSVSTK	GRAM Stack Contents Register
GRSVFP	GRAM Frame Pointer Register
GRSVPC	GRAM Program Counter Register
GRSVLOAD	GRAM EXEC Generic Load Identifier
GRSVCHKSUM	GRAM EXEC program checksum, low 16 bits
CTLEQUIP	Control Equipage

DATA: UNIQUE API DATA

AP1REINF_WD0	AP1REINF_WD1	AP1REINF_WD2	76543210	76543210	76543210
AP1RRCOV_WD0	AP1RRCOV_WD1	AP1RRCOV_WD2	76543210	76543210	76543210
AP1R_LSTATE_0	AP1R_LSTATE_1	AP1R_LSTATE_2	76543210	76543210	76543210
AP1R_CRSTATW	AP1R_CECODE	AP1R_CRSEQV	AP1R_CRTIMOT	AP1R_3BCMD	76543210
1APRPICSTAT	1APR_PICERR	1APRPICSTE	AP1RLKTSOUT	AP1R_TIMEWD	AP1RSWFLOUT
AP1RCFGFOUT	AP1R_RECOVR	AP1R_BL_ERR	AP1R_CNIBLM	AP1R_TBERSTAT	AP1R_CNIEWD
AP1R_CFIPS	AP1R_CFCST	AP1R_CFCER	AP1R_CFVIO	AP1R_CF3BER	AP1R_CFTOUT
AP1R_SFIPS	AP1R_SFCST	AP1R_SFCER	AP1R_SFVIO	AP1R_SF3BER	AP1R_SFTOUT
AP1RLTTAT	AP1RLTTAC0	AP1RLTTAC1			

NOTE: Octal data 76543210 means that the word was not used.

Defined as:

AP1REINF_WD0	Error information word for State 0. See TABLE M.
AP1REINF_WD1	Error information word for State 1. See TABLE M.
AP1REINF_WD2	Error information word for State 2. See TABLE M.
AP1RRCOV_WD0	Recovery information word for State 0. See TABLE N.

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AP1RRCOV_WD1	Recovery information word for State 1. See TABLE N.
AP1RRCOV_WD2	Recovery information word for State 2. See TABLE N.
AP1R_LSTATE_0	Link test results word for State 0. See TABLE O.
AP1R_LSTATE_1	Link test results word for State 1. See TABLE O.
AP1R_LSTATE_2	Link test results word for State 2. See TABLE O.
AP1R_CRSTATW	Command system response mode status word: (-----EEEEEEEEEDCBAAA) A Command system response state (AP1R_CRSTATE) 0 Idle state (1APR_IDLE) 1 Synchronous acknowledge sent (1APR_SACKS) 3 Command received (1APR_CMDR) B Command to API error (AP1R_CAPIER) C Command sequence violation (AP1R_CMDSEQV) D Command response timeout (AP1R_CRTIMOT) E Command response state code (AP1R_CRSTCODE), see TABLE P.
AP1R_CECODE	Command system response mode error word.
AP1R_CRSEQV	Command system response mode sequence violation word.
AP1R_CRTIMOT	Command system response mode timeout word.
AP1R_3BCMD	Command system response mode - 3B command and data.
1APRPICSTAT	PIC status word: (-----PONMLKJIHGFEDCBA) A PC emulation mode B Interrupt generated by 1B alert C Interrupt generated by 3B alert D Interrupt generated by 3B system interrupt E 1B alert function disabled F 3B alert function disabled G 1B error checking disabled H 3B error checking disabled I 1B side in loop around mode J 3B side in loop around mode K DMA suspended by 1B L DMA suspended by 3B

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M Interrupt generated by PIC error
N Interrupt generated by PC
O Interrupt generated by 1B system interrupt
P Interrupt generated by DGN

1APR_PICERR PIC error word: (-----PONMLKJIHGFEDCBA)

A BIC timeout
B Actual read in offset or size error
C 1B command register inhibited
D AU bus sequencer inhibited
E AU address range error
F Parity failure on AP bus
G Parity failure on PIC bus
H Pointer check failure
I Command check error
J Maintenance buffer address not loaded
K Illegal PIC RAM address specified
L PIC error
M BIC error
N DMA word count error
O Illegal circular buffer command
P Illegal instruction

1APRPICSTE PIC state word:

0 PIC has no status
1 PIC is active
2 PIC is standby
3 PIC is out of service

AP1RLKTSOUT Link test output (Latest results).

AP1R_TIMEWD Timing word: (DCBBBBBBBBBAAAAAAAAAAAA)

A Counter for half hour timing (AP1R_TIMEEN)
B Counter for state sequence timing (AP1R_HALFEN)
C Half hour timing enable (AP1RTIMECNT)
D State sequence timing enable (AP1R_HALFTM)

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AP1RSWFLOUT	Switch fail output. If the API switch fails, this gives the reason for the failure using APFR error codes in TABLE P.
AP1RCFGFOUT	Configuration fail output. If the configuration of the API fails, this gives the reason for the failure using APFR error codes in TABLE P.
AP1R_RECOVR	Recovery Miscellaneous word: (GGGFEDCCCB BBBBAAA-----) A The APS number (AP1R_APSNUM) B Count of successful buffer initializations (AP1R_BICNT) C State upon entry into fault recovery (AP1REENTRYST) D APDRV initialization (AP1RINITAPD) E 3B boot (AP1R_BOOT3B) F Pre-duplex fail analysis in progress (AP1R_DFAL) G Level of phase requested on 3B (AP1R_3BPHSE)
AP1R_BL_ERR	Base Level maintenance error word. To identify the source, refer to the text phrase printed in the BLM printout or refer to the BLM client items in the error information word (TABLE M, position A). Link Integrity Monitor (LIM) BLM Error Word: (NMLLLLLLLKJIIHGFEDDCBA) A LIM command to API error (AP1RLIMCMER) B LIM no access to command register (AP1RLIMNACC) C LIM had a command time out (AP1RLIMCMTO) D Type of API active, or standby (AP1RLIMTYPE) E 3B configuration request detected (AP1R3BCNFRQ) F 3B DMA is suspended (AP1R3BSUSP) G The 3B is not responding (AP1RN3BRESP) H Error when API status word was read (AP1RERRSTAT) I Specific KCODE of this API (AP1RLIMKCO) J Bad status no active API for this APS (AP1R_NACTIVE) K Bad status APIs are active (AP1R_ACTACT) L LIM time count (AP1RLIMTCNT) M LIM time out (AP1RLIMTTO) N LIM timing in progress (AP1RLIMTOP) APS message handler BLM Error Word in octal: 3 — No active API for this APS

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Disk system audit program BLM Error Word in octal:

- 2 — No disk request completions
- 5 — Circular buffer invalid
- 30 — Bad currency pointers
- 34 — No completions FMI non-1B file jobs
- 35 — No completions non-FMI jobs

Function Subs Message BLM Error Word:

- 36 — No message completions

AP1R_CNIBLM

CNI Base level error word: (-----EEEEEDCCBAAA)

A CNI Error Types (AP1R_BLTTYPE):

- 0 Not used
- 1 Self pointer BLM (1APR_SPBLM)
- 2 Unload pointer BLM (1APR_UPBLM)
- 3 Buffer overflow BLM (1APR_OVFLBLM)
- 4 Load pointer BLM (1APR_LPBLM)
- 5 Client reported BLM (1APR_CLEBLM)
- 6 Message reported by APMH BLM (1APR_MSGBLM)

B Side that was in error (AP1R_BLSIDE):

- set — 1B side (1APR_1ABLM)
- reset — 3B side (1APR_3BBLM)

C Message direction at time of error (AP1R_BLDIR):

- 0 Direction not specified (1APR_DINBLM).
- 1 Direction was incoming to the 1B (1APR1AINBLM).
- 2 Direction was outgoing from the 1B (1APR1AOUTBLM).
- 3 Both directions (1APRBOTHBLM).

D CNI buffer initialization requested (AP1R_BLINITR)

E CNITBERSTAT field (AP1R_BLTBST)

AP1R_TBERSTAT

CNI traffic buffer error status word: (-----HHHHGGGGIJFEDCBA)

- A TB Self pointer fault (AP1R_TBSPFLT)
- B TB Unload pointer fault (AP1R_TBUPFLT)
- C TB Load pointer fault (AP1R_TBLPFLT)

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- D Side of fault (AP1R_TBFLTSIDE):
 - set — 1B side
 - reset — 3B side
 - E Stream direction (AP1R_STRDRTN):
 - set — from 1B
 - reset — from APS
 - F Current buffer in use pointer (AP1R_TBCBPTR):
 - set — TB
 - reset — CB
 - J Invalid CNI buffer header pointer (AP1R_HDRINV)
 - I Invalid pointer address (AP1R_ADDERR)
 - G Buffer forced out of service (AAP1R_FRCOFF). (Diagnostics only)
 - H TB scanning activated in octal (AP1RSRTB_STAT):
 - 1 Send TB for 1B active - Outgoing stream
 - 2 Receive TB for 1B active - Incoming stream
 - 4 Receive TB for APS active - Outgoing stream
 - 10 Send TB for APS active - Incoming stream
- AP1R_CNIEWD CNI Error Information Word: (-----EDCCBAAA)
- A CNI Error Types (AP1R_CNITYPE):
 - 0 Unused (1APR_UNUSED)
 - 1 Self pointer error (1APR_SPPTRF)
 - 2 Unload pointer error (1APR_UPPTRF)
 - 3 Buffer overflow error (1APR_TBOVFL)
 - 4 Load pointer error (1APR_LPPTRF)
 - 5 Client requested BLM error (1APR_TBCLE)
 - 6 Bad messages error detected by APMH (1APR_TBMSG)
 - B Processor side that is in error (AP1R_SIDEERR):
 - set— 1B (1APRSODE_1A)
 - unset— 3B (1APRSODE_3B)
 - C Message direction at time of error (AP1R_DIRERR):
 - 0 Direction not specified (1APRDIR_NULL).
 - 1 Direction was incoming to the 1B (1APRDIR_1AIN).

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	2 Direction was outgoing from the 1B (1APRDIR_1AOUT).
	3 Both directions (1APRDIR_BOTH).
D	CNI buffer initialization request (AP1R_CINITR).
	0 No init requested (1APR_NOINIT).
	1 Init requested (1APR_YESINIT).
E	Request that stream be stopped (AP1R_STOP):
	0 Do not stop CNI stream (1APR_NOSTOP)
	1 Stop CNI stream (1APR_YESSTOP)
AP1R_CFIPS	Command system initiate mode that contains command and data to be sent to the 3B Computer. See TABLE Q. Configuration failure due to command system failure.
AP1R_CFCST	Command system initiate mode status word. See TABLE R. Configuration failure due to command system failure.
AP1R_CFCER	Command system initiate mode error word. See TABLE S. Configuration failure due to command system failure.
AP1R_CFVIO	Command system initiate mode sequence violation word. See TABLE T. Configuration failure due to command system failure.
AP1R_CF3BER	Command system initiate mode 3B error word. See TABLE T. Configuration failure due to command system failure.
AP1R_CFTOUT	Command system initiate mode timeout word. See TABLE T. Configuration failure due to command system failure.
AP1R_SFIPS	Command system initiate mode that contains command and data to be sent to the 3B Computer. See TABLE Q. Switch failure due to command system failures.
AP1R_SFCST	Command system initiate mode status word. See TABLE R. Switch failure due to command system failures.
AP1R_SFCER	Command system initiate mode error word. See TABLE S. Switch failure due to command system failures.
AP1R_SFVIO	Command system initiate mode sequence violation word. See TABLE T. Switch failure due to command system failures.
AP1R_SF3BER	Command system initiate mode 3B error word. See TABLE T. Switch failure due to command system failures.
AP1R_SFTOUT	Command system initiate mode timeout word. See TABLE T. Switch failure due to command system failures.
AP1RLTTAT	API long term trouble analysis timer.
AP1RLTTAC0	API 0 long term trouble analysis counter.
AP1RLTTAC1	API 1 long term trouble analysis counter.

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TABLE M
ERROR INFORMATION WORD
(Where State 0, 1, 2 = PONMLKJIHGFEDDDCBAAAAAA)(AP1REINF_WD)

Position	Meaning
A	ERROR TYPE (AP1RPIC_TYP): P=0: PIC error type: 1 Circular buffer address and size do not agree with the PIC (1APRCIRBERR) 2 Pointer check failure (1APRPTCKFL) 3 Illegal circular buffer command (1APRILLCMD) 4 1B command register inhibited (1APRCMRINH) 5 AU bus sequencer inhibited (1APRSEQINH) 6 AU address range error Parity failure on AP bus (1APRADDRERR) 7 Parity failure on AP bus (1APRPFLAPB) 10 Parity failure on PIC bus (1APRPFLPIC) 11 Command check error (1APRCMDERR) 12 Maintenance buffer address not loaded (1APRMTCBUF) 13 Illegal PIC RAM address specified (1APRILLRAMA) 14 PIC error (1APRPICERR) 15 Illegal instruction (1APRILLINS) 20 TB load /end pointer fault (1APR_TBLPLT) 21 TB unload pointer fault (1APR_TBUPFLT) 22 TB self pointer fault (1APR_TBSPFLT) 23 TB address calculation error (1APR_ADDRERR) 24 TB invalid header pointer (1APR_HDRINVL) P=1: Base level client: 10 Link integrity monitor (LIM) 20 SAWS audit (SADK) 30 APS message handler (APMH) 40 Functional subroutines (FNCTSUBS) 50 Common network interface (APMHNCNI)

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TABLE M
ERROR INFORMATION WORD (Continued)
(Where State 0, 1, 2 = PONMLKJIHGFEDDDCBBAAAAAA)

Position	Meaning
B	Hardware error type (AP1RHRD_TYP):
	1 3B requested interrupt (function not implemented) (1APR3BINT)
	2 API had a command parity fail on read (1APRCMDPFLR)
	3 API mode error (1APRMODE)
C	Interrupt from API on board diagnostics (1APRDGNINT)
D	3B error type: (AP1R3B_TYP)
	1 3B buffers have been initialized (1APR3BINITB)
	2 3B has marked an API out-of-service (1APR3BAPIOS)
	3 3B system has initialized (1APRSYSINIT)
	4 API sent 3B a PIC interrupt (1APRPICINT)
	7 Command system response mode failure (1APRCMDRFL)
E	3B interrupt (AP1R_3B_INT)
F	Dump ram from active API (AP1R_DRAM_A)
G	Interrupt from the active API (AP1R_ACTINT)
H	Interrupt from the standby API (AP1R_SBYINT)
I	Multiple PIC errors (AP1R_MULPIC)
J	PIC error detected (AP1RPIC_ERR)
K	No active API for this APS (AP1RNACTAPI)
L	Unknown command system sent from 3B (AP1RUKNCMD)
M	Error threshold exceeded (AP1RERRTHRS)
N	Buffer initialization required (AP1R_INITRQ)
O	No error found (AP1RNERRFND)
P	Base level recovery information (AP1R_BS_LEV)

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TABLE N
RECOVERY INFORMATION WORD
(Where State 0, 1, 2 = Q-----PONMLKJIHGFEDCBAAA)(AP1RRCV_INF)

Position	Meaning
A	Next recovery state (AP1R_STATE)
B	APS link tested OK (AP1R_LINKOK)
C	3B buffers were initialized (AP1R_3BINIT)
D	APS link tested no good (AP1R_LINKNG)
E	The standby API was removed (AP1R_SBYRMV)
F	Buffer initialization failed (AP1R_BIN_FL)
G	Buffer initialization OK threshold exceeded (AP1RBITHRES)
H	The configured API was no good (AP1R_CFGNG)
I	The switch was no good (AP1R_SW_NG)
J	No configuration was found (AP1RNCFGFND)
K	The configured API was OK (AP1R_CFG_OK)
L	The switch was OK (AP1R_SW_OK)
M	The buffer initialization was successful (AP1RBI_OK)
N	APDRV was initialized (AP1R_APDINIT)
O	3B has been booted (AP1R_3BBOOT)
P	CNI stream init successful (AP1R_CNIINOK)
Q	Pre-duplex fail analysis in progress (AP1R_DPFAF)

TABLE O
TEST LINK RESULTS
(Where State 0, 1, 2 = -----DCBA)(AP1R_LSTATE)

Position	Meaning
A	API cannot be reached (AP1R_LAPIFAL)
B	3B cannot be reached (AP1R_L3BFAL)
C	3B initialized com_buf (AP1R_L3BINIT)
D	1B to 3B link OK (AP1R_LNKOK)

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TABLE P
APFR ERROR CODES

100	Failed to get buffer information from message handler
101	API command failure
102	Failed to restore common hardware
103	Failed, forced by ROS key
104	Failed, unit active main
105	Failed, bus out of service
106	Failed, unit not in operational state
107	Unit type to KCODE conversion failed
110	Immediate fail return from message handler on sending message
111	MCC forced API out-of-service
112	Timeout, no message acknowledgement on comm buffer restore message to 3B
113	API command timeout
114	API command never started processing
115	Loop around message not in receiving buffer
116	Mate status fail, MEMN does not exist
117	Cannot access command register in the API
120	Incorrect final status detected
121	The test message has failed
122	The command system has failed - refer to fields h ¹ through m ¹ for reason of failure.
123	An attempt was made to restore active-active
124	Message handler failed to initialize com_buffer
125	No active API found for this APS
126	Active MEMN for this APS is not operational
127	Message handler failed to send message
130	Timeout waiting for message acknowledgement
131	Acknowledge message from 3B was no good
132	No active in-service API
133	Status shows active-active state
134	Message handler failed to initialize xcom_buf
135	Initial command system response failed
136	Command system not synchronized - sequence violation occurred

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TABLE P (Continued)
APFR ERROR CODES

137	SACK command system to interprocessor word failed
140	3B command system was not found
141	Command system response timeout in wait routine
142	CACK command system to interprocessor word failed
143	Received protocol command system expected command system command
156	3B command response time out (1APR_CMOTO)
201	APS member number out of range
202	Fail to restore out-of-service mate API before switching
203	Member number to base address conversion failed
204	Switch API failed due to the out-of-service mate API

TABLE Q
COMMAND SYSTEM INITIATE MODE
(Command and data to be sent to the 3B, where AP1R_CFIPS,
AP1R_SFIPS = -----CCCCBBBBAAAAAAAAA)

Position	Meaning
A	Interprocessor commands:
0	Null command (1APR_NULL)
1	Unassigned
2	Synchronization command (1APR_SYNC)
3	Synchronous acknowledgement command (1APR_SACK)
4	IP_CMD command acknowledgment (1APR_CACK)
5	Reinitialize all COM_BUF resources including in-service APIs (1APINIT_COM)
6	Initialize in-service APIs to COM_BUF (1APRACT_COM)
7	Reinitialize all XCOM_BUF resources including in-service APIs (1APINITXCOM)
10	Configure API as specified (1APCONF_API)
11	APS error detected - 3B only (1APRERR_RPT)

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TABLE Q
COMMAND SYSTEM INITIATE MODE (Continued)
(Command and data to be sent to the 3B, where AP1R_CFIPS,
AP1R_SFIPS = -----CCCCBBBBBAAAAAAAAA)

Position	Meaning
12	PS 0 pump request (1APRPS0B_REQ). The specific quarter to be pumped is defined as follows and placed in the AP1R_IPDATA field of the interprocessor command: 1 = Pump the first quarter of PS 0 (1APR_FIRST) 2 = Pump the second quarter of PS 0 (1APR_SECOND) 3 = Pump the third quarter of PS 0 (1APR_THIRD) 4 = Pump the fourth quarter of PS 0 (1APR_FOURTH) 5 = Pump the fourth quarter of PS 0 (1APR_FIFTH)
13	Select logical 1B-file for normal request as specified (1APRUPD_REQ): 1 = Logical normal file (1APR_NORMAL) 2 = Logical update file (1APR_UPDATE)
14	Load PCRVPUMP into 3B main memory (1APRSR_REQ): 1 = PCRVPUMP copy at DADR 200 (1APR_COPY1)
15	Unassigned
16	Request initialization of APDRV (1APR_REQINIT)
17	Request to boot the 3B system (1APR_REQBOOT)
B	Member number to be configured if CONF_API command
C	Configuration state for member number if CONF_API command:
0	Unit not operational (1APR_NOOP)
1	API is active and in-service (1APR_ACT)
2	API is standby and in-service (1APR_SBY)
3	API is out-of-service (1APR_OOS)

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TABLE R
COMMAND SYSTEM STATUS - INITIATE MODE
(Where AP1R_CSSTATI = IHHHHHGGGFFF--EDCB---AAA)

Position	Meaning
A	Present command system state. Initiate Mode States (AP1R_PCSS):
0	Idle state (1APR_IDLE)
1	Synchronous command sent state (1APR_SYNCS)
2	Synchronous acknowledge received state (1APR_SACKR)
3	Command sent state (1APR_CMDS)
4	Command acknowledge received state (1APR_CACKR)
5	Null command sent state (1APR_NULLS)
B	Command to API error (AP1R_CAPIE)
C	Sequence violation - synchronized from 3B (AP1R_SEQV)
D	Timeout error (AP1R_TIMEO)
E	3B error while processing command (AP1R_3BERR)
F	Command to API error count (AP1R_CERRC)
G	Command to acknowledge timeout (AP1R_CATO)
H	Synchronize acknowledge timeout (AP1R_SATO)
I	Final timeout (AP1R_FTO)

TABLE S
INITIATE MODE — COMMAND FAILURE LAYOUT
(Where AP1R_CFCER, AP1R_SFCER = CCCBBBBBBBBBBBBB---AAAAAA)

Position	Meaning
A	Failing command (AP1R_FACMD) - see TABLE U
B	Command error code (AP1R_CMD_EC) - see TABLE P
C	Command system state only if failure is in command system initiate mode (AP1R_CSTATE)

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TABLE T
COMMAND REGISTER LAYOUT
(CCCCCCCCCCCCCCCCBBAAAAAA)

Position	Meaning
A	Command operation code (AP1R_APIOP)- see TABLE U
B	Command disposition code(AP1R_APIDIS):
0	Command has been completed (1APR_COMP)
1	Command has failed (1APR_FAIL)
2	Command is in progress (1APR_IP)
3	Command has been loaded in the command register (1APR_LOAD)
C	Command data field (AP1R_APIDAT)
151515	Link integrity monitor OK code (1APR_LIMAOK)
152525	Link integrity monitor 3B configuration request (1APR_CNFRQ)
155555	Link integrity monitor 3B request 1B file duplex fail (1APR_DXF1AF)

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TABLE U
API COMMANDS

0	Invalid command (1APR_INVLD)
1	Mtc_sub size (both send and receive) (1APRMB_SZ)
2	Lower 16 bits of 1B send mtc_buf (1APRMB_LOSD)
3	Upper 6 bits of 1B send mtc_buf (1APRMB_UPSD)
4	Lower 16 bits of 1B receive mtc_buf (1APRMB_LORC)
5	Upper 6 bits of 1B send receive mtc_buf (1APRMB_UPRC)
6	Load RAM at 16-bit address from "my" send mtc_buf (1APRMB_LDRM)
7	Dump RAM at 16-bit address to "my" receive mtc_buf (1APRMB_DPRM)
10	Copy "my" sent mtc_buf to "other" receive mtc_buf (1APRMB_CPSD)
11	Copy "my" receive mtc_buf unload pointer to "other" send unload pointer (1APRMB_CPPT)
12	Send interrupt to other side (1APR_SD_INT)
13	Disable on board diagnostics (1APR_D_DGN)
14	Suspend DMA except for mtc_buf commands (1APR_SUSDMA)
15	Resume DMA from point of suspension (1APR_RESDMA)
16	Read 8-bit DMA job number (1APR_RDDMA)
17	Abort DMA job in progress, if any (1APR_ABTDMA)
20	Disable PIC loop around mode (1APR_D_LOOP)
21	Enable PIC loop around mode (1APR_E_LOOP)
22	Disable all error checks (1APR_D_ERCK)
23	Enable all error checks (1APR_E_ERCK)
24	Read 16-bit API status word (1APR_RDSTAT)
25	Clear through mask 16-bit API status word (1APR_MKSTAT)
26	Read 16 bit API error word (1APR_RDERR)
27	Clear through mask 16-bit error word (1APR_MKERR)
30	Read 16-bit API state word (1APR_RDSTE)
31	Write 16-bit API state word (1APR_WTSTE)
32	Initiate AU diagnostic helper (1APR_AUDGN)
33	Enable on board diagnostics (1APR_E_DGN)
34	Disable alert function (1APR_DALERT)
35	Enable alert function (1APR_EALERT)
36	Send 16-bit data to other processor (1APR_SDDATA)
37	Receive 16-bit data from other processor (1APR_RCDATA)
40	Disable PC emulation (1APR_D_PCEM)
41	Enable PC emulation (1APR_E_PCEM)
42	Send interprocessor data (IPD) to other side (1APR_IPD)
43	Read status/error word (TBERSTAT) (1APR_RDTBERST)
44	Update status/error word (TBERSTAT) (1APR_WTTBST)

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DATA: UNIQUE FS DATA (FSUNIQUE)

DRB0	DRB1	DRB2	DRB3	CAB0	CAB1
SAVJ	DDR	FS1ADDR	FS1IR0	FS1IR1	FS1ESR1
FS1ESR2	FS1ESR3	FS1ESR1M	FS1ESR2M	FS1RDRB0	FS1LDRB3
FS1RDRB1	FS1LDRB1	FS1RDRB2	FS1LDRB2	FS1RDRB3	FS1LDRB3
FS1RSTWDR	FS1LSTWDR	FS1RTRA	FS1LTRA	FS1CR01	FS1SPR0
FS1DIDC	FS1DS0	FS1DS1	FS1DS2	FS1DS3	FS1SMDRK
FS1SSJBS	FS1CR00	FS1EXCNT	FS1EUTCNTR	FS1FTRACTR0	FS1DC01
FS1DC1	FS1DC2	FS1DC3	FS1WDRBAR	FS1RSTAT0	FS1RSTAT1
FS1RSTAT2	FS1RSTAT3	FS1RSTAT0*	FS1RSTAT1*	FS1RSTAT2*	FS1RSTAT3*
FS1CR02					

Defined as:

DRB0 - DRB3	Disk request block for failing job.
CAB0	Client answer block 0.
CAB1	Client answer block 1.
SAVJ	SPPGM Address + 1 where error was detected.
DDR	DDR register.
FS1ADDR	Active DDR.
FS1IR0	Busy/idle REG 0.
FS1IR1	Busy/idle REG 1.
FS1ESR1	Error summary REG 1.
FS1ESR2	Error summary REG 2.
FS1ESR3	Error summary REG 3.
FS1ESR1M	Error summary REG 1 mate.
FS1ESR2M	Error summary REG 2 mate.
FS1RDRB* - FS1LDRB*	Right and left disk request registers for DRB word * (Where * = 0, 1, 2, or 3).
FS1RSTWDR - FS1LSTWDR	Right and left disk start word.
FS1RTRA - FS1LTRA	Right and left translated record address.
FS1CR01	Error control information.
FS1SPR0	Stop with interject register.
FS1DIDC	Disk indicators.

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FS1DS0 - FS1DS3	Disk shadow registers.
FS1SMDRR	Search and match register.
FS1SSJBS	Store sequencer jobs.
FS1CR00	Control read register 00.
FS1EXCNT	Exerciser error counter.
FS1EUTCNTR	Exerciser UTRA counter.
FS1ETRACR	Exerciser TRA counter.
FS1DC0 - FS1DC3	Disk counters 0 - 3.
FS1WDRBAR	Writable disk request block register.
FS1RSTAT0 - FS1RSTAT3	FS status for 4 FSs at interject or D-level entry.
FS1CR02	Control read register 2.

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DATA: UNIQUE MUP DATA.

MC1RCID0	MC1RMID0	MC1RSTA0U	MC1RSTA0	-----	MC1RCTL0
MC1RESR0U	MC1RESR0	MC1RDAT0U	MC1RDAT0	MC1RINST0U	MC1RINST0
MC1RRPLY0U	MC1RRPLY0	-----	-----	MC1RSTAT0	MC1RSTAT0A
-----	-----	MC1RSDAT0UB	MC1RSDAT0B	MC1RSINST0UB	MC1RSINST0B
MC1RCID1	MC1RMID1	MC1RSTA1U	MC1RSTA1	-----	MC1RCTL1
MC1RESR1U	MC1RESR1	MC1RDAT1U	MC1RDAT1	MC1RINST1U	MC1RINST1
MC1RRPLY1U	MC1RRPLY1	-----	-----	MC1RSTAT1	MC1RSTAT1A
-----	-----	MC1RSDAT1UB	MC1RSDAT1B	MC1RSINST1UB	MC1RSINST1B
MC1RFIB	MC1RFIB+1	MC1RFIB+2	MC1RSRTB	MC1RCTSWTB	MC1RLRTB
MC1RSIB	MC1RSIB+1	MC1RSIB+2	MC1RSRCB	-----	MC1RLRCB
MC1RSFIB	MC1RSFIB+1	MC1RSFIB+2	MC1RDTBLAB	MC1RBLMRAB	MC1RBLMFIB
MC1RST0FAB	MC1RST1FAB	MC1RCTSWFAB	MC1RST0FIB	MC1RST1FIB	-----
MC1RPGMAD	MC1RTSTAD	MC1RTSTOP	MC1RILFSAV	MC1RILGSAV	MC1RILJSAB
MC1RILKSAV	MC1RILLSAV	MC1RILXSAV	MC1RILYSAB	MC1RILZSAV	-----

OR

DATA: UNIQUE MUP DATA.

FREG	GREG	TREG	XREG	ZREG

Definedas:

MC1RCID0	MUP 0 client ID register. Bit Meaning 0-9 Circuit pack name
MC1RMID0	MUP 0 micro code ID register. Bit Meaning 0-9 Microcode name

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MC1RSTA0U	MUP 0 status register.
	Bit Meaning
	24 Command register is busy
	27 MUP has been reset
MC1RSTA0	MUP 0 status register.
	Bit Meaning
	0 Received data parity bit 0
	1 Received data parity bit 1
	2 Received data parity bit 2
	3 Received data parity bit 3
	4 Last cycle was read
	5 Last cycle was write
	6 Last cycle was block DMA
	7 Last cycle was word DMA
	8 Last cycle was client to client
	9 Operational interject active
	10 Maintenance interject active
	11 Maintenance interrupt active
	12 Block DMA request
	13 Word DMA request
	14 Client to client request
	16 MMIO request
	17 MUP trouble
	18 MUP not forced
	19 MUP not active
	20 Reply complete
	21 Reply in-progress
	22 Reply failure
	23 User option reply

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MC1RCTL0	MUP 0 control register. Bit Meaning 0 Client IFB enable 3 Operational interject enable 4 Maintenance interject enable 5 Maintenance interrupt enable 6 Operational interject clear 7 Maintenance interject clear 8 Maintenance interrupt clear 9 Indicates MUP is in-service 10 Indicates MUP is being updated 11 Reset client 12 MUP activity control 13 MUP trouble control 14 Clear reset indicator in MUP status register
MC1RESR0U	MUP 0 error summary register. Bit Meaning 24 User defined operational interject
MC1RESR0	MUP 0 error summary register. Bit Meaning 2 Detected no all seems well 3 Detected all seems well failure 4 Master detected data parity error 5 MUP detected data parity error 6 MUP detected control error 7 MUP detected unused address error 8 MUP detected address parity error 9 Sent all seems well failure 10 Client error - maintenance interject 11 IFB error - maintenance interrupt 16 Sanity timeout 17 68010 bus error

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	18	DRAM error
	19	Memory access error
	20	Both MUPs active
	21	Software detected error
	22	MUP forced in hardware
	23	User defined operational interject
MC1RDATA0U	MUP 0 data register. Bit Meaning	
	24-31	Upper byte of data
MC1RDATA0	MUP 0 data register. Bit Meaning	
	0-23	Lower 3 bytes of data
MC1RINST0U	MUP 0 instruction register. Bit Meaning	
	24-31	Upper byte of instruction
MC1RINST0	MUP 0 instruction register. Bit Meaning	
	0-23	Lower 3 bytes of instruction
MC1RRPLY0U	MUP 0 reply register. Bit Meaning	
	24-31	Upper byte of reply register
MC1RRPLY0	MUP 0 reply register. Bit Meaning	
	0-23	Lower 3 bytes of reply register
MC1RSTAT0	MUP 0 software status before fault processing. Bit Meaning	
	0	MUP is troubled
	1	MUP is stopped
	3	MUP is active

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	4 MUP is standby
	5 MUP is forced in hardware
	9 Do not restore MUP
MC1RSTAT0A	MUP 0 software status after fault processing. Same as MC1RSTAT0
MC1RSDAT0UB	MUP 0 DATA register before the last stop/start instruction. Same as MC1RDAT0U
MC1RSDAT0B	MUP 0 DATA register before the last stop/start instruction. Same as MC1RDAT0
MC1RSINST0UB	MUP 0 instruction register before the last stop/start instruction. Same as MC1RINST0U
MC1RSINST0B	MUP 0 instruction register before the last stop/start instruction. Same as MC1RINST0
MC1RCID1	MUP 1 client ID register. Same as MC1RCID0
MC1RMID1	MUP 1 micro code ID register. Same as MC1RMID0
MC1RSTA1U	MUP 1 status register. Same as MC1RSTA0U
MC1RSTA1	MUP 1 status register. Same as MC1RSTA0
MC1RCTL1	MUP 1 control register. Same as MC1RCTL0
MC1RESR1U	MUP 1 error summary register. Same as MC1RESR0U
MC1RESR1	MUP 1 error summary register. Same as MC1RESR0
MC1RDAT1U	MUP 1 data register. Same as MC1RDAT0U
MC1RDAT1	MUP 1 data register. Same as MC1RDAT0
MC1RINST1U	MUP 1 instruction register. Same as MC1RINST0U
MC1RINST1	MUP 1 instruction register. Same as MC1RINST0
MC1RRPLY1U	MUP 1 reply register. Same as MC1RRPLY0U
MC1RRPLY1	MUP 1 reply register. Same as MC1RRPLY0
MC1RSTAT1	MUP 1 software status before fault processing. Same as MC1RSTAT0
MC1RSTAT1A	MUP 1 software status after fault processing. Same as MC1RSTAT0
MC1RSDAT1UB	MUP 1 data register before the last stop/start instruction. Same as MC1RDAT0U
MC1RSDAT1B	MUP 1 data register before the last stop/start instruction. Same as MC1RDAT0
MC1RSINST1UB	MUP 1 instruction register before the last stop/start instruction. Same as MC1RINST0U
MC1RSINST1B	MUP 1 instruction register before the last stop/start instruction. Same as MC1RINST0

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MC1RFIB	MUP fault information. Bit Meaning 0 MUP member number 3-4 MUPs software status on the IFB 1 Active 2 Standby 3 OOS 6-7 Method of entry into fault recovery 1 Interrupt 2 Interject 3 BLM 9-12 Fault type 1 No fault found - INJ 2 Both MUPs active - INJ 3 Memory access error - INJ 4 DRAM error - INJ 5 68000 bus error - INJ 6 Sanity time-out - INJ 7 Software generated error - INJ 8 Forced active - INJ 9 Time-out - BLM 10 DMA failed - BLM 11 Hardware-software mismatch - BLM 15 Multiply fault indicator 18-19 Starting state 21-22 Ending state
MC1RFIB+1	Fault information from fault previous to MC1RFIB.
MC1RFIB+2	Fault information from fault previous to MC1RFIB+1.

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MC1RSRTB	MUP short range timer.
	Bit Meaning
	0-17 Short range timer
MC1RCTSWTB	21 Short range timer enable
	MUP context switch timer.
	Bit Meaning
	0-9 Context switch timer
	21 Context switch timer enable
MC1RLRTB	22 Indicates a restore command has been sent
	23 Context switch abort indicator
	MUP long range timer.
	Bit Meaning
	0-17 Long range timer
	21 Long range timer enable
MC1RSIB	Steps taken during fault processing
	Bit Meaning
	0 Determine INT/INJ type
	1 Both MUPs have same hardware activity state
	3 Both MUPs are active in software status
	4 Hardware - software match
	5 Other MUP was reset
	8 Recover both MUPs
	9 Remove standby MUP
	10 MUI failing address from MUP
	13 MUP / MUI access test
	14 Restart MUP
	15 Get MUP information
	19 Reset MUP
	20 Switch MUPs
	22 Switch context
	23 DTBL called

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MC1RSIB+1	Steps taken during fault processing for fault previous to MC1RSIB.
MC1RSIB+2	Steps taken during fault processing for fault previous to MC1RSIB+1.
MC1RSRCB	MUP short range counter. Bit Meaning 0-4 Number of force related entries.
MC1RLRCB	MUP long range counter. Bit Meaning 0-8 MUP 0 long range counter 12-20 MUP 1 long range counter
MC1RSFIB	Indicates which steps failed during fault processing. Same as MC1RSIB
MC1RSFIB+1	Indicates which steps failed during fault processing for fault previous to MC1RSFIB.
MC1RSFIB+2	Indicates which steps failed during fault processing for fault previous to MC1RSFIB+1.
MC1RDTBLAB	DTBL determination address.
MC1RBLMRAB	Return address of the caller of a BLM.
MC1RBLMFIB	Fault information from caller of a BLM.
MC1RST0FAB	State 0 failing address.
MC1RST1FAB	State 1 failing address.
MC1RCTSWFAB	Context switch failing address.
MC1RST0FIB	State 0 failing information: Bit Meaning 0 - 17 = Lower bits of MUP reply register 18 - 23 = Instruction status of restart instruction
MC1RST1FIB	State 1 failing information: Bit Meaning 0 - 23 = Lower bits of MUP reply register.
MC1RPGMAD	Program address at failure.
MC1RTSTAD	Test address at failure.
MC1RTSTOP	Test options: Bit Meaning 0 = Active CC failed 1 = Standby CC failed 2 = Store failed 3 = IFB failed

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- 4 = IFB client failed
- 5 = False response test failed
- 6 - 12 = Client unique failure information
 - 6 = MUP audit(s) failed
 - 7 = MUP audit(s) failed no dma data
 - 8 = Active CC failed
 - 9 = Standby CC failed
- 13 = Client delay segment break request flag
- 14 = Test standby configuration
- 15 = On standby configuration
- 16 = Run test on base level
- 17 = No PS test
- 18 = No CS test
- 19 = No CC test
- 20 = Test IFB controller
- 21 = Test IFB client
- 22 = Test store access
- 23 = False response test

MC1RILFSAV	F register at time of MUP access test failure.
MC1RILGSAV	G register at time of MUP access test failure.
MC1RILJSAV	J register at time of MUP access test failure.
MC1RILKSAV	K register at time of MUP access test failure.
MC1RILLSAV	L register at time of MUP access test failure.
MC1RILXSAV	X register at time of MUP access test failure.
MC1RILYSAV	Y register at time of MUP access test failure.
MC1RILZSAV	Z register at time of MUP access test failure.

FREG	Fault encountered by calling program.
GREG	Originator of BLM request.
TREG	Return address of caller.
XREG	Invalid MUP base address.
ZREG	Fault information passed by the calling program.

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DATA: UNIQUE SSD DATA

SS1RCID	SS1RMID	SS1RSTA	SS1RESR	SS1RDAT	SS1RLRTW
SS1RLRCW	SS10ROW40	SS10ROW41	SS10ROW42	SS10ROW43	SS10ROW44
SS10ROW45	SS10ROW46	SS10ROW50	SS10ROW51	SS10ROW52	SS10ROW53
SS10ROW54	SS10ROW55	SS10ROW56			

Defined as:

SS1RCID	SSD 0/1 CID register
SS1RMID	SSD 0/1 MID register
SS1RSTA	SSD 0/1 STA register
SS1RESR	SSD 0/1 ESR register
SS1RDAT	SSD 0/1 DAT register
SS1RLRTW	SSD long range timer word
SS1RLRCW	SSD long range counter word
SS10ROW40 - SS10ROW56	SSD 0/1 matrix

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DATA: VIF CRITICAL REGISTERS (VIFCR)

VC4STAT VC4VIUSTAT1

VC4R0_1 VC4R2_3 VC4R4_5 VC4R6_7 VC4R8_9 VC4R10_11
VC4R12_13 VC4R14_15

VC4R0_1 VC4R2_3 VC4R4_5 VC4R6_7 VC4R8_9 VC4R10_11
VC4R12_13 VC4R14_15

NOTE: The first line supplies information for controllers 0 and 1; the second and third lines supplies information for controller 0; the fourth and fifth lines supplies information for controller 1.

DATA: XA WINDOW INFORMATION

AC1SDA(H)	AC1SDA(L)	AC1XACTL	AC1XAWT	AC1XAWP0	AC1XAWP1
AC1XAWP2	AC1XAWP3	AC1XAWP4	AC1XAWP5	AC1XAWP6	AC1XAWP7
ST1SDA(H)	ST1SDA(L)	ST1XACTL	ST1XAWT	ST1XAWP0	ST1XAWP1
ST1XAWP2	ST1XAWP3	ST1XAWP4	ST1XAWP5	ST1XAWP6	ST1XAWP7

Defined as:

SDA(H) Saved Data Address. (High order bits)

Bit Meaning

0-6 The high order bits (24-29) of the 30-bit Saved Data Address (SDA). The complete data address is determined by concatenating SDA(H) with SDA(L).

SDA(L) Saved Data Address. (Low order bits)

Bit Meaning

0-23 The low order bits (0-23) of the 30-bit SDA. The complete data address is determined by concatenating SDA(H) with SDA(L).

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XACTL Extended access control register. There are 8 window enable bits corresponding to a specific window, 0-7. When an enable bit is set, access is enabled for that window. If the enable is "0", access to that window address will not be translated and will not result in an XS or XM access. Instead, the address goes directly to the CS Bus for ordinary CS access. The upper bits 8-31 are zero.

Bit Meaning

- 0 XAWEN0, extended access window 0 enable.
- 1 XAWEN1, extended access window 1 enable.
- 2 XAWEN2, extended access window 2 enable.
- 3 XAWEN3, extended access window 3 enable.
- 4 XAWEN4, extended access window 4 enable.
- 5 XAWEN5, extended access window 5 enable.
- 6 XAWEN6, extended access window 6 enable.
- 7 XAWEN7, extended access window 7 enable.

XAWT Extended access window type register. XAWTn - Window type bit for window n. A window type of "0" indicates that window n is an XS window. Window type "1" indicates window n is an XM window. The upper bits 8-31 are zero.

Bit Meaning

- 0 XAWT0, extended access window 0 type.
- 1 XAWT1, extended access window 1 type.
- 2 XAWT2, extended access window 2 type.
- 3 XAWT3, extended access window 3 type.
- 4 XAWT4, extended access window 4 type.
- 5 XAWT5, extended access window 5 type.
- 6 XAWT6, extended access window 6 type.
- 7 XAWT7, extended access window 7 type.

XAWPn Extended access window pointer n. (n represents window pointers 0-7.) This 15 bit field is the window pointer associated with accesses through window n. It will become bits 27 through 13 of the target address for translations using window n. The upper bits 15-31 are zero.

Bit Meaning

- 0-14 Extended access window pointer

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DATA: XPWR INTERNAL DATA

XSTAT_X	XSTAT_X+1	IMAGE_X	IMAGE_X+1	IMAGE_X+2	IMAGE_X+3
STABINX_X	STABINX_X+1	BSTAT_X			
XSTAT	XSTAT+1	IMAGE	IMAGE+1	IMAGE+2	IMAGE+3
STABINX	STABINX+1	BSTAT	LRTW	LRCW	

NOTE: Prefix all words with XP1R.

Defined as:

XSTAT_X XPWR 0 unit software status word before XPWR base level mtce.

Bit Meaning

- 0 = 5v converter for CS bus 0 found faulty.
- 1 = 5v converter for CS bus 1 found faulty.
- 2 = 5v converter for PS bus 0 found faulty.
- 3 = 5v converter for PS bus 1 found faulty.
- 4 = 5v converter for IF bus 0 found faulty.
- 5 = 5v converter for IF bus 1 found faulty.
- 6 = Terminating voltage of CS bus 0 found out-of-range.
- 7 = Terminating voltage of CS bus 1 found out-of-range.
- 8 = Terminating voltage of PS bus 0 found out-of-range.
- 9 = Terminating voltage of PS bus 1 found out-of-range.
- 10 = Terminating voltage of IF bus 0 found out-of-range.
- 11 = Terminating voltage of IF bus 1 found out-of-range.
- 12 = 24v converter found faulty.
- 13-14 = Current XPWR state.
 - State = DGR(degraded) state.
 - State = OOS(out of service) state.
 - State = ACT(active) state.
 - State = Unassigned.
- 15 = Unused.
- 16 = SSD 0 unit is just restored.
- 17-18 = Current SD value of XPWR 0.

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- 19 = XPWR 0 unit is just restored.
- 20 = Need to verify XPWR scan image.
- 21 = OOS state forced by XPWR software.
- 22 = XPWR 0 can be restored only by TTY message.
- 23 = Stop XPWR 0 scanning.

XSTAT_X+1 XPWR 1 unit software status word before XPWR base level mtce.

Bit Meaning

- 0 = 5v converter for CS bus 0 found faulty.
- 1 = 5v converter for CS bus 1 found faulty.
- 2 = 5v converter for PS bus 0 found faulty.
- 3 = 5v converter for PS bus 1 found faulty.
- 4 = 5v converter for IF bus 0 found faulty.
- 5 = 5v converter for IF bus 1 found faulty.
- 6 = Terminating voltage of CS bus 0 found out-of-range.
- 7 = Terminating voltage of CS bus 1 found out-of-range.
- 8 = Terminating voltage of PS bus 0 found out-of-range.
- 9 = Terminating voltage of PS bus 1 found out-of-range.
- 10 = Terminating voltage of IF bus 0 found out-of-range.
- 11 = Terminating voltage of IF bus 1 found out-of-range.
- 12 = 24v converter found faulty.

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- 13-14 = Current XPWR state.
State = DGR(degraded) state.
State = OOS(out of service) state.
State = ACT(active) state.
State = Unassigned.
15 = Unused.
16 = SSD 1 unit is just restored.
17-18 = Current SD value of XPWR 0.
19 = XPWR 1 unit is just restored.
20 = Need to verify XPWR scan image.
21 = OOS state forced by XPWR software.
22 = XPWR 1 will be restored only by TTY message.
23 = Stop XPWR 1 scanning.

IMAGE_X XPWR 0 scan image word 0 before XPWR base level mtce.

Bit	Meaning
0	= 24v converter status.
1-5	= Unused.
6	= Major alarm indicator.
7	= CS bus 0 terminating voltage status.
8	= CS bus 1 terminating voltage status.
9	= Status of 5v converter for CS bus 0.
10	= Unused.
11	= Status of 5v converter for CS bus 1.
12-13	= Unused.
14	= PS bus 0 terminating voltage status.
15	= PS bus 1 terminating voltage status.
16	= Status of 5v converter for PS bus 0.
17	= Unused.
18	= Status of 5v converter for PS bus 1.
19-23	= Unused.

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IMAGE_X+1 XPWR 0 scan image word 1 before XPWR base level mtce.

Bit Meaning

- 0 = IF bus 0 terminating voltage status.
- 1 = IF bus 1 terminating voltage status.
- 2 = Status of 5v converter for IF bus 0.
- 3 = Unused.
- 4 = Status of 5v converter for IF bus 1.
- 5-6 = Unused.
- 7-13 = Buffer used for verifying scan image.
- 14-23 = Unused.

IMAGE_X+2 XPWR 1 scan image word 0 before XPWR base level mtce.

Bit Meaning

- 0 = 0 = 24v converter status.
- 1-5 = Unused.
- 6 = Major alarm indicator.
- 7 = CS bus 0 terminating voltage status.
- 8 = CS bus 1 terminating voltage status.
- 9 = Status of 5v converter for CS bus 1.
- 10 = Unused.
- 11 = Status of 5v converter for CS bus 0.
- 12-13 = Unused.
- 14 = PS bus 0 terminating voltage status.
- 15 = PS bus 1 terminating voltage status.
- 16 = Status of 5v converter for PS bus 1.
- 17 = Unused.
- 18 = Status of 5v converter for PS bus 0.
- 19-23 = Unused.

SEE PROPRIETARY NOTICE ON COVER PAGE

IMAGE_X+3 XPWR 1 scan image word 1 before XPWR base level mtce.

Bit Meaning

0 = IF bus 0 terminating voltage status.

1 = IF bus 1 terminating voltage status.

2 = Status of 5v converter for IF bus 1.

3 = Unused.

4 = Status of 5v converter for IF bus 0.

5-6 = Unused.

7-13 = Buffer used for verifying scan image.

14-23 = Unused.

STABINX_X XPWR 0 status table index word before XPWR base level mtce.

Bit Meaning

0-23 = Index value.

Value = No fault on XPWR 0.

Value = SSD 0 is OOS.

Value = XPWR 0 is powered down.

Value = Fault on converter for ACT bus or 24v converter.

Value = Fault on converter for OOS bus.

STABINX_X+1 XPWR 1 status table index word before XPWR base level mtce.

Bit Meaning

0-23 = Index value.

Value = No fault on XPWR 1.

Value = SSD 1 is OOS.

Value = XPWR 1 is powered down.

Value = Fault on converter for ACT bus or 24v converter.

Value = Fault on converter for OOS bus.

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BSTAT_X Bus(CS, PS, IF bus) status word before XPWR base level mtce.

Bit Meaning

0 = CS bus 0 is OOS if set.

1 = CS bus 1 is OOS if set.

2 = PS bus 0 is OOS if set.

3 = PS bus 1 is OOS if set.

4 = PS bus 0 is OOS if set.

5 = PS bus 1 is OOS if set.

6-23 = Unused.

XSTAT XPWR 0 unit software status word after XPWR base level mtce.
See XSTAT_X.

XSTAT+1 XPWR 1 unit software status word after XPWR base level mtce.
See XSTAT_X+1.

IMAGE XPWR 0 scan image word 0 after XPWR base level mtce.
See IMAGE_X.

IMAGE+1 XPWR 0 scan image word 1 after XPWR base level mtce.
See IMAGE_X+1.

IMAGE+2 XPWR 1 scan image word 0 after XPWR base level mtce.
See IMAGE_X+2.

IMAGE+3 XPWR 1 scan image word 1 after XPWR base level mtce.
See IMAGE_X+3.

STABINX XPWR 0 status table index word after XPWR base level mtce.
See STABINX_X.

STABINX+1 XPWR 1 status table index word after XPWR base level mtce.
See STABINX_X+1.

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BSTAT Bus(CS, PS, IF bus) status word after XPWR base level mtce.
 See BSTAT_X.

LRTW XPWR long range timer word.

Bit Meaning

0-17 = XPWR long range timer.

18-19 = Unused.

20 = Long range timer enable bit.

21-23 = Unused.

LRCW XPWR long range counter word.

Bit Meaning

0-11 = Long range counter for XPWR 0.

12-23 = Long range counter for XPWR 1.

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DATA: XTSI AUXILIARY DATA (for base level maintenance)

BSIZE	LPBK_ERR/KIND	HEADER	DATA0	DATA1	DATA2
DATA3	DATA4	DATA5	DATA6	DATA7	DATA8
DATA9	DATA10	DATA11	DATA12	DATA13	DATA14
DATA15	MBPTRS*	SDMPTR*	MBSTAT*	PSC_OS*	PSC_PEST
0...0					

NOTE: Only present for illegitimate reports, otherwise all zeros.

BSIZE	Block size.
LPBK_ERR/KIND	Loopback error flag / Kind of report
HEADER	Frame report header word (from the maintenance buffer).
DATA0-DATA15	Frame report data words 00-15 (from the maintenance buffer).
MBPTRS*	Maintenance buffer pointers.
SDMPTR*	Shadow maintenance buffer pointer.
MBSTAT*	Maintenance processor buffer status.
PSC_OS	Protection switch client out of service.
PSC_PEST	Protection switch client PEST bit array.

DATA: XTSI NON PSC AUXILIARY DATA DUMP

DUMP SZ	CLIENT_ID	PUFR_INT2	PUFR_INT3	PUFR_INT4	PUFR_INT5

DUMP SZ => octal 00005014

Defined as:

DUMP SZ	Report Type and Block Size
CLIENT_ID	Suspect client identification number
PUFR_INT2	Reserved
PUFR_INT3	Reserved
PUFR_INT4	Reserved
PUFR_INT5	Reserved

SEE PROPRIETARY NOTICE ON COVER PAGE

DATA: XTSI PCM BUS AUXILIARY

DUMP SZ	0....0	0....0	0....0	0....0	0....0
PSCX0	PSCX0 USTAT	PSCX0 STAT	PSCX0 CESR	PSCX0 CTL	PSCX0 EXR
PSCX1	PSCX1 USTAT	PSCX1 STAT	PSCX1 CESR	PSCX1 CTL	PSCX1 EXR
PSCX2	PSCX2 USTAT	PSCX2 STAT	PSCX2 CESR	PSCX2 CTL	PSCX2 EXR
PSCX3	PSCX3 USTAT	PSCX3 STAT	PSCX3 CESR	PSCX3 CTL	PSCX3 EXR
PSCX4	PSCX4 USTAT	PSCX4 STAT	PSCX4 CESR	PSCX4 CTL	PSCX4 EXR
PSCX5	PSCX5 USTAT	PSCX5 STAT	PSCX5 CESR	PSCX5 CTL	PSCX5 EXR

NOTE: The printout for SPS will be all zero for XTSI REL 1.

Defined as:

DUMP SZ	Report Type and Block Size.
PSCX	D3U/SPS/IBU Subunit type indicator.
PSCX STAT	D3U/SPS/IBU Software Status.
PSCX USTAT	D3U/SPS/IBU Hardware Status.
PSCX CESR	D3U/SPS/IBU Error Register.
PSCX CTL	D3U/SPS/IBU Control Register.
PSCX EXR	D3U/SPS/IBU Exercise Register.

Following is the data layout of clients that reside on a sub-branch. The data is layout based on the EVEN or ODD member of the XTSI frame and the sub-branch within the member. The Client_id is returned.

To access the data:

XTSI_PCM_SUBBR_DATA[EVEN / ODD mem][SUB-BRANCH][Client mem]

PCM SUB-BRANCH LAYOUT

FRAME MEM	SUB-BRANCH	CLIENT 1	CLIENT 2	CLIENT 3	CLIENT 4	CLIENT 5	CLIENT 6
4TIXMEMN_E	PCM_SUB_BRANCH_0	4TIXSPS0	4TIXSPS1	4TIXSPS2	4TIXSPS3	4TIXSPS4	4TIXSPS10
	PCM_SUB_BRANCH_1	4TIXALF	4TIXALF	4TIXALF	4TIXALF	4TIXALF	
	PCM_SUB_BRANCH_2	4TIXD3U0	4TIXD3U1	4TIXD3U2	4TIXD3U6	SPARE0	SPARE2
4TIXMEMN_O	PCM_SUB_BRANCH_0	4TIXSPS5	4TIXSPS6	4TIXSPS7	4TIXSPS8	4TIXSPS9	4TIXSPS11
	PCM_SUB_BRANCH_1	4TIXALF	4TIXALF	4TIXALF	4TIXALF	4TIXALF	
	PCM_SUB_BRANCH_2	4TIXD3U3	4TIXD3U4	4TIXD3U5	4TIXD3U7	SPARE1	4TIXIBU0

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DATA: XTSI PCM BUS MISMATCH AUXILIARY

DUMP SZ	TIME-SLOT	TRANS WORD C0	TRANS WORD C1	TRANS QUERY C0	TRANS QUERY C1
PCMIL C0	PCMIL C1	PCMIH C0	PCMIH C1	PCMOL C0	PCMOL C1
PCMOH C0	PCMOH C1	TSM C0	TSM C1	SYNDR C0	SYNDR C1
SYNDR CALC	SUTMN	SUB-BRANCH 0....0		0....0	0....0
PSCX0	PSCX0 USTAT	PSCX0 STAT	PSCX0 CESR	PSCX0 CTL	PSCX0 EXR
PSCX1	PSCX1 USTAT	PSCX1 STAT	PSCX1 CESR	PSCX1 CTL	PSCX1 EXR
PSCX2	PSCX2 USTAT	PSCX2 STAT	PSCX2 CESR	PSCX2 CTL	PSCX2 EXR
PSCX3	PSCX3 USTAT	PSCX3 STAT	PSCX3 CESR	PSCX3 CTL	PSCX3 EXR
PSCX4	PSCX4 USTAT	PSCX4 STAT	PSCX4 CESR	PSCX4 CTL	PSCX4 EXR
PSCX5	PSCX5 USTAT	PSCX5 STAT	PSCX5 CESR	PSCX5 CTL	PSCX5 EXR

Defined as:

DUMP SZ	Report Type and Block Size.
TIMESLOT	Time Slot
TRANS WORD C0	Translation Ram Controller 0
TRANS WORD C1	Translation Ram Controller 1
TRANS QUERY C0	Translation Query Controller 0
TRANS QUERY C1	Translation Query Controller 1
TTSI PCMIL C0	TTSI Input PCM Low Controller 0
TTSI PCMIL C1	TTSI Input PCM Low Controller 1
TTSI PCMIL C0	TTSI Input PCM High Controller 0
TTSI PCMIL C1	TTSI Input PCM High Controller 1
TTSI PCMOL C0	TTSI Output PCM Low Controller 0
TTSI PCMOL C1	TTSI Output PCM Low Controller 1
TTSI PCMOL C0	TTSI Output PCM High Controller 0
TTSI PCMOL C1	TTSI Output PCM High Controller 1

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TSM C0	TSM Controller 0
TSM C1	TSM Controller 1
SYNDR C0	Syndrome Register Controller 0
SYNDR C1	Syndrome Register Controller 1
SUB-BRANCH	PCM Bus Subbranch
PSCX(0-5)	PSC Client Number
PSCX(0-5) STAT	PSC Client HW Status
PSCX(0-5) USTAT	PSC Client SW Status
PSCX(0-5) CESR	PSC Client CESR
PSCX(0-5) CTL	PSC Client Control Register
PSCX(0-5) EXR	PSC Client Exercise Register

Following is the data layout of clients that reside on a sub-branch. The data is layout based on the EVEN or ODD member of the XTSI frame and the sub-branch within the member. The Client_id is returned.

To access the data:

XTSI_PCM_SUBBR_DATA[EVEN / ODD mem][SUB-BRANCH][Client mem]

PCM SUB-BRANCH LAYOUT

FRAME MEM	SUB-BRANCH	CLIENT 1	CLIENT 2	CLIENT 3	CLIENT 4	CLIENT 5	CLIENT 6
4TIXMEMN_E							
	PCM_SUB_BRANCH_0	4TIXSPS0	4TIXSPS1	4TIXSPS2	4TIXSPS3	4TIXSPS4	4TIXSPS10
	PCM_SUB_BRANCH_1	4TIXALF					
	PCM_SUB_BRANCH_2	4TIXD3U0	4TIXD3U1	4TIXD3U2	4TIXD3U6		
4TIXMEMN_O							
	PCM_SUB_BRANCH_0	4TIXSPS5	4TIXSPS6	4TIXSPS7	4TIXSPS8	4TIXSPS9	4TIXSPS11
	PCM_SUB_BRANCH_1	4TIXALF					
	PCM_SUB_BRANCH_2	4TIXD3U3	4TIXD3U4	4TIXD3U5	4TIXD3U7	RESERVED	4TIXIBU0

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4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

APFR	DTFR	MARP	PSFR	TNFR
AUFR	DUFR	MCAI	SPFR	VCFR
CCFR	ERAP	NCFR	PUFR	WPAD
CCIS	ERAT	PBFR	SCFR	XTSI
CSFR	FSFR	PCRVR	SCSF	
DIFR	IOCP	PFLR	SIRE	

Practice 234-180-110, *Call Processing Programs*

Practice 234-180-300, *Interrupt Software Control Structure Description*

Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*

Practice 234-180-320, *Error Analysis Program Description*

Practice 234-280-330, *System Recovery, Initialization and Reinitialization Description*

Practice 254-280-111, *Input/Output Programs Software Description*

Practice 254-280-310, *Fault Recovery Program*

Practice 254-280-320, *Error Analysis Program*

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4ESS
OM-4B000-01

REPT:

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REPT:0-226

Issue 1.5
March 1999

ID REPT:A-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

A-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a A-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs
AUFR CCFR CCIS CSFR DIFR
DTFR DUFR ERAP ERAT FSFR
IOCP MARP MCAI NCFR PBFR
PCR V PFLR PSFR PUFR SCFR
SCSF SIRE SPFR TNFR VCFR
WPAD XTSI

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The A-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

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TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the A-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:B-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

B-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a B-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The B-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the B-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:BLM:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

BLM[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a base level maintenance (BLM) interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The BLM message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the BLM message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:C-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

C-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a C-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The C-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the C-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:D-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

D-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a D-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs
AUFR CCFR CCIS CSFR DIFR
DTFR DUFR ERAP ERAT FSFR
IOCP MARP MCAI NCFR PBFR
PCRVR PFLR PSFR PUFR SCFR
SCSF SIRE SPFR TNFR VCFR
WPAD XTSI

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The D-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the D-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:E-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

E-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a E-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The E-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDL0M	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the E - LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:ERSTP:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

ERSTP[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that an error stop (ERSTP) interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRVR	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The ERSTP message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the ERSTP message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:F-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

F-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a F-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The F-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the F-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:INT:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

INT[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The INT message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

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TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the INT message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:INTJ:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

INTJ[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a interject has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The INTJ message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the INTJ message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:K-LEV:0
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

K-LEV[a]
MFNUM=b

2. REASON FOR OUTPUT

To report that a K-level interrupt has occurred. This is an abbreviated form of the REPT:0 message, which will follow.

3. VARIABLE FIELD DEFINITIONS

- a Action line. Refer to TABLE A.
b Maintenance file number (MFNUM) in octal.

4. ACTION TO BE TAKEN

This output message is informational. Any action taken must be based on the specific information printed and the technical impact of that data.

5. REFERENCES

PIDENTs

AUFR	CCFR	CCIS	CSFR	DIFR
DTFR	DUFR	ERAP	ERAT	FSFR
IOCP	MARP	MCAI	NCFR	PBFR
PCRv	PFLR	PSFR	PUFR	SCFR
SCSF	SIRE	SPFR	TNFR	VCFR
WPAD	XTSI			

NOTE: The PIDENT listing contains PIDENTs for all abbreviated messages.
The K-LEV message is not associated with all listed PIDENTs.

Practice 234-180-110, *Call Processing Programs*
Practice 234-180-300, *Interrupt Software Control Structure Description*
Practice 234-180-310, *Peripheral Units Fault Recovery Program Description*
Practice 234-180-320, *Error Analysis Program Description*
Practice 234-180-330, *System Recovery, Initialization and Reinitialization Description*
Practice 254-280-111, *Input/Output Programs Software Description*
Practice 254-280-310, *Fault Recovery Program*
Practice 254-280-320, *Error Analysis Program*

SEE PROPRIETARY NOTICE ON COVER PAGE

TABLE A

Action Lines and Their Meanings		
Phase	Symbol	Meaning
COPIED HARD TO SOFT	40MTN_FRDCHS	Requested Copy Hardware to Software
COPIED SOFT TO HARD	40MTN_FRDCSH	Requested Copy Software to Hardware
DUPLEX FAILED	40MTN_ERDUF	Duplex Failed
DUPLEX FAILED	40MTN_FRDUFL	Requested Duplex Fail
FORCE REMOVED	40MTN_FRDFRV	Requested Force Removal
PESTED	40MTN_FRRPS	Requested Pesting
REMOVED	40MTN_FRDNRV	Requested Normal Removal
REMOVED LOM	40MTN_FRDLOM	Requested Removal LOM
REQ NO ACTION	40MTN_FRRQNA	Requested No Action
RESTORED	40MTN_FRRSUB	Requested Restore
RMV MATE LOM & RST	40MTN_FRLOMR	Requested Restore Subject Remove Mate LOM
RMVD & DGN	10MTN_MIRAD	Removed and Requested Diagnostics
RMVD BOTH MATE &	40MTN_FRRMRS	Requested Remove Subject Remove Mate
RST MATE & RMVD	10MTN_MIRMR	Restored Mate and Removed
RST MATE & RMVD & DGN	10MTN_MIRRD	Restored Mate and RMVD and Diagnosed
RST MATE NO UPD & RMVD	40MTN_FRRNRS	Requested Remove Subject Restore Mate Not Updated
RST MATE UPD & RMVD	40MTN_FRRURS	Requested Remove Subject Restore Mate Updated
RST NO UPDATE	40MTN_FRDTNP	Requested Restore No Update
RST WITH UPDATE	40MTN_FRDTUP	Requested Restore With Update
SCHED AUDIT NUMBER	40MTN_FRDAUD	Requested Audit Number
SCHED CLEANUP OF	40MTN_FRDCLP	Requested Cleanup
SCHED DGN	40MTN_FRDDGN	Requested Diagnostics
SCHED DGN & OPT PHASES	40MTN_FRDOP	Requested DGN With Optional Phases
SCHED PERIPH UNIT	40MTN_FRDPUC	Requested Peripheral Unit
SCHED PEST UPDATE	40MTN_FRUPDD	Requested Pest Update
STATUS AUDIT		Status Audit
SWITCHED	40MTN_FRDSWT	Requested Switch
ZSTART MATE & RMVD	40MTN_ERRZS	Removed Suspect and Requested Zero Start Mate
ZSTART MATE & RMVD	40MTN_FRZAPS	Requested ZAP and Zero Start Mate

NOTE: TABLE A contains a complete listing of abbreviated phases for all abbreviated messages. Some of the abbreviated phases may not be used as the a (action line) variable for the K-LEV message.

SEE PROPRIETARY NOTICE ON COVER PAGE

ID REPT:PMOS-TSKID
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

REPT: PMOS a OF TASKID b

REASON FOR ACTION: c
STACK COUNT d
CONTENTS OF T-STACK
e
. . .
CONTENTS OF TCB PTR ARRAY
f
. . .
CONTENTS OF TCB
g
. . .
CONTENTS OF REQUEST STRUCTURE
h
. . .

2. REASON FOR OUTPUT

To report important Peripheral Maintenance Operating System (PMOS) actions.

3. VARIABLE FIELD DEFINITIONS

- a HARD ABORT — A task completely aborted from PMOS.
 MEDIUM ABORT — A task restarted on the next entry.
 REQUEST DENIAL — A task execution was denied.
 SOFT ABORT — A task is allowed to run abort routine.
- b Task name.

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c	Reason for action: BLOCKING — Task interferes with a currently active task. INTERNAL INTERRUPT — An internal PMOS or PMOS task program interrupt has occurred. INVALID PARAMETERS — Request parameters do not match those allowed. LVS MEM UNAVAILABLE — Insufficient local variable stack to fulfill a request. MANUAL — The task is aborted by an input request. TASK REQUESTED — The PMOS task is requested for the abort. TCB MEM UNAVAILABLE — All Task Control Blocks (TCBs) in use.
d	Stack depth of the process.
e	T-stack address data.
f	Contents of task control block pointer memory. See Table 1.
g	Contents of task control block memory. See Table 2.
h	Contents of task request structure. See Table 3.

4. ACTION TO BE TAKEN

Use the information provided in this message to analyze PMOS, PMOS task, and fault recovery system errors.

5. REFERENCES

PIDENTs
PMOSIOHN
PMOSMAIN
PMOSPRIM
PMOSTBLE

Input Message
INIT:PMOS-UTIL

SEE PROPRIETARY NOTICE ON COVER PAGE

Table 1
TCB Pointer Array Data Layout

WORD	BIT POSITION	CONTENT
0	0-7	PM4TCB_FORWARD_PTR - Indicates next active TCB pointer array structure.
0	8-15	PM4TCB_BACK_PTR - Indicates previous active TCB pointer array structure.
0	16-19	PM4TCB_LEVEL - Task execution level: 0 = F-level. 1 = Phase level. 2 = Autonomous Peripheral Unit Trouble (APUT) level. 3 = Base Level Maintenance (BLM) level. 4 = Interject level. 5 = Base level. 6 = Error stop. 7 = A- through E- or K-levels. 10 = Current level.
0	20	PM4TCB_IN_USE - TCB in use: 0 = Active. 1 = Inactive.
1	0-22	PM4TCB_START_PTR - Address of the Task Control Block (TCB).

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Table 2
TCB Structure Data Layout

WORD	BIT POSITION	CONTENT
0	0-22	PM4TCB_MEM_FORWARD_PTR - Static forward memory link.
1	0-22	PM4TCB_MEM_BACKWARD_PTR - Static backward memory link.
1	23	PM4TCB_MEM_IN_USE - TCB memory in use: 0 = Memory in use. 1 = Memory not in use.
2	0-7	PM4TCB_NUMBER - TCB number.
2	8-14	PM4TCB_TASK_IDENT - Task identifier number. See Table 4.
3	0-13	PM4TCB_UTMN - Unit type and member number associated with the task.
4	0-16	PM4TCB_SUTMN - Subunit type and member number associated with the task.
4	17-23	PM4TCB_PRIORITY - TCB priority: 0 = Lowest. 100 = Highest.
5	0	PM4TCB_PAGED - TCB paging: 0 = Paged program. 1 = Not paged.

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Table 2
TCB Structure Data Layout (continued)

WORD	BIT POSITION	CONTENT
5	1	PM4TCB_PAGING_COMPLETE - TCB paging complete: 0 = Yes. 1 = No.
5	2	PM4TCB_ACTIVE - Local Variable Stack (LVS) memory allocated: 0 = Yes. 1 = No.
5	3	PM4TCB_START - Task execution started: 0 = Yes. 1 = No.
5	4	PM4TCB_ABORT - Task requested abort: 0 = Yes. 1 = No.
5	5	PM4TCB_WAIT - Task suspended: 0 = Yes. 1 = No.
5	6-8	PM4TCB_WAIT_REASON - Reason for the suspend: 0 = No wait. 1 = Timing wait. 2 = Input/Output (I/O) wait. 3 = Parallel task wait. 4 = Message dispenser wait.

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Table 2
TCB Structure Data Layout (continued)

WORD	BIT POSITION	CONTENT
5	9	PM4TCB_DISK_REQUEST_ACTIVE - Disk request active: 0 = Yes. 1 = No.
5	10	PM4TCB_DISK_COMP_RTN - Disk completed return: 0 = Success. 1 = Failure.
5	11-14	PM4TCB_DISK_FAILURE_CODE - Disk failure code: 0 = Initial value. 1 = Request canceled. 2 = Software error. 3 = Hardware error.
5	15-18	PM4TCB_DISK_FAILURE_REASON - Reason for TCB disk failure: 0 = Initial value. 1 = Logical copy not available. 2 = Disk address Out-Of-Service (OOS). 3 = 1B canceled request. 4 = Request time out.
6	0-22	PM4TCB_WAIT_TIME - The Peripheral Maintenance Operating System (PMOS) clock value of the end of the task wait.
7	0-22	PM4TCB_INHIBITS
8	0-7	PM4TCB_HELD_BY_NUM - TCB number of a spawned task.
8	8-15	PM4TCB_HOLDS_NUM - TCB number of parent task.

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Table 2
TCB Structure Data Layout (continued)

WORD	BIT POSITION	CONTENT
8	16-23	PM4TCB_CHILD_COUNT - Number of tasks spawned by this parent task.
9	0	PM4TCB_PARALLEL_CHILD - Any parallel child tasks: 0 = Yes. 1 = No.
9	1	PM4TCB_HOLDS_MACP_JOB: 0 = Yes. 1 = No.
9	2-9	PM4TCB_MACP_JOB_ID - Program class bits 2-5 and program subclass bits 6-9.
9	10-17	PM4TCB_BUFF_NUM - Buffer number.
9	18-19	PM4UTIL_LVS_PRINT - Output indicator used by the LVS audit utility: 0 = Print enable. 1 = LVS threshold exceeded. 2 = LVS allocation exceeded.
10	0-22	PM4TCB_REQUEST_ACK_PTR - Address of task request acknowledge.
11	0-20	PM4TCB_STACK_PTR - Address of local variable stack memory.
12	0-20	PM4TCB_PAGED_PROGRAM_ADDRESS - Address of paged program.
13-23	0-23	PM4TCB_PARM_LIST - Task input parameter list.

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Table 3
Task Request Structure Data Layout

WORD	BIT POSITION	CONTENT
0	0-6	PM4TASKID - Task identifier of requested task. See Table 4.
1	0-22	PM4PARM_PTR - Address of task input parameters.
2	0-22	PM4PARM_SIZE - Number of words the parameters are contained.
3	0-22	PM4TASK_TIME - Task time.
4	0-2	PM4TASK_MODE - Task mode: 0 = Run immediately. 1 = Schedule and hold 2 = Maintenance Control Program (MACP) schedule and hold. 3 = Parallel schedule. 4 = Schedule.
4	3-6	PM4TASK_LEVEL - Task level: 0 = F-level. 1 = Phase level. 2 = Autonomous Peripheral Unit Trouble (APUT) level. 3 = Base Level Maintenance (BLM) level. 4 = Interject level. 5 = Base level. 6 = Error stop level. 7 = A- through E- and K-level. 10 = Current level.
4	7-20	PM4TASK_UTMN - Unit type and member number of related frame.
5	0-16	PM4TASK_SUTMN - Subunit type and member number.

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Table 3
Task Request Structure Data Layout (continued)

WORD	BIT POSITION	CONTENT
5	17-18	PM4TASK_PRIORITY - Task priority: 0 = Lowest. 100 = Highest.
6	0-22	PM4REQ_ACK_PTR - Address of Peripheral Maintenance Operating System (PMOS) schedule acknowledgment.

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Table 4
TASK IDENTIFICATION

<i>Value</i>	<i>Task Name</i>
0	PUFR
1	TNFR_ISOL
2	SYNC_ISOL
3	DIFR_ISOL
4	SCSFR_ISOL
5	FRDIMREQ
6	FRDILAUD
7	FRDILAMP
10	FRDIPCSC
11	XTSI_PSC_FRDIPCSC
12	FRDIPRE
13	FRDIPOST
14	FRDISWCH
15	TOPIC
16	FERA_FREQ
17	FERA_ROUTINE
20	FERA_DF_AUDIT
21	FERA_TST_RTN
22	FERA_DF_TIMEOUT
23	BOOTCNTL
24	DIF_BOOTSTRAP
25	SCS_BOOTSTRAP
26	DIF_PEST_UPDATE
27	SCS_PEST_UPDATE
30	DIFR_TIMED_AUDIT
31	SCS_TIMED_AUDIT
32	CLK_SWIP
33	RUN_ESTAB_CLK
34	AUTON_MESSDISP
35	MESSDISP_POLLING
36	PMOS_TTY
37	MEDIC_AUDIT
40	TIMED_ENTRY
41	DIF_PEST_APUFS
42	DIF_PST_CLEANUP
43	SCS_PST_CLEANUP
44	SCS_PEST_APUFS
45	DIF_UNPEST_BOVFL

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Table 4
TASK IDENTIFICATION (continued)

<i>Value</i>	<i>Task Name</i>
46	SCS_UNPEST_BOVFL
47	DIFEPUMP
50	UTIL_AUDIT
51	PREDFN_OD_ALARMS
52	PARALLEL_DIF_POLLING
53	PARALLEL_SCS_POLLING
54	SCS_ANN_UPD_RESP_HNDLR
55	SCS_COPY_RESP_HNDLR
56	SCS_FORMAT_RESP_HNDLR
57	SCS_DISK_COPY
60	SCS_DISK_FORMAT
61	SCS_DISK_LOAD
62	SCS_DISK_DUMP
63	SCS_START_3B_COPY
64	COPY3B_SCS_FILES
65	SCS_CONTR_GEN_UPD
66	FERA_UNPEST_APUT
67	SCS_BP_MEM_UTIL
70	SCS_BP_RESP_HNDLR
71	XTSI_BOOTCNTL
72	XTSI_BOOTSTRAP
73	XTSI_PEST_UPDATE
74	PARALLEL_XTSI_POLLING
75	XTSI_DISK_COPY
76	XTSI_DISK_DUMP
77	XTSI_DISK_LOAD
100	XTSI_START_3B_COPY
101	COPY3B_XTSI_FILES
102	XTSI_START_GEN_UPD
103	XTSI_READ_CONTR_MEM_UTIL
104	XTSI_WRITE_CONTR_MEM_UTIL
105	XTSI_READ_D3U_MEM_UTIL
106	XTSI_WRITE_D3U_MEM_UTIL
107	XTSI_BP_UTIL
110	XTSI_ORD_LPBK
111	XTSI_AUDIT_LPBK
112	XTSI_DIAG_REQ

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Table 4
TASK IDENTIFICATION

<i>Value</i>	<i>Task Name</i>
113	DIF_INITDG
114	XTSI_FILE_COPY
115	XTSI_FILE_DUMP
116	XTSI_FILE_LOAD
117	XTSI_PEST_APUFS
120	XTSI_PST_CLEANUP
121	Internal PMOS spare task ID (not available for use)
122-123	Spare TASK IDS available for future use
124	XTSI_SPU_MULTI_RRES
125-126	Spare TASK IDS available for future use
127	XTSI_UPDATE_PSC_PARMS
130	XTSI_PM_24HR_SYNC
131	XTSI_SU_ODA_AUD
132	XTSI_SCHED_SU_ODA_AUD
133	XTSI_UNPEST_APUT

SEE PROPRIETARY NOTICE ON COVER PAGE

ID RMV:XTSI
WORK CENTER.. MAC, MOC, NMOC, TEC,
 TOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

RMV: XTSI a b c

2. REASON FOR OUTPUT

To report the results of a Teletypewriter (TTY) remove message, a TTY diagnostic message, or a power control switch request to the Expanded Time Slot Interchange (XTSI).

3. VARIABLE FIELD DEFINITIONS

- a XTSI frame member number (0-63). Even numbers only.
- b Subunit type and submember number:
- ALC — A-Link controller (0-1).
- CONTR — Controller (0-1).
- D3U — Digital Signal Level 3 Unit (D3U) subunit (0-7).
- IBU — In-Band Unit (IBU) subunit (0).
- IPUB — Interface peripheral unit bus (0-1).
- SPU — Signal Processing Unit (SPU) subunit (0-11).
- c Disposition of request:
- COMPL — Completed.
- NOT STARTED FAC BUSY RETRY LATER — The frame request was not started because the scan point acknowledgement table was full.
- STOPPED ACTIVE MAIN: DO NOT REMOVE POWER — Other controller is Out-Of-Service (OOS); response to power switch request.
- STOPPED ACTIVE MAIN: MATE OOS — Other controller is OOS.
- STOPPED CHECK FAILURE — Defensive check failure. The system has detected a problem. This is not an office problem.
- STOPPED CONTR DUPLEX FAILED — Remove of D3U, SPU or IBU fails when frame is duplex failed.
- STOPPED DENIED ON SPARE — Spare D3U or SPU cannot be removed since it is protection switching an out-of-service D3U or SPU.

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STOPPED INVALID UNIT OR SUBUNIT — In growth or
unequipped.

STOPPED SERVICE CIRCUIT THRESHOLD EXCEEDED — IBU
cannot be removed from service since the 4ESSTM office service
circuit threshold is exceeded.

STOPPED SPARE NOT AVAILABLE — Non-spare D3U or SPU cannot
be removed from service since the spare is not available to
protection switch it.

STOPPED UNEQUIPPED — D3U, SPU or IBU is unequipped.

4. ACTION TO BE TAKEN

If the disposition of the request is:

NOT STARTED FAC BUSY RETRY LATER, try the request later.

STOPPED CHECK FAILURE, contact local technical support.

Otherwise, no action is required.

5. REFERENCES

PIDENTs
MAINIPUB
MCFWPEMO
MIRA
PSCTOPEX
PSCTOPMS
PSCTOPOP
PUCN01
TOPIC000
XTSTOPEX
XTSTOPMS
XTSTOPOP

Input Messages
RMV:XTSI
RST:XTSI

Output Message
RST:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

1. FORMAT

2. REASON FOR OUTPUT

3. VARIABLE FIELD DEFINITIONS

SEE PROPRIETARY NOTICE ON COVER PAGE

STOPPED OS DGN — Left Out-Of-Service (OOS), diagnostics requested.

STOPPED OOS FAULT — Left OOS, diagnostics found fault.

STOPPED OOS TBL ANAL — Error analysis.

STOPPED RESTORE FAILED — Restore of D3U, SPU or IBU failed.
Refer to the Maintenance Reference Handbook to find fail reason.

STOPPED RMVD — TTY removed, cannot restore from power switch.

STOPPED UPDATE FAILURE — Left OOS, could not update.

STOPPED UNAVAIL FORCED — Power switch off normal.

STOPPED UNEQUIPPED — D3U, SPU or IBU is unequipped.

STOPPED UNIT OR SUBUNIT IN GROWTH — D3U, SPU or IBU is in special growth or growth state.

ee

Pump Failure code (octal):

01 — XTSI CONTR pump failed - read file status order failed.

02 — XTSI CONTR pump failed - MISC error macro failed.

03 — XTSI CONTR pump failed - flash pump macro failed.

04 — XTSI fabric INIT failed - TSI status REG error.

05 — XTSI fabric INIT failed - TSI XLAT RAM macro failed.

06 — XTSI fabric INIT failed - TSI time_slot MEM macro failed.

07 — XTSI fabric INIT failed - ALF busy/idle MEM macro failed.

10 — XTSI fabric INIT failed - ALF XLAT RAM macro failed.

11 — XTSI CONTR pump failed - invalid reply (all zeroes).

12 — XTSI update program RAM failed.

13 — XTSI update program RAM failed - hard INIT failure.

14 — XTSI update program RAM failed - checksum failure.

15 — XTSI update other RAM failed.

16 — XTSI update other RAM failed - GESR bits set.

17 — XTSI pump / update failed - internal error.

20 — XTSI update failed - lockstep failed.

21 — XTSI pump failed - first checksum failed.

22 — XTSI pump failed - recalculated checksum failed.

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- 23 — XTSI update program memory - update macro failed.
 - 24 — XTSI access test failed.
 - 25 — XTSI pump failed - internal error.
 - 26 — XTSI pump failed - flash checksum.
 - 27 — XTSI pump failed - no file one flash.
 - 30 — XTSI pump failed - disk job.
 - 31 — XTSI pump failed - empty file.
 - 32 — XTSI pump failed - Control Bus (CB) copy.
 - 33 — XTSI pump failed - transfer.
 - 34 — XTSI pump failed - file error.
 - 35 — XTSI SPU tear-down - nail-up macro success.
 - 36 — XTSI SPU tear-down - nail-up macro maintenance buffer read failed.
 - 37 — XTSI SPU tear-down - nail-up macro failure.
 - 40 — XTSI Controller Signal Processor (CSP) pump failed - read file status order failure.
 - 41 — XTSI CSP pump failed - miscellaneous error macro failure.
 - 42 — XTSI CSP pump failed - flash pump macro failure.
 - 43 — XTSI CSP pump failed - internal error.
 - 44 — XTSI CSP initialize - initialize CSP memory failed.
- f Frame reply indicator:
- 0 — Variable gggggg is not frame reply data.
 - 4 — Variable gggggg is frame reply data.
- ggggg Message dispenser (macro) failure data:
- 0 — Invalid macro ID passed to message dispenser (1B program error).
 - 1 — Macro not accepted by frame (all 1's response not received from frame).
 - 2 — Macro response not received in time allowed, Peripheral Maintenance Operating System (PMOS) task hold timeout.
 - 3 — Macro response not received in time allowed (Macro response not ready).
 - 4 — Message dispenser request was successful but a task hold was not requested (1B program error).

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4. ACTION TO BE TAKEN

If disposition of the request is:

NOT STARTED FAC BUSY RETRY LATER , retry the request later.

STOPPED DUPLEX FAILED , use the TTY requests.

Otherwise, no action is required.

5. REFERENCES

PIDENT
MCFWPEMO
PSCTOPEX
PSCTOPMS
PSCTOPOP
XTSTOPEX
XTSTOPMS
XTSTOPOP
TOPIC000

Practice 234-010-107, *Maintenance Reference Handbook*

Input Messages

DGN:XTSI
RST:XTSI
UPD:XTSI

Output Messages

DGN:XTSI-ILL
DGN:XTSI-NOT
DGN:XTSI-PUB
DGN:XTSI-TERM
DGN:XTSI-TEST
UPD:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID RST:XTSI-SCHEDUL
WORK CENTER.. MAC, MOC, NMOC, TEC,
TOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

RST:XTSI a,b SCHEDULE IN PROGRESS
RST:XTSI a,b SCHEDULE COMPLETE
[D3US 0-7 c]
[SPUS 0-11 d]
[IBU 0 e]

2. REASON FOR OUTPUT

To report the result of a Teletypewriter (TTY) request to the Expanded Time Slot Interchange (XTSI).

NOTE: The one line message per subunit indicates pass or fail of the restore and a service degraded summary report (See OP:SDC output message) will follow.

3. VARIABLE FIELD DEFINITIONS

- a Member number of the XTSI to be restored (0-63). Companion member numbers (odd numbers) generate Input/Output(I/O) error text.
- b Type of rapid restore:
- ALLD3U — All Digital Signal Level 3 Units (D3Us) only.
- ALLPSC — All D3Us, all Signal Processing Units (SPUs) and the In-Band Unit (IBU).
- ALLSPU — All SPUs only.
- c A bit map of D3Us to be restored in octal with least significant bit refers to D3U 0.
- d A bit map of SPUs to be restored in octal with least significant bit refers to SPU 0.
- e A bit map of IBU to be restored in octal with least significant bit refers to IBU 0.

4. ACTION TO BE TAKEN

None, for information only.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENT
PSCTOPEX
PSCTOPMS
PSCTOPOP
SDEGRPRT
TOPIC000

Input Message
RST:XTSI-ALL

Output Message
OP:SDC

SEE PROPRIETARY NOTICE ON COVER PAGE

ID SET:TSIBP
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] SET:TSIBP XTSI a MRAM b FAST COMPLETE
- [2] SET:TSIBP XTSI a MRAM b FAST c
- [3] SET:TSIBP XTSI a MRAM b NORM COMPLETE
- [4] SET:TSIBP XTSI a b MRAM b NORM c
- [5] SET:TSIBP XTSI a MRAM b CUST {GRAM d|LRAM e|CRAM f} L g COMPLETE
- [6] SET:TSIBP XTSI a MRAM b CUST {GRAM d|LRAM e|CRAM f} L g c
- [7] SET:TSIBP XTSI a MRAM b CUST c {GRAM d|LRAM e| REG h} ...
INDIR {GRAM |LRAM | CRAM} L g COMPLETE
- [8] SET:TSIBP XTSI a MRAM b CUST c {GRAM d|LRAM e| REG h} ...
INDIR {GRAM |LRAM | CRAM} L g c
- [9] SET:TSIBP XTSI a D3U j MRAM k FAST COMPLETE
- [10] SET:TSIBP XTSI a D3U j MRAM k FAST m
- [11] SET:TSIBP XTSI a D3U j MRAM k NORM COMPLETE
- [12] SET:TSIBP XTSI a D3U j MRAM k NORM m
- [13] SET:TSIBP XTSI a D3U j MRAM k CUST HADR n [INDIR] L g COMPLETE
- [14] SET:TSIBP XTSI a SPU o MRAM k CUST HADR n [INDIR] L g m
- [15] SET:TSIBP XTSI a SPU o MRAM k FAST COMPLETE
- [16] SET:TSIBP XTSI a SPU o MRAM k FAST m
- [17] SET:TSIBP XTSI a SPU o MRAM k NORM COMPLETE
- [18] SET:TSIBP XTSI a SPU o MRAM k NORM m
- [19] SET:TSIBP XTSI a SPU o MRAM k CUST HADR n [INDIR] L g COMPLETE
- [20] SET:TSIBP XTSI a SPU o MRAM k CUST HADR n [INDIR] L g m

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- [21] SET:TSIBP XTSI a IBU 0 MRAM k FAST COMPLETE
- [22] SET:TSIBP XTSI a IBU 0 MRAM k FAST m
- [23] SET:TSIBP XTSI a IBU 0 MRAM k NORM COMPLETE
- [24] SET:TSIBP XTSI a IBU 0 MRAM k NORM m
- [25] SET:TSIBP XTSI a IBU 0 MRAM k CUST HADR n [INDIR] L g COMPLETE
- [26] SET:TSIBP XTSI a IBU 0 MRAM k CUST HADR n [INDIR] L g m

2. REASON FOR OUTPUT

This message prints in response to a SET:TSIBP input message.

Formats [1-8] are output if the input request specified that a breakpoint be set in a Expanded Time Slot Interchange (XTSI) simplex controller or duplex controllers.

Formats [9-14] are output if the input request specified a breakpoint be set in a Digital Signal Level 3 Unit (D3U).

Formats [15-20] are output if the input request specified a breakpoint be set in a Signal Processing Unit (SPU).

Formats [21-26] are output if the input request specified a breakpoint be set in an In-Band Unit (IBU).

3. VARIABLE FIELD DEFINITIONS

- a XTSI member number in decimal.
- b XTSI controller Micro-Instruction Random Access Memory (MRAM) memory address in hexadecimal (0-FFFF).
- c Controller request status code:
 - ABORTED - FRAME ERROR Request for the given XTSI was aborted because of an error returned from the frame. There may already be two breakpoints in the controller or there may already be a breakpoint at the micro-instruction address specified. Use the OP:TSIBP command to list the breakpoints in the controller. The breakpoint buffer for storing breakpoint data may be full, use the CLR:TSIBP command to reset the buffer. Contact the Technical Assistance Center for further information.
 - COMPLETE The breakpoint was set.
 - DENIED - INV TSI TYPE OR UNEQ Request denied because only an XTSI can be specified, or the frame is unequipped, in growth, or special growth state.

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- DENIED - ODD TSI MEMBER Request denied because only the even member number can be specified.
- DENIED - TSI DUPF Request denied because the frame is duplex failed.
- DENIED - TSI LOM Request denied because the frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.
- d Controller starting address of Global Random Access Memory (GRAM) region to be copied to custom breakpoint save area.
- e Controller starting address of Local Random Access Memory (LRAM) region to be copied to custom breakpoint save area.
- f Controller starting address of Control-Bus Random Access Memory (CRAM) region to be copied to custom breakpoint save area.
- g Number of "words" copied to the custom breakpoint save area. For XTSI controller, D3U, SPU and IBU, a word is 32-bits.
- h Controller register number in hexadecimal.
- j D3U number in decimal.
- k D3U SPU local memory RAM instruction address in hexadecimal (100000-17FFFF).
- m D3U, SPU or IBU request status code:
- ABORTED - FRAME ERROR Request for the given D3U, SPU or IBU was aborted because of an error returned from XTSI frame. Contact the Technical Assistance Center for further information.
- ABORTED - MACRO ERROR Request was aborted because the given D3U, SPU or IBU failed in processing the set command. Contact the Technical Assistance Center for further information.
- ABORTED - MACRO REJECTED Request for the given D3U, SPU or IBU was aborted because the XTSI frame rejected the set command. Contact the Technical Assistance Center for further information.
- ABORTED - MACRO TIMEOUT Request for the given D3U, SPU or IBU was aborted because the XTSI frame did not reply to the set command within the allotted time limit. Contact the Technical Assistance Center for further information.
- COMPLETE The breakpoint was set.
- DENIED - BREAKPOINT ALREADY AT ADDRESS Request for the given D3U, SPU or IBU was denied since there already is a breakpoint at the instruction address specified. Use OP:TSIBP to list the breakpoints in the D3U, SPU or IBU.

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- DENIED - DATA ADDRESS RANGE ERROR Request for the given D3U, SPU or IBU was denied because an illegal custom breakpoint address to be dumped is specified. The custom breakpoint address plus the entry in the L field must equal legal address. The instruction address specified. Use OP:TSIBP to list the breakpoints in the D3U, SPU or IBU.
- DENIED - DATA LENGTH ERROR Request for the given D3U, SPU or IBU was denied because an illegal amount of custom data to be dumped was specified. Re-enter the command with a different value in the L field.
- DENIED - INV TSI TYPE OR UNEQ Request denied because either a TSI, not XTSI, was specified, the frame or D3U, SPU or IBU was unequipped, in growth, or special growth state.
- DENIED - NON-ADDRESSABLE DATA BYTE Request for the given D3U, SPU or IBU was denied because the breakpoint attempts to dump data starting on an illegal byte address boundary in shared memory. Re-enter the command either incrementing or decrementing the address.
- DENIED - NON-ADDRESSABLE MRAM BYTE Request for the given D3U, SPU or IBU was denied because it attempts to set a breakpoint on at an illegal address in XTSI micro-instruction RAM. Re-enter the command either incrementing or decrementing the address.
- DENIED - ODD TSI MEMBER Request denied because only the even member number can be specified.
- DENIED - SUBUNIT IS OOS Request for the given D3U, SPU or IBU was denied because the D3U, SPU or IBU is out of service.
- DENIED - TOO MANY BREAKPOINTS Request for the given D3U, SPU or IBU was denied there already are two breakpoints in the D3U, SPU or IBU. Use OP:TSIBP to list the breakpoints in the D3U, SPU or IBU.
- DENIED - TSI DUPF Request denied because the frame is duplex failed.
- DENIED - TSI LOM Request denied because the frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.
- DENIED - UNUSED DATA ADDRESS Request for the given D3U, SPU or IBU was denied because the specified custom breakpoint starting address to be dumped into the save area is currently not being used.
- DENIED - UNUSED MRAM ADDRESS Request for the given D3U, SPU or IBU was denied because the specified micro-instruction address is currently not being used.

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- n D3U, SPU or IBU starting address of memory region to be copied to custom breakpoint save area. If INDIR option is specified, the contents of the address specified are the starting address of the D3U, SPU or IBU RAM memory region to dump.
- o SPU number in decimal.

4. REFERENCES

PIDENT
XTSIBKPT

Input Messages
CLR: TSIBP
OP: TSIBP
SET: TSIBP

Output Messages
CLR: TSIBP
OP: TSIBP
REPT: TSIBP

SEE PROPRIETARY NOTICE ON COVER PAGE

ID UPD:XTSI
WORK CENTER.. MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

- [1] UPD:XTSI a XTC SVN c
d
- [2] UPD:XTSI a XTC SVN c;UCL
d
- [3] UPD:XTSI a D3U b SVN c
d
- [4] UPD:XTSI a SPU e SVN c
d
- [5] UPD:XTSI a IBU 0 SVN c
d

2. REASON FOR OUTPUT

To respond to a UPD:XTSI input message requesting that the Expanded Time Slot Interchange (XTSI) controllers or its subunits be updated to a new generic program. This message identifies invalid configurations of the controllers or its subunits, Digital Signal Level 3 Unit (D3U), Signal Processing Unit (SPU) or In-Band Unit (IBU) identifies problems detected during the generic update, and provides complete message during the generic update procedure.

3. VARIABLE FIELD DEFINITIONS

- a XTSI member number.
- b D3U number.
- c Version number.
- d System response:

ABORTED UNABLE TO SCHEDULE PMOS TASK— The generic update is controlled by the Peripheral Maintenance Operating System (PMOS). The program was unable to schedule the PMOS task to remove or to restore D3U or SPU.

CONTR x RESTORE FAILED— The active controller is running on the new generic. The Out-Of-Service (OOS) controller, containing the old generic, could not be restored. This error message should co-existed with CONTR x UPDATE COMPLETED message.

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- CONTR x UPDATE COMPLETED—The generic update has completed. Only one of the XTSI controllers is running on the new generic. Translations still point to the old generic.
- D3U x UPDATE COMPLETED—The D3U generic update has completed. The D3U is running on the new generic. However, unit type translator indicating which generic version to use have not been changed.
- DENIED - INV TSI TYPE OR UNEQ—The XTSI number entered is either an invalid XTSI type or an unequipped XTSI frame.
- IBU 0 UPDATE COMPLETED—The IBU generic update has completed. The IBU is running on the new generic. However, unit type translator indicating which generic version to use have not been changed.
- INTERNAL SYSTEM ERROR—An output message was requested. The message index was outside the range of output messages defined for this procedure.
- INTERNAL SYSTEM ERROR—Ignore this message if the generic update completes successfully. If the generic update fails, run the System Audit Of Writable Stores (SAWS) audit, restore both controllers, and re-enter the input message.
- SPU x UPDATE COMPLETED—The SPU generic update has completed. The SPU is running on the new generic. However, unit type translator indicating which generic version to use have not been changed.
- STOPPED BREAK POINT SET—Break points are currently set in one or both of the XTSI controllers, on D3U, or on SPU. A controller generic update will not be performed while there are break points set in either of the controllers.
- STOPPED CONTR x CSP INIT FAILED—A failure was detected while attempting to initialize the new generic in the Controller Signal Processor (CSP) of controller x (original is In-Service, Standby, or OOS).
- STOPPED CONTR x CSP INIT FAILED(CODE: y)—A failure was detected while attempting to initialize the new generic in the CSP of controller x (original is In-Service, Standby, or OOS) due to an error found by the XTSI frame firmware.
- STOPPED CONTR x CSP INIT FAILED(FRAME REJECT)—A failure was detected while attempting to initialize the new generic in the CSP of controller x (original is In-Service, Standby, or OOS) due to frame reject.

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STOPPED CONTR x CSP INIT FAILED(TIMEOUT)— A failure was detected while attempting to initialize the new generic in the CSP of controller x (original is In-Service, Standby, or OOS) due to timeout while waiting response from the XTSI frame firmware.

STOPPED CONTR x CSP PUMP FAILED— A failure was detected while attempting to pump the new generic into the CSP of controller x (original is In-Service, Standby, or OOS).

STOPPED CONTR x CSP PUMP FAILED(CODE: y)— A failure was detected while attempting to pump the new generic into the CSP of controller x (original is In-Service, Standby, or OOS) due to an error found by the XTSI frame firmware.

STOPPED CONTR x CSP PUMP FAILED(FRAME REJECT)— A failure was detected while attempting to pump the new generic into the CSP of controller x (original is In-Service, Standby, or OOS) due to frame reject.

STOPPED CONTR x CSP PUMP FAILED(TIMEOUT)— A failure was detected while attempting to pump the new generic into the CSP of controller x (original is In-Service, Standby, or OOS) due to timeout while waiting response from the XTSI frame firmware.

STOPPED CONTR x PUMP FAILED— A failure was detected while attempting to pump the new generic into the controller x (original is in-service Standby or OOS).

STOPPED CONTR x PUMP FAILED(CODE: y)— A failure was detected while attempting to pump the new generic into the controller x (original is in-service Standby or OOS) due to an error found by the XTSI frame firmware.

STOPPED CONTR x PUMP FAILED(FRAME REJECT)— A failure was detected while attempting to pump the new generic into the controller x (original is in-service Standby or OOS) due to frame reject.

STOPPED CONTR x PUMP FAILED(TIMEOUT)— A failure was detected while attempting to pump the new generic into the controller x (original is in-service Standby or OOS) due to timeout while waiting response from the XTSI frame firmware.

STOPPED CONTR x UPDATE FILE HEADER FAILED— A failure was detected while attempting to update the new generic header into the controller x (original is in-service Standby or OOS).

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STOPPED CONTR x UPDATE FILE HEADER FAILED(CODE: y)—
A failure was detected while attempting to update the new generic header into the controller x (original is in-service Standby or OOS) due to an error found by the XTSI frame firmware.

STOPPED CONTR x UPDATE FILE HEADER FAILED(FRAME REJECT)— A failure was detected while attempting to update the new generic header into the controller x (original is in-service Standby or OOS) due to frame reject.

STOPPED CONTR x UPDATE FILE HEADER FAILED(TIMEOUT)—
A failure was detected while attempting to update the new generic header into the controller x (original is in-service Standby or OOS) due to timeout while waiting response from the XTSI frame firmware.

STOPPED CONTROLLER NOT DUPLEX— An entry requirement for a generic update is that both XTSI controllers must be in service.

STOPPED D3U x REMOVE FAILED— A problem was detected while attempting to remove the D3U x that is going to be updated to the new generic.

STOPPED D3U x RESTORE FAILED— A problem was detected while attempting to restore the D3U x that is going to be updated to the new generic.

STOPPED IBU 0 NOT EQUIPPED— A check of the Office Data Assembler (ODA) shows no equipage of an IBU subunit for this XTSI frame.

STOPPED IBU 0 REMOVE FAILED— A problem was detected while attempting to remove the IBU 0 that is going to be updated to the new generic.

STOPPED IBU 0 RESTORE FAILED— A problem was detected while attempting to restore the IBU 0 that is going to be updated to the new generic.

STOPPED SPU x REMOVE FAILED— A problem was detected while attempting to remove the SPU x that is going to be updated to the new generic.

STOPPED SPU x RESTORE FAILED— A problem was detected while attempting to restore the SPU x that is going to be updated to the new generic.

STOPPED XTC NOT OPERATIONAL— The XTSI in which the generic update was to be performed is not marked operational in the translations.

XTC UPDATE COMPLETED— The generic update has completed. Both of the XTSI controllers are running on the new generic. Translations still point to the old generic.

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e SPU number.

4. ACTION TO BE TAKEN

The following actions should be taken depending on the system response:

ABORTED UNABLE TO SCHEDULE PMOS TASK— Re-enter the input message.

CONTR x UPDATE COMPLETED— Try to restore the OOS controller manually.

CONTR x RESTORE FAILED— Try to restore the OOS controller manually after the generic update has completed.

D3U x UPDATE COMPLETED— No action required.

DENIED - INV TSI TYPE OR UNEQ— Re-enter the input message by entering another XTSI number or valid XTSI number.

IBU 0 UPDATE COMPLETED— No action required.

SPU x UPDATE COMPLETED— No action required.

STOPPED BREAK POINT SET— Remove all break points from both controllers and D3Us or SPU's and re-enter the input message.

STOPPED CONTR x CSP INIT FAILED— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the Attached Processor System (APS) to the controllers.

STOPPED CONTR x CSP INIT FAILED(CODE: y)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP INIT FAILED(FRAME REJECT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP INIT FAILED(TIMEOUT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP PUMP FAILED— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP PUMP FAILED(CODE: y)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP PUMP FAILED(FRAME REJECT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

STOPPED CONTR x CSP PUMP FAILED(TIMEOUT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.

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- STOPPED CONTR x PUMP FAILED— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x PUMP FAILED(CODE: y)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x PUMP FAILED(FRAME REJECT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x PUMP FAILED(TIMEOUT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x UPDATE FILE HEADER FAILED— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x UPDATE FILE HEADER FAILED(CODE: y)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x UPDATE FILE HEADER FAILED(FRAME REJECT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTR x UPDATE FILE HEADER FAILED(TIMEOUT)— Restore the controllers to duplex and re-enter the input message using a different active controller. If necessary re-copy the new generic file from the APS to the controllers.
- STOPPED CONTROLLER NOT DUPLEX— Restore the controllers to duplex and re-enter the input message. An entry requirement for a generic update is that both XTSI controllers must be in service.
- STOPPED D3U x REMOVE FAILED— It is possible no spare D3U is available. Re-enter the input message after the spare D3U is available to be protection switched.
- STOPPED D3U x RESTORE FAILED— Dump IREG Internal Register (IREG) Configuration Status (CNFGSTAT) in the software D3USTATUS word to find out the type of restoral failure. Manually restore the subject D3U. The subject D3U will be brought up with the original generic version. Analyze the causes of failure, clean up and then re-enter the input message.
- STOPPED IBU 0 NOT EQUIPPED— Complete the installation of IBU 0 and re-enter the input message.
- STOPPED IBU 0 REMOVE FAILED— It is possible the office service circuit threshold has been exceeded. Re-enter the input message after correcting the threshold condition.

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STOPPED IBU 0 RESTORE FAILED— Dump IREG Configuration Status (CNFGSTAT) in the software IBUSTATUS word to find out the type of restoral failure. Manually restore the subject IBU. The subject IBU will be brought up with the original generic version. Analyze the causes of failure, clean up and then re-enter the input message.

STOPPED SPU x REMOVE FAILED— It is possible no spare SPU is available. Re-enter the input message after the spare SPU is available to be protection switched.

STOPPED SPU x RESTORE FAILED— Dump IREG Configuration Status (CNFGSTAT) in the software SPUSTATUS word to find out the type of restoral failure. Manually restore the subject SPU. The subject SPU will be brought up with the original generic version. Analyze the causes of failure, clean up and then re-enter the input message.

STOPPED XTC NOT OPERATIONAL— Check the XTSI number in the input message. If the input message is correct, check the translations for the XTSI frame. The XTSI must be in the OPER state before attempting a controller generic update.

XTC UPDATE COMPLETED— No action required.

5. REFERENCES

PIDENT
XTSGNUPD

Input Message
UPD:XTSI

SEE PROPRIETARY NOTICE ON COVER PAGE

ID VER:MISC-SUXTSI
WORK CENTER.. MAC, MOC
GENERIC 4E24 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

VER:MISC;OPT(SUXTSI): XT SI MEMN a,

XTCN 0 1
XTCHV b,b,
XTCSV c,c,

CSP,PUBI,GRAM,CIA,ALF,EXEC
XTC0 PACKS d, e, f, g, h, i,
XTC1 PACKS d, e, f, g, h, i,

XT SI FRAME INBAND ENABLED j,

IBUEQ k,
IBUHV l,
IBUSV m,

D3UN 0 1 2 3 4 5 6 7
D3UEQ n,n,n,n,n,n, n,n,
D3UHV o,o,o,o,o,o, o,o,
D3USV p,p,p,p,p,p, p,p,

SPUN 0 1 2 3 4 5 6 7 8 9 10 11
SPUEQ [q,q,q,q,q,q,q,q,q,q q, q,
SPUHV r,r,r,r,r,r,r,r,r,r r, r,
SPUSV s,s,s,s,s,s,s,s,s,s s, s,]

2. REASON FOR OUTPUT

Display the sub-unit Expanded Time Slot Interchange (XTSI) type data for the requested XT SI.

3. VARIABLE FIELD DEFINITIONS

a XT SI member number (2-62 even numbers only).
XTCN XT SI controller number.
b XT SI Controller Hardware Version (XTCHV) number (0-7).
c XT SI Controller Software Version (XTCSV) number (0-7).

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- d Hardware version of the Controller Signal Processor (CSP) pack for XTSI controller 0 or 1:
- 0 — No CSP pack present.
 - 1 — Initial 4WB9 CSP pack needed for In-Band.
 - 2 — Unassigned.
 - 3 — Unassigned.
- e Hardware version of the Peripheral Unit Bus Interface (PUBI) pack for XTSI controller 0 or 1:
- 0 — Initial KBN16 PUBI pack present.
 - 1 — KBN23 PUBI pack needed for In-Band.
 - 2 — Unassigned.
 - 3 — Unassigned.
- f Hardware version of the Global Random Access Memory (GRAM) pack for XTSI controller 0 or 1:
- 0 — Initial UN557 GRAM pack present.
 - 1 — Unassigned.
 - 2 — Unassigned.
 - 3 — Unassigned.
- g Hardware version of the Controller Bus Image Administration (CIA) pack for XTSI controller 0 or 1:
- 0 — Initial UN547 CIA pack present.
 - 1 — UN650 CIA pack needed for In-Band.
 - 2 — Unassigned.
 - 3 — Unassigned.
- h Hardware version of the A-Link Formatter (ALF) pack for XTSI controller 0 or 1:
- 0 — Initial 4WB6 ALF pack present.
 - 1 — Unassigned.
 - 2 — Unassigned.
 - 3 — Unassigned.

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i	Hardware version of the Executive Controller (EXEC) pack for XTSI controller 0 or 1: 0 — Initial UN548 EXEC pack present. 1 — UN549 EXEC pack needed for In-Band. 2-15 — Unassigned.
j	XTSI frame In-Band enabled: N — XTSI without In-Band signaling. Y — XTSI with In-Band signaling enabled.
k	In-Band Unit (IBU) equipage: G — Grow O — Operational S — Special Growth U — Unequipped
l	IBU hardware version: 0 — Initial hardware version. 1-7 — Unassigned.
m	IBU software version (0-7).
D3UN	Digital Signal Level 3 (DS3) number (0-7). Six is the spare Digital Signal Level 3 Unit (D3U) number for D3U numbers 0-2. Seven is the spare D3U number for D3U numbers 3-5.
n	DS3 Unit Equipage (D3UEQ): G — Grow O — Operational S — Special Growth U — Unequipped
o	D3U Hardware Version (D3UHV) number (0-7). 0 — Initial 4WB3 D3U pack. 1 — 4WB11 In-Band Capable D3U pack.
p	D3U Software Version (D3USV) number (0-7).
SPUN	Signal Processing Unit Number (SPUN) Ten is the spare Signal Processing Unit (SPU) number for SPU numbers 0-4. Eleven is the spare SPU number for SPU numbers 5-9.

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q Signal Processing Unit Equipage (SPUEQ) AT&T exclusive:

 G — Grow

 O — Operational

 S — Special Growth

 U — Unequipped

r SPU Hardware Version (SPUHV) number (0 - 7). AT&T exclusive.

s SPU Software Version (SPUSV) number (0 - 7). AT&T exclusive.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
 IOCPIMC4
 IOCPMCP4
 IOCPPVR4
 VRFYCNTL
 VRFYINPT
 VRFYMISC
 VRFYOUT

Input Message
 VER:VFUNC

SEE PROPRIETARY NOTICE ON COVER PAGE

ID VER:MISC-XTSID3U
WORK CENTER.. MAC, MOC
GENERIC 4E24 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

VER:MISC;OPT(XTSID3U) XTSI MEMN a, D3UN b,
REM ALARM c, MAX LBO d, DS3 APPL [e], INBAND D3U f,

DS1 INFO

DS1 NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14,
EQUIPAGE	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,
FRAME FORMAT	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,
STATIC A/B	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,
INBAND DS1	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,

DS1 NUMBER	15	16	17	18	19	20	21	22	23	24	25	26	27	28,
EQUIPAGE	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,	g,
FRAME FORMAT	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,	h,
STATIC A/B	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,	i,
INBAND DS1	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,	j,

2. REASON FOR OUTPUT

To display the Digital Signal Level 3 (DS3) informational data for the DS3 and the Digital Signal Level 1 (DS1) information for the requested DS3.

3. VARIABLE FIELD DEFINITIONS

- a Expanded Time Slot Interchange (XTSI) member number (2-62 even numbers only).
- b DS3 number (0-5).
- c Remote alarm indication:
 IGN — Ignore
 INV — Inverted
 STD — Standard
- d Maximum line build out for cable length:
 225 — For lengths 0 to 225.
 450 — For lengths 225 to 450.

SEE PROPRIETARY NOTICE ON COVER PAGE

- e DS3 application:
CBP
M23
- f In-Band signaling state for this D3U:
N — In-Band disabled.
Y — In-Band enabled.
- g Equipage for the 1st through the 28th DS1 for this D3U:
F — Future
P — Present / provisioned.
- h Frame format for the 1st through the 28th DS1 for this D3U:
E — Extended Superframe
S — Superframe
- i Static A/B for this DS1:
N — 64K clear channel.
Y — Static A/B 64K speed but only 56k usable, the rest of the bits are restricted.
- j In-Band signaling state for this D31:
N — In-Band disabled.
Y — In-Band enabled.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
IOCPIMC4
IOCPMCP4
IOCPPVR4
VRFYCNTL
VRFYINPT
VRFYMISC
VRFYOUT

Input Message
VER:VFUNC

SEE PROPRIETARY NOTICE ON COVER PAGE

ID VER:SUBUTP-XTSII
WORK CENTER.. MAC, MOC, NMOC, TEC,
TOC
GENERIC 4E24 and later
APPLICATION .. 4E
TYPE Output

1. FORMAT

VER:SUBUTP;OPT(XTSIIBU): XTSI MEMN a,

TANS RESERVED b,

MF OR DTMF c,

XCVR CONFIG d,

2. REASON FOR OUTPUT

Outputs the In-Band Unit (IBU) configuration data for the requested Expanded Time Slot Interchange (XTSI) IBU.

3. VARIABLE FIELD DEFINITIONS

- a Expanded Time Slot Interchange (XTSI) member number (2-62 even numbers only).
- b Indicates whether the Trunk Appearance Numbers (TANs) associated with the IBU are reserved:
N — No.
Y — Yes.
- c Type of signaling supported by the IBU:
MF — Multi-frequency.
DTMF — Dual Tone multi-frequency.
- d Type of miscellaneous service circuits the IBU supports:
CCT — 16 Continuity Check Transceivers (CCT)
MISC — 12 CCTs plus 4 miscellaneous service circuits (i.e., digital milliwatt, digital milliwatt-10, common systems tone detector, and CCT test.

4. ACTION TO BE TAKEN

None.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENTs
IOCPIMC4
VRFYCNTL
VRFYINPT
VRFYMISC
VRFYOUT

Input Message
VER:VFUNC-XTSIIB

SEE PROPRIETARY NOTICE ON COVER PAGE

ID TEST:SD
 WORK CENTER.. MAC,MOC,NMOC,TOC
 GENERIC 4E24 Rel. 2 and later
 CLASS ALL
 APPLICATION .. 4E - Proprietary
 TYPE Input

1. PURPOSE

Requests a test query to be sent to the Segmentation Directory (**SD**) database from the 4ESSTM Switch serving as an Originating AT&T Switch (OAS). This test query verifies Triangular Call Flow between the 4ESSTM (OAS), **SD**, and Service Processor (**SP**) (NCP database) utilizing the Common Channel Signaling Version 7 (CCS7) Transaction Capability Application Part (TCAP) protocol. It also will enable office personnel, via input messages, to initiate queries to verify the interactions between the 4E and **SD**, and the **SP** and the 4E. The contents of specific responses sent by the **SD** complex to the 4ESSTM, and the responses sent by the **SP** will be displayed. The **SP** response will only be printed if the **SD** response indicates to "wait for instructions". This query is designed to be used as a testing vehicle for data associated with a particular customer.

2. FORMAT

TEST:SD;DIG a:[QRYTYPE b[,]][DPC c[,]][ANI d[,]|ANI d,APN[,]][SP e[,]][TOS f[,]][NMTCH g[,]][CAR h[,]][SID i[,]][TYP j[,]][REF k[,]][TMSD l[,]][TMSP m[,]][AUTHCODE n[,]][CCF o[,]][DIGITS p[,]][LANI q[,]][TP r[,]][CD[,]][LIST]!

3. EXPLANATION OF MESSAGE

- a Called party number. A North American Numbering Plan (NANP) 1-15 digit number or 011 + International 5-15 digit number is required.
- b **SD**-Query type:
 - 1 — Specific destination.
 - 2 — Any destination. Default.
 - 3 — All.
- c **SD** destination. **SD** point code is only entered if the **SD** query type is equal to specific destination.
- d Automatic Number Identification (**ANI**) digits. A 3-10 digit **ANI** is required.
- APN** Action Point Numbering Plan (**APN**) indicates **ANI** is **APN**.

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- e **SP** destination:
- 0 — Any available **SP**. Default.
 - 1 — **SP** address 1.
 - 2 — **SP** address 2.
 - 3 — **SP** address 3.
 - 4 — **SP** address 4.
 - 5 — **SP** address 5.
 - 6 — **SP** address 6.
 - 7 — **SP** address 7.
 - 8 — **SP** address 8.
- f Trunk Subgroup (TSG) service type:
- 1 — Software Defined Network (SDN)
 - 3 — Megacom®
 - 6 — Switched Digital Service (SDS)
 - 7 — Long Distance Service (LDS) Default.
- g Match restriction indicator. For **SD** Phase I, the default is always sent by the switch.
- 0 — No restrictions. Default.
 - 1 — Match on **ANI** only.
 - 2 — Match on Dialed Number (DN) only.
- h Carrier selection:
- 0 — No Indication
 - 1 — Selected carrier identification code presubscribed and not input by the call party.. Default.
 - 2 — Selected carrier identification code presubscribed and input by the calling party
 - 3 — Selected carrier identification code presubscribed, no indication of whether input by the calling party
 - 4 — Selected carrier identification code not presubscribed and input by the calling party
- i 1-15 digit calling directory number.
- j Origination station type. Format is two **ANI** II digits.

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k	Bearer capability requested: 0 — Voice call, default. 1 — 1.536 Megabits Per Second (MBPS) clear. 2 — 1.536 MBPS restricted. 3 — 384 MBPS clear. 4 — 384 MBPS restricted. 5 — 64 Kilobits Per Second (KBPS) clear. 6 — 56 KBPS. 7 — 64 KBPS restricted.
l	SD query test timer (5-120). Each number is an increment of 100 ms. Default value is the provisioned value.
m	SP response test timer (5-120). Each number is an increment of 100 ms. Default value is the provisioned value.
n	Authorization code (15 digits). Parameter is accepted but the value is not sent in the TCAP message.
o	Concentrated Calling Feature (CCF) override code (8 digits). Parameter is accepted but the value is not sent in the TCAP message.
p	Carrier Identification Code (CIC) digits parameter. Three or four digits accepted.
q	Local ANI (LANI). This parameter consists of 10 digits.
r	Access type: 1 — Switched. 2 — Direct connect. 3 — International. 4 — Telephone User Part (TUP) data. 5 — International World Zone 1 (IWZ1). 6 — TUP data and IWZ1. 7 — Operator Service Position System (OSPS). 8 — IWZ1 on international trunks.
CD	Continue Data (CD) is used when there is too much data for one-line a second test query has to be entered with the remaining data. (Example: TEST:SD;DIG 3128231200:CD! followed by TEST:SD;DIG 3128231200:QRYTYPE 1,DPC 254255101!)

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LIST Performs raw dump of TCAP messages sent to and received from **SD** or **SP** database.

4. SYSTEM RESPONSE

?D		Data field contains an error. Invalid or out-of-range data was received in the input message.
?D, CODE	1	Data field contains an error. A keyword was entered twice.
?D, CODE	2	Data field contains an error. Invalid SD destination detected, or illegal combination of SD destination and QRYTYPE .
?D, CODE	3	Data field contains an error. Invalid SD query type detected.
?D, CODE	4	Data field contains an error. Invalid called party number digit count detected.
?D, CODE	8	Data field contains an error. Invalid ANI digit count detected.
?D, CODE	9	Data field contains an error. Invalid SP destination detected.
?D, CODE	10	Data field contains an error. Invalid TSG service type detected.
?D, CODE	11	Data field contains an error. Invalid Match Restriction Indicator detected.
?D, CODE	12	Data field contains an error. Invalid Carrier Selection detected.
?D, CODE	13	Data field contains an error. Invalid Called Directory digit count detected.
?D, CODE	15	Data field contains an error. Invalid Inbound Supplemental Origination Information detected.
?D, CODE	16	Data field contains an error. Invalid Station Group Designator detected.
?D, CODE	17	Data field contains an error. Invalid Bearer Capability detected.
?D, CODE	18	Data field contains an error. Invalid SD Query Test timer value detected.
?D, CODE	19	Data field contains an error. Invalid SD Response timer value detected.
?D, CODE	20	Data field contains an error. Invalid Authorization Code detected.
?D, CODE	21	Data field contains an error. Invalid Concentrated Calling Feature override code detected.
?D, CODE	22	Data field contains an error. Unrecognized keyword.
?D, CODE	23	Data field contains an error. The TMAD0005 PIDENT found errors.
?D, CODE	24	Data field contains an error. Missing mandatory parameters.
?D, CODE	25	Data field contains an error. Illegal keyword combination.

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?D, CODE 26	Data field contains an error. Invalid Local ANI digits.
?D, CODE 27	Data field contains an error. Invalid access type.
?D, INV KW	Data field contains an error. Unrecognized keyword.
?D, XTRA KW	Data field contains an error. Duplicate keywords have been entered.
?E	Error exists in the message but cannot be resolved to the proper field. Required parameters are missing, or some duplicate keywords or errors in data was detected.
PF	Printout Follows. The test query has been initiated and the results will be printed.
RL	Retry Later. No Teletypewriter (TTY) output buffer or trunk query register available.

5. REFERENCES

PIDENT
IOCPIMC4
TESTSEGD
TMAD0005

Output Message
TEST:SD

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pursuant to Company Instructions.

ID VER:MISC-FHT-CIC
WORK CENTER.. MAC,MOC
GENERIC 4E24 Rel. 2 and later
CLASS ALL
APPLICATION .. 4E - Proprietary
TYPE Input

1. PURPOSE

The purpose of this message is to output the Carrier Identification Code (CIC) and its associated Route Selection Index (RSI).

Format 1 will output all of the populated CIC entries.

Format 2 will output the specific input entry.

Format 3 will output all entries which have the input RSI.

2. FORMAT

- [1] VER:MISC:FHT CICTORSIX!
- [2] VER:MISC:FHT CICTORSIX,DIG aaaa!
- [3] VER:MISC:FHT CICTORSIX,ID b!

3. EXPLANATION OF MESSAGE

- a Four digit Carrier Identification Code (CIC).
- b One to four digit Route Selection Index (RSI).

4. SYSTEM RESPONSE

PF Printout Follows.

5. REFERENCES

PIDENTs
IOCPIMC4
VRFYMSC

Output Messages
STOP:VERMSG
VER:MISC-FHT-CIC

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ID VER:MISC-FHT-CIC
WORK CENTER.. MAC, MOC
GENERIC 4E24 Rel. 2 and later
APPLICATION .. 4E - Proprietary
TYPE Output

1. FORMAT

VER:MISC:FHT CICTORSIX:

CIC	RSI
aaaa	bbbb
aaaa	bbbb
.	.
.	.
.	.

2. REASON FOR OUTPUT

To display the Carrier Identification Code (CIC) / Route Selection Index (RSI) entries.

Up to 20 entries can be output per segment. Up to 52 segments may be printed if a request has been received to output all populated entries and the maximum number of entries (1024) have been populated.

3. VARIABLE FIELD DEFINITIONS

a	Four digit Carrier Identification Code (CIC).
b	Route Selection Index (RSI).

4. ACTION TO BE TAKEN

None. This message is for information only.

5. REFERENCES

PIDENT
VRFYMSC

Input Message
STOP:VERMSG
VER:MISC-FHT-CIC

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